

PROJECT ID:

CO300ELV2

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

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

LAW

VOLUME 1 OF 3

BID BOOKLET

FOR FURNISHING ALL LABOR AND MATERIALS NECESSARY AND REQUIRED FOR:

Queens Supreme Court Elevator Modernization Re-Bid

LOCATION: BOROUGH:

CITY OF NEW YORK

88-11 Sutphin Boulevard

Queens 11435

CONTRACT NO. 1

GENERAL CONSTRUCTION

FOR:

DGS

BY:

AECOM



Date:

September 9, 2015

BID BOOKLET PART A

SPECIAL NOTICE TO BIDDERS

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

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

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

A prime contractor may not discriminate against a subcontractor or potential subcontractor by reason of the subcontractor's participation, or nonparticipation, in the NYC Construction Loan program.

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

BID BOOKLET

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

SPECIAL NOTICE TO BIDDERS

BID SUBMISSION REQUIREMENTS

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

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

- Bid Form, including Affirmation
- Bid Security (if required, see page 24)
- Schedule B: M/WBE Utilization Plan (if participation goals have been established)

BID ENVELOPE #2: Bid Envelope #2 shall contain ONLY the following item:

Bidder's Identification of Subcontractors (see pages 18 & 19)

FAILURE TO SUBMIT THE FOUR ITEMS LISTED ABOVE WILL RESULT IN THE DISQUALIFICATION OF THE BID

BID ENVELOPE #1: In addition to the items listed above, Bid Envelope #1 shall also contain the following items: DO NOT Include the items listed below in Bid Envelope #2.

- Bid Breakdown (if required, see page 23)
- Safety Questionnaire
- Construction Employment Report (if bid is \$1,000,000 or more)
- Contract Certificate (if bid is less than \$1,000,000)
- Confirmation of Vendex Compliance
- Bidder's Certification of Compliance with Iran Divestment Act
- Special Experience Requirements Qualification Form (if required, see pages 3, 4)
- Apprenticeship Program Requirements (if required, see pages 10, 11)
- Any Addenda issued prior to the receipt of bids

FAILURE TO SUBMIT THE NINE ITEMS LISTED ABOVE MAY RESULT IN THE DISQUALIFICATION OF THE BID.

NOTES:

- (1) All of the above referred to blank forms to be completed and submitted with the bid are included in the BID BOOKLET.
- (2) If the bidder has any questions or requires additional information, please contact the Department of Design and Construction by phone (718-391-2601) or by fax (718-391-2615).
- (3) <u>VENDEX QUESTIONNAIRES:</u> Vendex Questionnaires, as well as detailed instructions, may be obtained at www.nyc.gov/vendex. The bidder may also obtain Vendex forms and instructions by contacting the Agency Chief Contracting Officer or the contact person for this contract.
- (4) <u>SPECIAL EXPERIENCE REQUIREMENTS:</u> The Bidder is advised that Special Experience Requirements may apply to this contract. Such requirements are set forth on pages 3 and 4 of this Bid Booklet.
- (5) <u>SPECIAL EXPERIENCE REQUIREMENTS FOR ASBESTOS</u>: The Bidder is advised that this contract contains strict requirements regarding the prior experience and licensing of the subcontractor who will perform any required asbestos abatement work. These special experience requirements are set forth in the section of the specifications which describes any required asbestos abatement work.

SPECIAL EXPERIENCE REQUIREMENTS

Special Experience Requirements apply as indicated below.				
Bidder:	General Construction	<u> X</u>	YES	NO
Specific Areas of Work:	General Construction	X	YES	NO

- (A) EXPERIENCE REQUIREMENTS FOR THE BIDDER: The special experience requirements set forth below apply to the bidder indicated above. Compliance with such special experience requirements will be determined solely by the City prior to an award of contract. Failure to comply with the special experience requirements will result in the rejection of the bid as non-responsive.
 - The bidder must, within the last five (5) consecutive years prior to the bid opening, have successfully completed in a timely fashion at least three (3) projects similar in scope and type to the required work.
- (B) QUALIFICATION FORM: For each project submitted to demonstrate compliance with the special experience requirements, the bidder must complete the Qualification Form included in the Bid Booklet. The City will only evaluate a project if the following criteria are met: (1) the project is described on the Qualification Form, and (2) all information on the Qualification Form is provided. The City will not evaluate any project which does not comply with the criteria set forth herein, including any project which is referred to only on the resume of an individual.
- (C) <u>CONDITIONS</u>: The City may, in determining compliance with the special experience requirements set forth above, consider prior projects completed by principal(s) or other employees of the bidder while affiliated with another entity, subject to the conditions set forth below.
 - Any principal or other employee on whose prior experience the bidder is relying to demonstrate compliance with this special experience requirement must have held the following: (a) a significant management role in the prior entity with which he/she was affiliated, and (b) a significant management role in the entity submitting the bid for a period of six months or from the inception of the bidding entity. If the bidder is relying on the prior experience of a principal or employee, it must submit documentation confirming the position held by such principal or employee in the prior entity, as well as in the bidding entity.
 - The bidder may not rely on the experience of its principals or other employees to demonstrate compliance with any other requirements, including without limitation, financial requirements or requirements for a specified minimum amount of annual gross revenues.
- (D) <u>JOINT VENTURES</u>: In the event the bidder is a joint venture, at least one firm in the joint venture must meet the above described experience requirements.
- (E) EXPERIENCE REQUIREMENTS FOR SPECIFIC AREAS OF WORK: The special experience requirements set forth below apply to the contractor or subcontractor that will perform specific areas of work. Compliance with such experience requirements will be evaluated after an award of contract. Within two (2) weeks of such award, the contractor will be required to submit the qualifications of the contractor or subcontractor that will perform these specific areas of work. If the bidder intends to perform these specific areas of work with its own forces, it must demonstrate compliance with the special experience requirements. If the bidder intends to subcontract these specific areas of work, its proposed subcontractor(s) must demonstrate compliance with the special experience requirements. Once approved, no substitution will be permitted, unless the qualifications of the proposed replacement have been approved in writing in advance by the City. The bidder is advised to carefully review these special experience requirements prior to submitting its bid, as such experience requirements will be strictly enforced.

(1) Special experience requirements apply to the contractor or subcontractor that will perform specific areas of work specified in the section(s) set forth below.

General Construction

Section 07 55 52 MODIFIED BITUMINOUS PROTECTED MEMBRANE ROOFING

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

The contractor or subcontractor performing the work of this section must, within the last five (5) consecutive years prior to the bid opening, have successfully completed in a timely fashion at least three (3) projects similar in scope and type to the required work. In addition, for roofing work, the contractor or subcontractor must be licensed or approved by the manufacturer of the roofing system.

Project ID: CO300ELV2

List previous projects con photocopy this form for s	npleted to meet the special experience requirements for this contract. Please ubmission of all required projects.
Name of Contractor:	ENTENNIAL ELEVATION /NOUSTRIES /WC
Name of Project:	EVATOR UPGRADE
Location of Project: S	TUDIO MUSEUM OF HARLEM
Owner or Owner's represe	ntative (Architect or Engineer) who is familiar with the work performed:
Name: NICDDC-	- TED SOLOMON
	Phone Number: 347-203-08/2
HARLEM, CONTRACT	REGISTRATION NO. 20111414ff
	s a prime or a subcontractor:
Amount of Contract:	
Date of Completion:	FOBER 25, 2012
********	·*************************************
Name of Contractor:	NTENNIAL ELEVATOR INDUSTRIES /WC
Name of Project: <u>Ela</u>	IAMA MODERNIZATION, MAINTENANCE + SERVICE
Location of Project: N-	.C HOUSING AUTHORY-NASHINGTON HUSES CONTRACT # EV1128372
Owner or Owner's represent	ative (Architect or Engineer) who is familiar with the work performed:
Name: Lovis Can	LEGALI"
Title: ARMINI DIRE	714 ELEVATORS Phone Number: 7/1-709-5746 0R9/7-991-600/
Brief description of work co	empleted: <u>ELEVATOR MODERNIZATION</u> , MAINTENIMIE + EVATORS AT WASHINGTON HOUSES
Was the work performed as	a prime or a subcontractor: Prime
Amount of Contract: +11	,190,310-
Date of Completion: Au	bust 2,2015

Project ID: CO300ELV2

List previous projects completed to meet the special experience requirements for this contract. Please

photocopy this form for submission of all required projects.
Name of Contractor: CENTENWIAL ELEVATION /NONSTRIES /NE
Name of Project: ELEVATOR MONERNIZATION (NYCDCAS)
Location of Project: 230 Backbury, NYNY
Owner or Owner's representative (Architect or Engineer) who is familiar with the work performed:
Name: MICHAEL ROBOZIN
Title: PROJECT MANAGER Phone Number: 212-386 049)
Brief description of work completed: ELEVATOR MODERNIZATION AT 280 BROADNAY
CONTRACT REGISTRATION NO. CT 85620050030465
Was the work performed as a prime or a subcontractor:
Amount of Contract: \$1,607,06/.81
Date of Completion: October 37, 2014

Name of Contractor: CENTENNIAL ELEVATOR /NOUSTRIES /NL.
Name of Project: <u>ELEVATOR MODERNITHTION MAINTENIMIE + SERVILE AT KING TOWERS</u>
Location of Project: KING TOWERS (NYCHA)
Owner or Owner's representative (Architect or Engineer) who is familiar with the work performed:
Name: Louis Callegari
Title: AST. DIRELEVATORS Phone Number: 715-707-5746 0R917-991-600
Brief description of work completed: <u>ELEVATOR MODERNIZATION MAINTENANCE</u> SERVICE FOR 20 ELEVATORS AT KING TOWERS
CONTRACT NO E 190/2234
Was the work performed as a prime or a subcontractor: ReiME
Amount of Contract: +8,006,613,31
Date of Completion: SETEMBER 20, 2012

Project ID: CO300ELV2

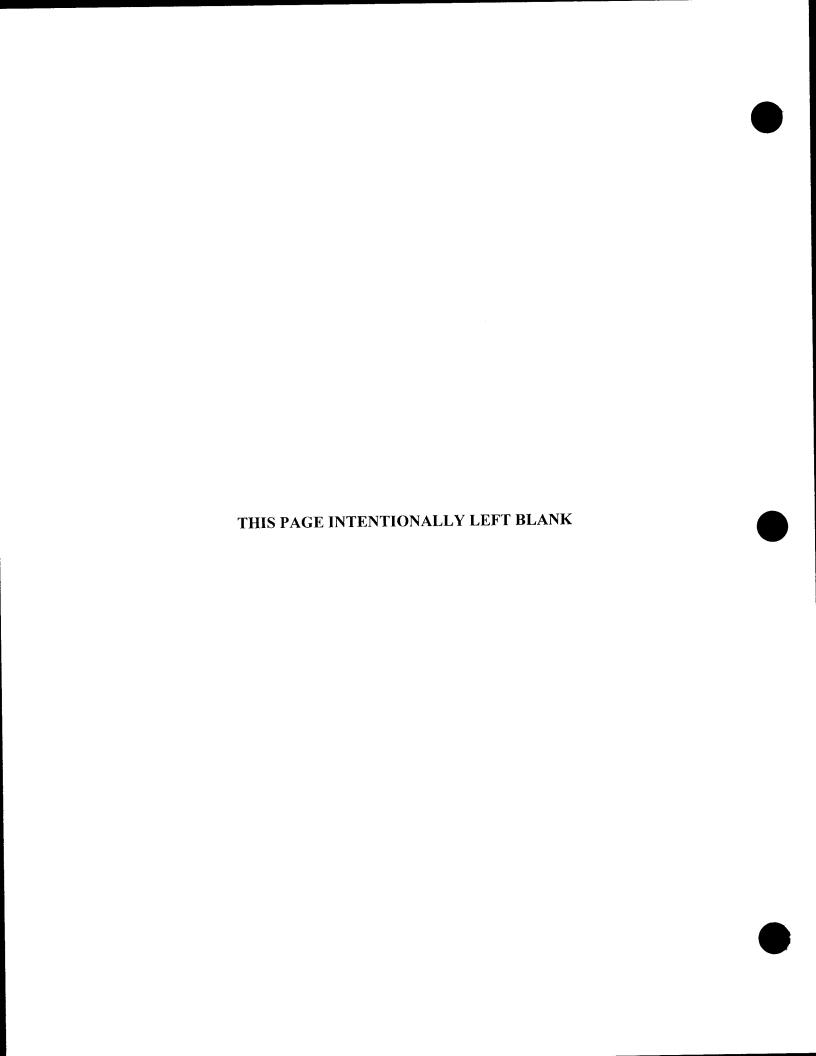
List previous projects completed to meet the special experience requirements for this contract. Please

photocopy this form for submission of all required projects.
Name of Contractor: CENTENNINL ELEVATOR /NOUSTRIES /WI.
Name of Project: ELEVATOR NORIC-REHABILITATE ELEVATORS DOWNITATE MEDICAL CENTER
Location of Project: DOWNSTATE MEDICAL CENTER
Owner or Owner's representative (Architect or Engineer) who is familiar with the work performed:
Name: NIGEL MCLEAN
Title: Basect Manager Phone Number: 914-557-4235
Brief description of work completed: REHABILITATION + SERVICE FOR 26 BLEVATORS VARIANS BUILDINGS, CONTRACT NO 43506-U
Was the work performed as a prime or a subcontractor:
Amount of Contract: +7,093,856
Date of Completion: MAY 2015
Name of Contractor: CENTENNIAL ELEVATOR /NOVSTRIES IN C. Name of Project: NAMM HALL - ELEVATOR MOSERNITATION Location of Project: NAMM HALL - NYC COLLEGE OF TEXANDLOGY - (NYS DOENITARY AUTHORITY)
Owner or Owner's representative (Architect or Engineer) who is familiar with the work performed:
Name: John Kelly Title: Resert Manyber. Phone Number: 718-354-8570
Title: Mary Mary 651 Phone Number: 718-354-8570
Brief description of work completed: Elevation MODERNIZATION 7 ELEVATIONS OF NAME HALL. CONTRACT NO 167463
Was the work performed as a prime or a subcontractor: \$\int Rim\text{TRIME}\$
Amount of Contract: \$3,382,308, FV
Date of Completion: $f-1-15$

Project ID: CO300ELV2

List previous projects completed to meet the special experience requirements for this contract. Please photocopy this form for submission of all required projects.
Name of Contractor:
Name of Project:
Location of Project:
Owner or Owner's representative (Architect or Engineer) who is familiar with the work performed:
Name:
Title: Phone Number:
Brief description of work completed:
Was the work performed as a prime or a subcontractor:
Amount of Contract:
Date of Completion:

Name of Contractor:
Name of Project:
Location of Project:
Owner or Owner's representative (Architect or Engineer) who is familiar with the work performed:
Name:
Title: Phone Number:
Brief description of work completed:
Was the work performed as a prime or a subcontractor:
Amount of Contract:
Date of Completion:



MWBE PROGRAM

M/WBE UTILIZATION PLAN

<u>M/WBE Program Requirements:</u> The requirements for the M/WBE Program are set forth on the following pages of this Bid Booklet, in the section entitled "Notice to All Prospective Contractors".

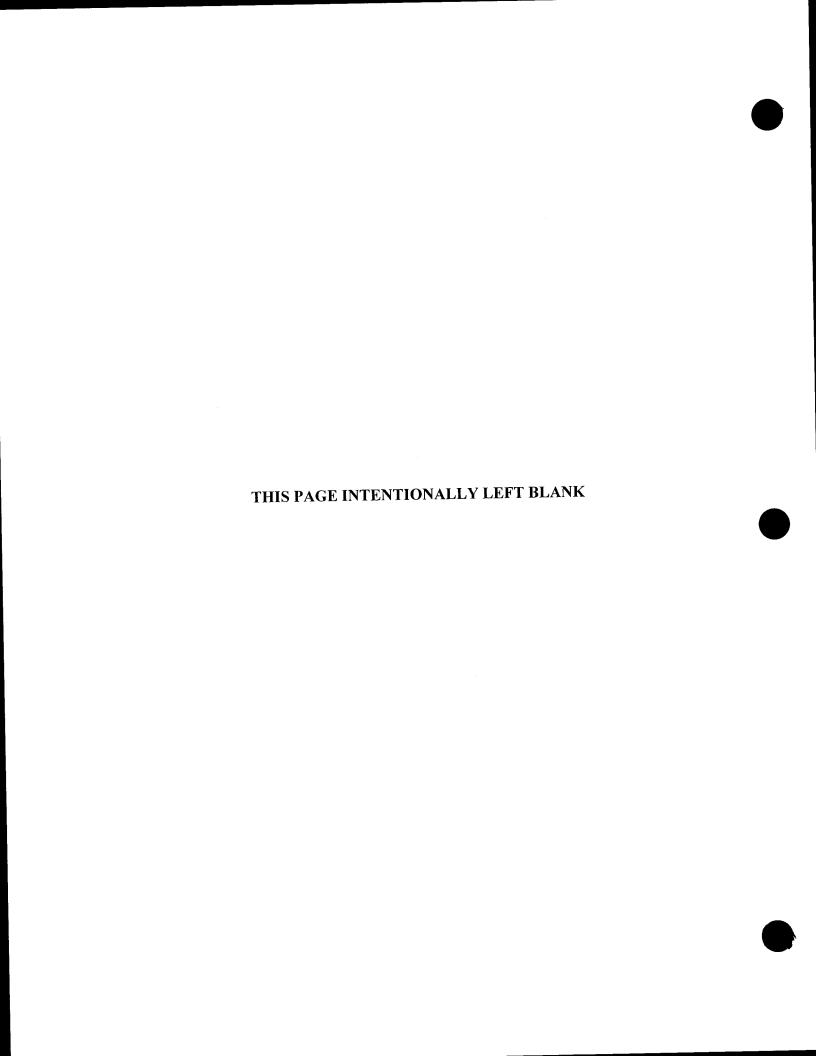
Schedule B: M/WBE Utilization Plan: Schedule B: M/WBE Utilization Plan for this Contract is set forth in this Bid Booklet on the pages following the section entitled "Notice to All Prospective Contractors". The M/WBE Utilization Plan (Part I) indicates whether Participation Goals have been established for this Contract. If Participation Goals have been established for this Contract, the bidder must submit an M/WBE Utilization Plan (Part II) with its bid.

<u>Waiver:</u> The bidder may seek a full or partial pre-award waiver of the Participation Goals in accordance with the "Notice to All Prospective Contractors" (See Part A, Section 10). The bidder's request for a waiver must be submitted at least seven (7) calendar days prior to the bid date. Waiver requests submitted after the deadline will not be considered. The form for requesting a waiver of the Participation Goals is set forth in the M/WBE Utilization Plan (Part III).

Rejection of the Bid: The bidder must complete Schedule B: M/WBE Utilization Plan (Part II) set forth in this Bid Booklet on the pages following the section entitled "Notice to All Prospective Contractors". A Schedule B submitted by the bidder which does not include the Vendor Certification and Required Affirmations (See Section V of Part II) will be deemed to be non-responsive, unless a full waiver of the Participation Goals is granted (Schedule B, Part III). In the event that the City determines that the bidder has submitted a Schedule B where the Vendor Certification and Required Affirmations are completed but other aspects of the Schedule B are not complete, or contain a copy or computation error that is at odds with the Vendor Certification and Required Affirmations, the bidder will be notified by the Agency and will be given four (4) calendar days from receipt of notification to cure the specified deficiencies and return a completed Schedule B to the Agency. Failure to do so will result in a determination that the Bid is non-responsive.

Receipt of notification is defined as the date notice is emailed or faxed (if the bidder has provided an email address or fax number), or no later than five (5) days from the date of mailing or upon delivery, if delivered.

<u>Impact on LBE Requirements:</u> If Participation Goals have been established for the participation of M/WBEs, the contractor is not required to comply with the Locally Based Enterprise Program ("LBE"). The LBE Program is set forth in Article 67 of the Contract.



NOTICE TO ALL PROSPECTIVE CONTRACTORS

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

ARTICLE I. M/WBE PROGRAM

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

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

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

PART A

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

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

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

- 2. If **Participation Goals** have been established for this Contract or Task Orders issued pursuant to this Contract, Contractor agrees or shall agree as a material term of the Contract that Contractor shall be subject to the **Participation Goals**, unless the goals are waived or modified by Agency in accordance with Section 6-129 and Part A, Sections 10 and 11 below, respectively.
- 3. If **Participation Goals** have been established for this Contract or Task Order issued pursuant to this Contract, a Contractor that is an MBE and/or WBE shall be permitted to count its own participation toward fulfillment of the relevant **Participation Goal**, provided that in accordance with Section 6-129 the value of Contractor's participation shall be determined by subtracting from the total value of the Contract or Task Order, as applicable, any amounts that the Contractor pays to direct subcontractors (as defined in Section 6-129(c)(13)), and provided further that a Contractor that is certified as both an MBE and a WBE may count its own participation either toward the goal for MBEs or the goal for WBEs, but not both.

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

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

- 4. A. If Participation Goals have been established for this Contract, a prospective contractor shall be required to submit with its or proposal, as applicable, a completed Schedule B, M/WBE Utilization Plan, Part II (see Pages 2-4) indicating: (a) whether the contractor is an MBE or WBE, or qualified joint venture; (b) the percentage of work it intends to award to direct subcontractors; and (c) in cases where the contractor intends to award direct subcontracts, a description of the type and dollar value of work designated for participation by MBEs and/or WBEs, and the time frames in which such work is scheduled to begin and end. In the event that this M/WBE Utilization Plan indicates that the bidder or proposer, as applicable, does not intend to meet the Participation Goals, the bid or proposal, as applicable, shall be deemed non-responsive, unless Agency has granted the bidder or proposer, as applicable, a pre-award waiver of the Participation Goals in accordance with Section 6-129 and Part A, Section 10 below.
- B. (i) If this Contract is for a master services agreement or other requirements type contract that will result in the issuance of Task Orders that will be individually registered ("Master Services Agreement") and is subject to M/WBE Participation Goals, a prospective contractor shall be required to submit with its bid or proposal, as applicable, a completed Schedule B, M/WBE Participation Requirements for Master Services Agreements That Will Require Individually Registered Task Orders, Part II (page 2) indicating the prospective contractor's certification and required affirmations to make all reasonable good faith efforts to meet participation goals established on each individual Task Order issued pursuant to this Contract, or if a partial waiver is obtained or such goals are modified by the Agency, to meet the modified Participation Goals by soliciting and obtaining the participation of certified MBE and/or WBE firms. In the event that the Schedule B indicates that the bidder or proposer, as applicable, does not intend to meet the Participation Goals that may be established on Task Orders issued pursuant to this Contract, the bid or proposal, as applicable, shall be deemed non responsive.
- (ii) **Participation Goals** on a Master Services Agreement will be established for individual Task Orders issued after the Master Services Agreement is awarded. If **Participation Goals** have been established on a Task Order, a contractor shall be required to submit a Schedule B M/WBE Utilization Plan For Independently Registered Task Orders That Are Issued Pursuant to Master Services Agreements, Part II (see Pages 2-4) indicating: (a) whether the contractor is an MBE or WBE, or qualified joint venture; (b) the percentage of work it intends to award to direct subcontractors; and (c) in cases where the contractor intends to award direct subcont a description of the type and dollar value of work designated for participation by MBEs and/or WBEs, and the time frames in which such work is scheduled to begin and end. The contractor must engage in good faith efforts to meet the **Participation Goals** as established for the Task Order unless Agency has granted the contractor a pre-award waiver of the Participation Goals in accordance with Section 6-129 and Part A, Section 10 below.
- C. THE BIDDER/PROPOSER MUST COMPLETE THE SCHEDULE B INCLUDED HEREIN (SCHEDULE B, PART II). A SCHEDULE B SUBMITTED BY THE BIDDER/PROPOSER WHICH DOES NOT INCLUDE THE VENDOR CERTIFICATION AND REQUIRED AFFIRMATIONS (SEE SECTION V OF PART II) WILL BE DEEMED TO BE NON-RESPONSIVE, UNLESS A FULL WAIVER OF THE PARTICIPATION GOALS IS GRANTED (SCHEDULE B, PART III). IN THE EVENT THAT THE CITY DETERMINES THAT THE BIDDER/PROPOSER HAS SUBMITTED A SCHEDULE B WHERE THE VENDOR CERTIFICATION AND REQUIRED AFFIRMATIONS ARE COMPLETED BUT OTHER ASPECTS OF THE SCHEDULE B ARE NOT COMPLETE, OR CONTAIN A COPY OR COMPUTATION ERROR THAT IS AT ODDS WITH THE VENDOR CERTIFICATION AND AFFIRMATIONS, THE BIDDER/PROPOSER WILL BE NOTIFIED BY THE AGENCY AND WILL BE GIVEN FOUR (4) CALENDAR DAYS FROM RECEIPT OF NOTIFICATION TO CURE THE SPECIFIED DEFICIENCIES AND RETURN A COMPLETED SCHEDULE B TO THE AGENCY. FAILURE TO DO SO WILL RESULT IN A DETERMINATION THAT THE BID/PROPOSAL IS NON-RESPONSIVE. RECEIPT OF NOTIFICATION IS DEFINED AS THE DATE NOTICE IS E-MAILED OR FAXED (IF THE BIDDER/PROPOSER HAS PROVIDED AN E-MAIL ADDRESS OR FAX NUMBER), OR NO LATER THAN FIVE (5) CALENDAR DAYS FROM THE DATE OF MAILING OR UPON DELIVERY, IF DELIVERED.
- 5. Where an M/WBE Utilization Plan has been submitted, the Contractor shall, within 30 days of issuance by Agency of a notice to proceed, submit a list of proposed persons or entities to which it intends to award subcontracts within the subsequent 12 months. In the case of multi¬year contracts, such list shall also be submitted every year thereafter. The Agency may also require the Contractor to periodically about the contracts awarded by its direct subcontractors to indirect subcontractors (as defined in Section 6-129(c)(22)).

 PLEASE NOTE: If this Contract is a public works project subject to GML §101(5) (i.e., a contract valued at or

CITY OF NEW YORK
DDC
5b
December 2013

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

- MBE and WBE firms must be certified by DSBS in order for the Contractor to credit such firms' participation toward the attainment of the **Participation Goals**. Such certification must occur prior to the firms' commencement of work. A list of MBE and WBE firms may be obtained from the DSBS website at www.nyc.gov/buycertified, by emailing DSBS at buyer@sbs.nyc.gov, by calling (212) 513-6356, or by visiting or writing DSBS at 110 William St., New York, New York, 10038, 7th floor. Eligible firms that have not yet been certified may contact DSBS in order to seek certification by visiting www.nyc.gov/getcertified, emailing MWBE@sbs.nyc.gov, or calling the DSBS certification helpline at (212) 513-6311. A firm that is certified as both an MBE and a WBE may be counted either toward the goal for MBEs or the goal for WBEs, but not both. No credit shall be given for participation by a graduate MBE or graduate WBE, as defined in Section 6-129(c)(20).
- Where an M/WBE Utilization Plan has been submitted, the Contractor shall, with each voucher for payment, and/or periodically as Agency may require, submit statements, certified under penalty of perjury, which shall include, but not be limited to;: the total amount the Contractor paid to its direct subcontractors, and, where applicable pursuant to Section 6-129(j), the total amount direct subcontractors paid to indirect subcontractors; the names, addresses and contact numbers of each MBE or WBE hired as a subcontractor by the Contractor, and, where applicable, hired by any of the Contractor's direct subcontractors; and the dates and amounts paid to each MBE or WBE. The Contractor shall also submit, along with its voucher for final payment: the total amount it paid to subcontractors, and, where applicable pursuant to Section $6\neg-129(j)$, 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.

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

- 9. Where an M/WBE Utilization Plan has been submitted, and the Contractor requests a change order the value of which exceeds the greater of 10 percent of the Contract or Task Order, as applicable, or \$500,000, Agency shall review the scope of work for the Contract or Task Order, as applicable, and the scale and types of work involved in the change order, and determine whether the **Participation Goals** should be modified.
- 10. Pre-award waiver of the **Participation Goals**. (a) A bidder or proposer, or contractor with respect to a Task Order, may seek a pre-award full or partial waiver of the **Participation Goals** in accordance with Section 6-129, which requests that Agency change one or more **Participation Goals** on the grounds that the **Participation Goals** are unreasonable in light of the availability of certified firms to perform the services required, or by demonstrating that it has legitimate business reasons for proposing a lower level of subcontracting in its M/WBE Utilization Plan.
- (b) To apply for a full or partial waiver of the **Participation Goals**, a bidder, proposer, or contractor, as applicable, must complete Part III (Page 5) of Schedule B and submit such request no later than seven (7) calendar days prior to the date and time the bids, proposals, or Task Orders are due, in writing to the Agency by email at zhangji@ddc.nyc.gov or via facsimile at (718) 391-1886. Bidders, proposers, or contractors, as applicable, who have submitted requests will receive an Agency response by no later than two (2) calendar days prior to the due date for bids, proposals, or Task Orders; provided, however, that if that date would fall on a weekend or holiday, an Agency response will be provided by close-of-business on the business day before such weekend or holiday date.
- (c) If the Agency determines that the **Participation Goals** are unreasonable in light of the availability of certified firms to erform the services required, it shall revise the solicitation and extend the deadline for bids and proposals, or revise the Task Order, as opticable.

- (d) Agency may grant a full or partial waiver of the Participation Goals to a bidder, proposer or contractor, as applicable, who demonstrates—before submission of the bid, proposal or Task Order, as applicable—that it has legitimate business reasons for proposing the level of subcontracting in its M/WBE Utilization Plan. In making its determination, Agency shall consider factors that shall include, but not be limited to, whether the bidder, proposer or contractor, as applicable, has the capacity and the bona fide intention to perform Contract without any subcontracting, or to perform the Contract without awarding the amount of subcontracts represented by the Participation Goals. In making such determination, Agency may consider whether the M/WBE Utilization Plan is consistent with past subcontracting practices of the bidder, proposer or contractor, as applicable, whether the bidder, proposer or contractor, as applicable, has made efforts to form a joint venture with a certified firm, and whether the bidder, proposer, or contractor, as applicable, has made good faith efforts to identify other portions of the Contract that it intends to subcontract.
- Modification of M/WBE Utilization Plan. (a) A Contractor may request a modification of its M/WBE Utilization Plan after award of this Contract. PLEASE NOTE: If this Contract is a public works project subject to GML §101(5) (i.e., a contract valued at or below \$3M for projects in New York City) or if the Contract is subject to a project labor agreement in accordance with Labor Law §222, and the bidder is required to identify at the time of bid submission its intended subcontractors for the Wicks trades (plumbing and gas fitting; steam heating, hot water heating, ventilating and air conditioning (HVAC); and electric wiring), the Contractor may request a Modification of its M/WBE Utilization Plan as part of its bid submission. The Agency may grant a request for Modification of a Contractor's M/WBE Utilization Plan if it determines that the Contractor has established, with appropriate documentary and other evidence, that it made reasonable, good faith efforts to meet the Participation Goals. In making such determination, Agency shall consider evidence of the following efforts, as applicable, along with any other relevant factors:
- (i) The Contractor advertised opportunities to participate in the Contract, where appropriate, in general circulation media, trade and professional association publications and small business media, and publications of minority and women's business organizations;
- (ii) The Contractor provided notice of specific opportunities to participate in the Contract, in a timely manner, to minority and women's business organizations;
- (iii) The Contractor sent written notices, by certified mail or facsimile, in a timely manner, to advise MBEs or WBEs that their interest in the Contract was solicited;
- (iv) The Contractor made efforts to identify portions of the work that could be substituted for portions originally designated for participation by MBEs and/or WBEs in the M/WBE Utilization Plan, and for which the Contractor claims an inability to retain MBEs or WBEs;
- (v) The Contractor held meetings with MBEs and/or WBEs prior to the date their bids or proposals were due, for the purpose of explaining in detail the scope and requirements of the work for which their bids or proposals were solicited;
- (vi) The Contractor made efforts to negotiate with MBEs and/or WBEs as relevant to perform specific subcontracts, or act as suppliers or service providers;
- (vii) Timely written requests for assistance made by the Contractor to Agency's M/WBE liaison officer and to DSBS;
- (viii) Description of how recommendations made by DSBS and Agency were acted upon and an explanation of why action upon such recommendations did not lead to the desired level of participation of MBEs and/or WBEs.

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

- (b) The Agency may modify the **Participation Goals** when the scope of the work has been changed by the Agency in a manner that affects the scale and types of work that the Contractor indicated in its **M/WBE** Utilization Plan would be awarded to subcontractors.
- 12. If this Contract is for an indefinite quantity of construction, standard or professional services or is a requirements type contract and the Contractor has submitted an **M/WBE** Utilization Plan and has committed to subcontract work to MBEs and/or WBEs in order to meet the **Participation Goals**, the Contractor will not be deemed in violation of the M/WBE Program requirements for this Contract with regard to any work which was intended to be subcontracted to an MBE and/or WBE to the extent that the Agency has determined that such work is not needed.
- 13. If **Participation Goals** have been established for this Contract or a Task Order issued pursuant to this Contract, at least once annually during the term of the Contract or Task Order, as applicable, Agency shall review the Contractor's progress toward attainment of its M/WBE Utilization Plan, including but not limited to, by reviewing the percentage of work the Contractor has actually awarded to MBE and/or WBE subcontractors and the payments the Contractor made to such subcontractors.

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

PART B: MISCELLANEOUS

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

ARTICLE II. ENFORCEMENT

- 1. If Agency determines that a bidder or proposer, as applicable, has, in relation to this procurement, violated Section 6-129 or the DSBS rules promulgated pursuant to Section 6-129, Agency may disqualify such bidder or proposer, as applicable, from competing for this Contract and the Agency may revoke such bidder's or proposer's prequalification status, if applicable.
- 2. Whenever Agency believes that the Contractor or a subcontractor is not in compliance with Section 6-129 or the DSBS rules promulgated pursuant to Section 6-129, or any provision of this Contract that implements Section 6-129, including, but not limited to any **M/WBE** Utilization Plan, Agency shall send a written notice to the Contractor describing the alleged noncompliance and offering the Contractor an opportunity to be heard. Agency shall then conduct an investigation to determine whether such Contractor or subcontractor is in compliance.
- 3. In the event that the Contractor has been found to have violated Section 6-129, the DSBS rules promulgated pursuant to Section 6-129, or any provision of this Contract that implements Section 6-129, including, but not limited to, any **M/WBE** Utilization Plan, Agency may determine that one of the following actions should be taken:
- (a) entering into an agreement with the Contractor allowing the Contractor to cure the violation;
- (b) revoking the Contractor's pre-qualification to bid or make proposals for future contracts;
- (c) making a finding that the Contractor is in default of the Contract;
- (d) terminating the Contract;
- (e) declaring the Contractor to be in breach of Contract;
- (f) withholding payment or reimbursement;
- (g) determining not to renew the Contract;
 - assessing actual and consequential damages;

- (i) assessing liquidated damages or reducing fees, provided that liquidated damages may be based on amounts representing costs of delays in carrying out the purposes of the M/WBE Program, or in meeting the purposes of the Contract, the costs of meeting utilization goals through additional procurements, the administrative costs of investigation and enforcement, or other factors set forth in the Contract;
- (j) exercising rights under the Contract to procure goods, services or construction from another contractor and charge the cost of such contract to the Contractor that has been found to be in noncompliance; or
- (k) taking any other appropriate remedy.
- 4. If an M/WBE Utilization Plan has been submitted, and pursuant to this Article II, Section 3, the Contractor has been found to have failed to fulfill its Participation Goals contained in its M/WBE Utilization Plan or the Participation Goals as modified by Agency pursuant to Article I, Part A, Section 11, Agency may assess liquidated damages in the amount of ten percent (10%) of the difference between the dollar amount of work required to be awarded to MBE and/or WBE firms to meet the Participation Goals and the dollar amount the Contractor actually awarded and paid, and/or credited, to MBE and/or WBE firms. In view of the difficulty of accurately ascertaining the loss which the City will suffer by reason of Contractor's failure to meet the Participation Goals, the foregoing amount is hereby fixed and agreed as the liquidated damages that the City will suffer by reason of such failure, and not as a penalty. Agency may deduct and retain out of any monies which may become due under this Contract the amount of any such liquidated damages; and in case the amount which may become due under this Contract shall be less than the amount of liquidated damages suffered by the City, the Contractor shall be liable to pay the difference.
- 5. Whenever Agency has reason to believe that an MBE and/or WBE is not qualified for certification, or is participating in a contract in a manner that does not serve a commercially useful function (as defined in Section 6-129(c)(8)), or has violated any provision of Section 6-129, Agency shall notify the Commissioner of DSBS who shall determine whether the certification of such business enterprise should be revoked.
- 6. Statements made in any instrument submitted to Agency pursuant to Section 6-129 shall be submitted under penalty of perjury and any false or misleading statement or omission shall be grounds for the application of any applicable criminal and/or civil penalties for perjury. The making of a false or fraudulent statement by an MBE and/or WBE in any instrument submitted pursuant to Section 6-129 shall, in addition, be grounds for revocation of its certification.
- 7. The Contractor's record in implementing its **M/WBE** Utilization Plan shall be a factor in the evaluation of its performance. Whenever Agency determines that a Contractor's compliance with an **M/WBE** Utilization Plan has been unsatisfactory, Agency shall, after consultation with the City Chief Procurement Officer, file an advice of caution form for inclusion in VENDEX as caution data.



Tax ID #:				_

APT E-		
PIN#:	85016B0028	

Contract # 1 - General Construction Work

SCHEDULE B - M/WBE Utilization Plan

Part I: M/WBE Participation Goals

Part I to be completed by contracting agency

Contract Overview		
APT E-Pin #	85016B0028	FMS Project ID#: CO300ELV2
Project Title/Agency	Queens Supreme Court E	levator Modernization Rebid
PIN#	8502016CT0005C	
Bid/Proposal Response Date:	September 22, 2015	
Contracting Agency	Department of Design and	Construction
Agency Address	30-30 Thomson Avenue	City Long Island City State NY Zip Code 11101
Contact Person	Norma Negrón	Title MWBE Liaison & Compliance Analyst
Telephone#	(718) 391-1502	Email negronn@ddc.nyc.gov

Project Description (attach additional pages if necessary)

This Project consists of Modernization of 10 Electric Traction Passenger Elevators including cabs, hoisting machinery, wire ropes, and all controls. The project also includes modernization of 1 Dumbwaiter and the installation of 5 sets of Sump Pumps in the elevator pits.

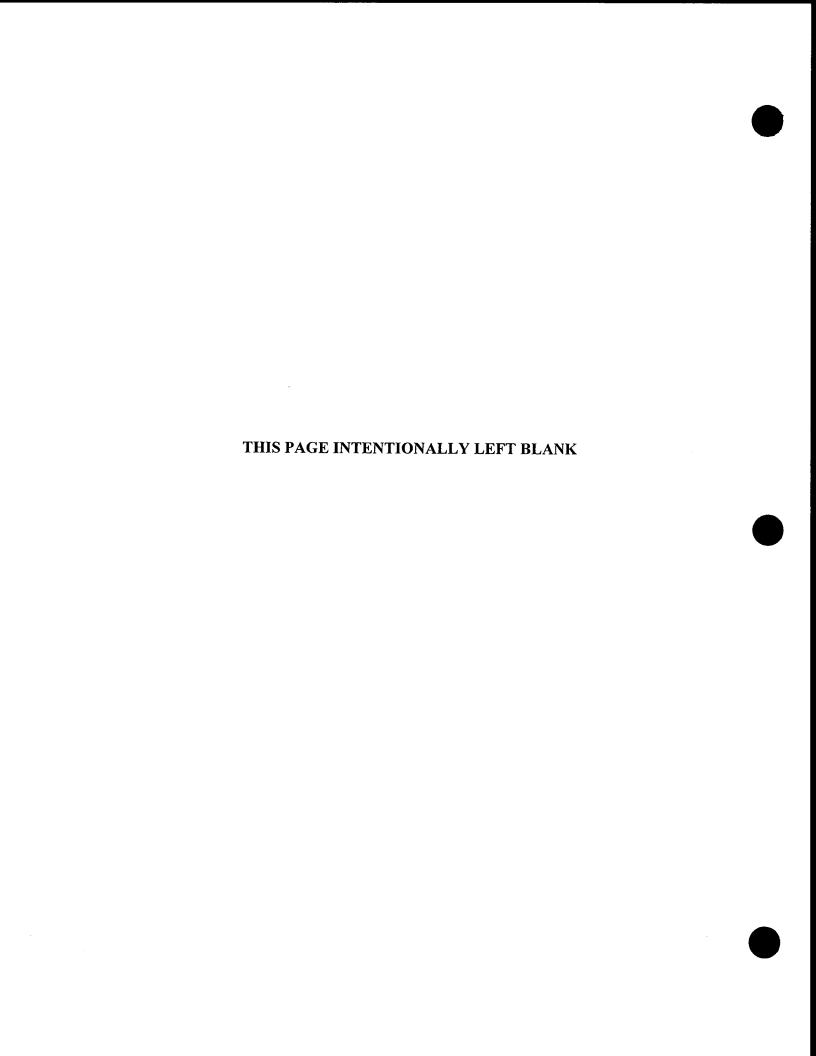
M/WBE Participation Goals for Services

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

Prime Contract Industr	: Construction
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Group	Percentage		
<u>Unspecified *</u>	0	%	
or			
Black American		%	
Hispanic American		%	
Asian American		%	
Women		%	
Total Participation Goals	0	%	Line 1

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



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Tax ID #:	

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85016B0028

HEDULE B - Part II: M/WBE Participation Plan

Il to be completed by the bidder/proposer:

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

Section I: Prime Contractor Contact Infor	mation				
Tax ID#	Tax ID #				
Business Name			Contact Person		
Address					
Telephone #	Email _				
The state of the s			The State States	e e e e e e e e e e e e e e e e e e e	2 7 7 7 7
Section II: M/WBE Utilization Goal Calcul	ation: Check the app	ica	ble box and complete s	ibsection.	
PRIME CONTRACTOR ADOPTI		WE	SE PARTICIPATIO	N GOAL	S
For Prime Contractors (including Qualified Joint Ventures and M/WBE firms) adopting Agency M/WBE Participation Goals.	Total Bid/Proposal Value		Agency Total Participation Goals (Line 1, Page 6)		Calculated M/WBE Participation Amount
Calculate the total dollar value of your total bid that you agree will be awarded to M/WBE subcontractors for services and/or are dited to an MWBE prime contractor or lifled Joint Venture.					
Please review the Notice to Prospective Contractors for more information on how to obtain credit for M/WBE participation.	\$	x			\$ Line 2
PRIME CONTRACTOR OBTAIN M/WBE PARTICIPATION GOALS	ED PARTIAL WA S	ΊV	ER APPROVAL: A	DOPTIN	G MODIFIED
For Prime Contractors (including Qualified Joint Ventures and M/WBE firms) adopting Modified M/WBE	Total Bid/Proposal Value		Adjusted Participation Goal (From Partial Waiver)		Calculated M/WBE Participation Amount
Participation Goals.				40-disease	
Calculate the total dollar value of your total bid that you agree will be awarded to M/WBE subcontractors for services and/or credited to an M/WBE prime contractor or Qualified Joint Venture.					
Please review the Notice to Prospective Contractors for more information on how to obtain credit for M/WBE participation.	\$	X		=	\$ Line 3

CITY OF NEW YORK

MBE and/or WBE firms.

Signature

Print Name

DDC

Title

obtained or such goals are modified by the Agency, to meet the modified Participation Goals by soliciting and obtaining the participation of certified

SCHEDULE B - PART III - REQUEST FOR WAIVER OF M/WBE PARTICIPATION REQUIREMENT

Contract Overview		
Tax ID #	FMS V	endor ID #
Business Name		
Contact Name	Telephone #	Email
Type of Procurement	☐ Competitive Sealed Bids ☐ Other	Bid/Response Due Date
APT E-PIN # (for this procurement):		Contracting Agency:
M/WBE Participation	GOAIS as described in bid/solicitation doc	unents
" -	gency M/WBE Participation Goal	
Proposed M/WBE Partici	pation Goal as anticipated by vendor seekin	d walver
9/		
	rvices and/or credited to an M/WBE Prime Co	aith by the bidder/proposer to be subcontracted for
		ail below (attach additional pages if needed)
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List 3 most recent contracts performed for other entities. Include information for each subcontract awarded in performance of such contracts. Add more pages if necessary. (Complete ONLY if vendor has performed fewer than 3 New York City contracts.) DATE COMPLETED **ENTITY TYPE OF Contract** Manager at entity that hired vendor (Name/Phone No./Email) **Total Amount Total Contract** Subcontracted \$ **Amount** Type of Work Subcontracted DATE COMPLETED AGENCY/ENTITY **TYPE OF Contract** Manager at agency/entity that hired vendor (Name/Phone No./Email) **Total Amount Total Contract** Amount \$ Subcontracted \$ Item of Work Item of Work Subcontracted Item of Work Subcontracted and and Value of Subcontracted and Value of subcontract subcontract Value of subcontract AGENCY/ENTITY DATE COMPLETED **TYPE OF Contract** Manager at entity that hired vendor (Name/Phone No./Email) **Total Contract Total Amount** Subcontracted \$ Amount \$ Item of Work Item of Work Subcontracted Item of Work Subcontracted and and Value of Subcontracted and Value of subcontract Value of subcontract subcontract VENDOR CERTIFICATION: I hereby affirm that the information supplied in support of this waiver request is true and correct and that this request is made in good faith. Date: Signature: Title: Print Name: Shaded area below is for agency completion only AGENCY CHIEF CONTRACTING OFFICER APPROVAL Date: Signature: CITY CHIEF PROCUREMENT OFFICER APPROVAL Date: Signature: Waiver Determination Full Waiver Approved: Waiver Denied: 🔲 🤈 Partial Waiver Approved: Revised Participation Goal:

APPRENTICESHIP PROGRAM REQUIREMENTS

	General Construction * Note: Ev	YES ven if Yes is marked,	the Exemption set for	NO h below may apply.		
1)	Apprenticeship Program Req	uirements				
	NOTICE TO BIDDERS: Please City under Labor Law Section 8 requires that the contractor awar any of its subcontractors with su to entering into such contract or the type and scope of work to be by, the New York State Commissubcontractors will be required to years of current, successful expensions.	816-b, the Departract as abcontracts worth subcontract, apple performed that has sioner of Labor. to show that such	nent of Design and a result of this Interest two million dolla renticeship agreem ave been registered in addition, the coapprenticeship properticeship properticeship properticeship are resulted.	d Construction here vitation for Bids, and are or over, have, prinents appropriate for with, and approventractor and its		
	The failure to prove, upon request, that these requirements have been met shall result in the contract not being awarded to the contractor or the subcontract not being approved.					
	Please be further advised that, pursuant to Labor Law Section 220, the allowable ratio of apprentices to journeypersons in any craft classification shall not be greater than the ratio permitted to the contractor as to its workforce on any job under the registered					
2)	Apprenticeship Program Questionnaire					
	The bidder must submit a compleunless it qualifies for the exempt	eted and signed A ion set forth belo	pprenticeship Pro w. The Questionn	gram Questionnaire		
3)	Exemption					
	Bidders for the General Construction below applies if an "X" is indicated	etion Contract are	advised that the erd "Yes".	xemption set forth		
		YES				

exemption, it shall submit a letter stating that it intends to subcontract 100% of the construction work. As indicated above, the Apprenticeship Program Requirements apply

to subcontracts worth two million dollars or more.

APPRENTICESHIP PROGRAM QUESTIONNAIRE

PROJECT ID: CO300ELV2

	er must submit a completed and s he previous page.	igned Apprenticeship Program (Questionnaire unless it qualifies for the exemption set	ţ
Nai	me of Bidder:			
1)	Does the bidder have an Appr [Note: Participation may be b	renticeship Program appropriate by either direct sponsorship or the	for the type and scope of work to be performed? rough collective bargaining agreement(s).]	
		YES	NO	
2)	Has the bidder's Apprenticesh of Labor?	nip Program been registered with	n, and approved by, the New York State Commission	er
		YES	NO	
3)	Has the bidder's Apprentices	hip Program had three years of so	uccessful experience in providing career opportunite	s?
		YES	NO	
				•
Bidder:				
By:	(Signature of Partner or Corp	porate Officer)	Title:	
Date:				

XV

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

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

PROJECT ID: CO300ELV2

Queens Supreme Court Elevator Modernization 88-11 Sutphin Boulevard Queens 11435

Name of Bidder: CENTENNIAL ELEVATOR NOVSTRIES /WC
Date of Bid Opening: Aulust 24, 2015
Bidder is: (Check one, whichever applies) Individual () Partnership () Corporation
Place of Business of Bidder: 24-35 47th STREET ASTORIA, NY. WIO3
Bidder's Telephone Number: 718-726-5900 Bidder's Fax Number: 718-728-6217
Bidder's Email Address: resperance centennial e levator, com
Residence of Bidder (If Individual): N/A
If Bidder is a Partnership, fill in the following blanks: Names of Partners Residence of Partners
If Bidder is a Corporation, fill in the following blanks: Organized under the laws of the State of NEW YORK
Name and Home Address of President: RICHMED LESPERANCE 94 COUNTRY CLUB DR PORT WASHINGTON, NY 11050
Name and Home Address of Secretary: Gus CATANZARO 26 CLIFFORD BLVD, HONPPOUSE NY117++
Name and Home Address of Treasurer: Richard Lesperance, 94 Country Club DR. Port Nashington NY 11050

BID FORM

CENTENNIAL ELEVATOR NOUSTRIES INC

The above-named Bidder affirms and declares:

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

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

The bidder, as an individual, or as a member, partner, director or officer of the bidder, if the same be a firm, partnership or corporation, executes this document expressly warranting and representing that should this bid be accepted by the City and the Contract awarded to him, he and his subcontractors engaged in the performance:

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

6. Compliance Report

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

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

- 7. By submission of this bid, the bidder certifies that it now has and will continue to have the financial capability to fully perform the work required for this contract. Any award of this contract will be made in reliance upon such certification. Upon request therefor, the bidder will submit written verification of such financial capability in a form that is acceptable to the department.
- 8. In accordance with Section 165 of the State Finance Law, the bidder agrees that tropical hardwoods, as defined in Section 165 of the State Finance Law, shall not be utilized in the performance of this Contract, except as the same are permitted by the foregoing provision of law.
- 9. The bidder has visited and examined the site of the work and has carefully examined the Contract in the form approved by the Corporation Counsel, and will execute the Contract and perform all its items, covenants and conditions, and will provide, furnish and deliver all the work, materials, supplies, tools and appliances for all labor and materials necessary or required for the hereinafter named work, all in strict conformity with the Contract, for the prices set forth in the Bid Schedule:

Section V: Vendor Certification and Required Affirmations:

I hereby:

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

BID FORM

PROJECT ID: CO300ELV2

TOT/	AL BID PRICE:	In the space	e provided below, the Bidder shal	I indicate the total bid price in figures.
A.	forth below. Total	Price shall i	ice for all labor and material for an actude all costs and expenses, i.e. the drawings and specifications.	all required work, excluding items (B) and (C) set all the all the
	Total Price for Material Sold and Delivered		Total Price For Labor	
	s <u>5</u> ,714327	+	s4,584,613	Total Price for Item A= \$\lorerrightarrow\oldsymbol{0}, 300940
В.	ALLOWANCE for (Section 028013 or		Asbestos Abatement cations)	\$15,000.00
C.				s 659.853
	TOTAL BID PRIC (a/k/a BID PROPO	CE (Add A +		8 10 975,793 183 9/22/15
			BIDDER'S SIGNATURE ANI	O AFFIDAVIT
*	Subcontractors" (p (BID ENVELOPE)	age 19) at the #2). In the ev	e time you submit your bid. You m	nd submit the form entitled "Bidder's Identification of ust submit this form in a separate, sealed envelope ade to the Bidder, the Bidder hereby authorizes the ontractors" Yes No
Bidde	r: CENTENNI	of Ele	VATOR INDVSTRIES /	√c,
By:	PH	/ 	(Signature of Partner or corpo	orate officer)
1	The Cake			Late
Attes	t:		Secre	etary of Corporate Bidder

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

(Corporate Seal)

Unit Price Schedule - Elevator Maintenance

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

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

SPARE PARTS - Elevator Maintenance (section 142123, Article 1.2, sub-article L)

Item #	Item Description		Quant.	Units	Unit Price	Total
1	GAL Hoistway Door Interlock Assembly		10	EA	492	4920
2	GAL Hoistway/Car hanger track		6	EA	1552	9312
3	GAL Hoistway and Car Door Rollers		25	EA	352	8500
4	GAL Interlock Release Rollers		25	EA	47	1050
5	Door Detector Assembly		2	EA	2136	4272
5A	Rope Gripper		1	EA	7752	7752
6	Car and CTW Roller Guide Rollers		10	EA	1584	15840
6A	Roller Wheels Complete of Each Type Used		25	EA	300	7500
7	Leveling Unit & Encoder	,	2	EA	5820	11640
8	Hoistway Limit Switches		10	EA	355	3550
9	GAL Car Door Clutch Assembly		2	EA	1914	3836
10	Load Weighing Device		3	EA	3942	11826
11	Brushes for Hoist Motor (Sets)		5	EA	435	2175
12	Hall & Car Push Button Assembly	5 N 110 1 11 1	24	EA	378	9072
12A	Vandal -Resistant Buttons for Each Type Used		24	EA	513	12312
12B	GAL, or approved equal Gate Switches		6	EA	342	2052
13	Toggle Switch & Keyswitch Assemblies		5	EA	450	2250
14	Keys for Each Different Type Used		- 20	EA	24	450
15	LED Position Indicators & Drive Boards		10	EA	694	6980
16	Stop Switch		10	EA	355	3550
17	Printed Circuit Boards		5	EA	3540	סטררן
18	High & Low Voltage Relays		6	EA	545	3270
19	Spare Parts Indicated in Intercommunications Section		3	EA	340	1020
20	Remote Fault Monitoring Computer System in Motor Room		1	EA	3050	3080
21	Silicon Control (VVVF-AC) Power Drive		2	EA	11240	224 B
22	Monitors for each used, controllers and dispatcher		2	EA	570	1140
23	Brake coils for each type in use		2	EA	750	1500
24	Brake assembles complete of each type in use		1	EA	1500	1500
25	Chokes and filters of each different type used	ļ	1	EA	35/0	34/0
	Power supplies of each different type used		6	EA ·	670	4020

CITY OF NEW YORK

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BID BOOKLET

	Feedback tachometers of each type used	6	EA	६००	4800
27	Encoders for each type used	6	EA	500	4500
28		100	EA	288	21800
·29	Door gibs	3	EA	1440	4320
30	Emergency lighting units complete of each different type used	2	EA	7884	15768
31	Door operators of each type in use	-	EA	/333	5320
32	Door motors of each type in use	4	1		900
33	Side and top Emergency exit switch assembles	2	EA	450	1984
34	Top of car run boxes complete	2	EA	992	1 . /
35	Hall Lantern bell/gong	24	EA .	225	5400
36	Hall Lantern covers of each type used	5	EA	450	2220
36	EEPROM chips for all elevator controls and dispatcher, final	1	SET	200	100
37	as built	6	EA	436	26/6
38	Fans for cabs	_			14616
39	Lobby panel components, switches (keyed and toggle), glass doors	3	EA	4472	740/2
39	00013			g. 1 Jan 1991	20 (0)
Total A	mount of SPARE PARTS - Elevator Maintenance (MATERIAL			<u> </u>	280,763

INTERIM MAINTENANCE - Elevator Maintenance (section 142123, article 1.5, sub-article A-3)

INIER	(IM MAINTENANCE - Elevator maintenance (c	(1)	(2)	(3)	(4)	(5)
ltem #	Item Description	Prevailing Wage including Supplemental Benefits	Mark-Up %	Bid Price	Estimated # of Hours	Total
	EXAMPLE	\$53.15	1.15 (15% Mark-Up)	\$61.12	1000	\$61,120 (example - C not Include Total Below)
	Straight-Time Rate for Elevator/ Service Modernization Mechanic per Hour	\$77.83	11.67	8950	1000	59,500
2	Straight-Time Rate for Elevator/ Service Modernization Mechanic (Third Year) per Hour	\$58.58	879	67.37	1000	67,370
3	Percent Mark-Up on \$10,000 Materials Allowance: (Insert Mark-up % in Column 2, multiply by \$10,000 and insert result in Column 5; example: 1.15% x \$10,000 = \$11,500)		1500-			11,500
Total A	I mount of INTERIM MAINTENANCE - Elevator Maintenance					168,370

Guarantee Full Service Elevator Maintenance (section 142123, article 1.5, sub-article C)

Item #	Item Description	Quant.	Units	Unit Price	Total
1	Full Comprehensive preventative maintenance services for a period of twelve (12) months per each elevator car after the final completion and acceptance of the project.	10	PER CAR	21,072	
Total A	mount of FULL SERVICE ELEVATOR MAINTENANCE				219720

Total Amount of Unit Price Work - Elevator Maintenance

SPARE PARTS plus INTERIM MAINTENANCE plus GUARANTEE FULL SERVICE ELEVATOR MAINTENANCE

659,853

^{*} Insert Total amount of Unit Price Work on line C of Bid Form

BID FORM (TO BE NOTARIZED)

AFFIDAVIT WHERE BIDDERS IS AN INDIVIDUAL

STATE OF NEW YORK, COUNTY OF	being duly sworn says:
I am the person described in and who executed the foregoing b	id, and the several matters therein stated are in all respects true.
(5)	gnature of the person who signed the Bid)
Subscribed and sworn to before me this day of	gnature of the person who signed the oldy
·	
Notary Public	
*************	· 公司公司公司公司公司公司公司公司公司公司公司公司公司公司公司公司公司公司公司
AFFIDAVIT WHERE BID	DERS IS A PARTNERSHIP
STATE OF NEW YORK, COUNTY OF	ss: being duly sworn says:
I am a member of	the firm described in and which executed the foregoing bid.
subscribed the name of the firm thereto on behalf of the firm, a	nd the several matters therein stated are in all respects true.
	ignature of Partner who signed the Bid)
Subscribed and sworn to before me this day of	
Notary Public	
******************	***********************
AFFIDAVIT WHERE BIDI	DERS IS A CORPORATION
Ø 16	
STATE OF NEW YORK, COUNTY OF CAGEBOA	ss: being duly sworn says:
STATE OF NEW YORK, COUNTY OF QUEENS RICHARA VESPERANCE I am the President Of the above named the foregoing hid. I resident Off. C. 11. Co. 20. 27.	corporation whose name is subscribed to and which executed
the folegoing bld. Heside at 74 Convincy Cons. The Tr.	1013-14WB 1353 10 9 1 W. C
I have knowledge of the several matters therein stated, and the	\land
	abil fl-
Subscribed and sworn to before me this	ure of Corporate Officer who signed the Bid)
16 day of Senengyn 2015	
EM C	
Notary PubliseL BACOLAS	
NOTARY PUBLIC - STATE OF NEW YORK	
No. 018A5014881	

Qualified in Rockland County

CTTY OF NEW YOR My Commission Expires July 12, 2015 2019
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AFFIRMATION

The undersigned bidder affirms and declares that said bidder is not in arrears to the City of New York upon debt,

not been	declar	es and is not a defaulter, as surety or otherwise, upon oblaced not responsible, or disqualified, by any agency of the ading relating to the responsibility or qualification of the	City of New York, nor is there an	ıy
(If none,	the bi	dder shall insert the word "None" in the space provided	above.)	
Full Nar	ne of F	Bidder: CENTENNIAL ELEVATIN MOUSPILE 35 47 st.	s/nc	
City:	sturi	State: NY	Zip Code: 1110 3	
·	ONE	BOX AND INCLUDE APPROPRIATE NUMBER: Individual or Sole Proprietorship *		
		SOCIAL SECURITY NUMBER		
		, 		
	В-	Partnership, Joint Venture or other unincorporated orga EMPLOYER IDENTIFICATION NUMBER	nization	
*	C -	Corporation EMPLOYER IDENTIFICATION NUMBER		
		11-2379315		
By:	Ru			
		Signature:		
Title:	Tro	51000		

If a corporation, place seal here

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

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

BID FORM (TO BE NOTARIZED)

AFFIDAVIT WHERE BIDDERS IS AN INDIVIDUAL

STATE OF NEW YORK, COUNTY OF	
I am the person described in and who executed the foregoing bi	being duly sworn says: d, and the several matters therein stated are in all respects true
	,
(Sig	nature of the person who signed the Bid)
Subscribed and sworn to before me this	
day of,	
Notary Public	
*************	**************************************
AFFIDAVIT WHERE BIDE	
STATE OF NEW YORK, COUNTY OF	SS:
I am a member of subscribed the name of the firm thereto on behalf of the firm, and	the firm described in and which executed the foregoing bid.
subscribed the name of the firm thereto on behalf of the firm, an	nd the several matters therein stated are in all respects true.
(Si	gnature of Partner who signed the Bid)
Subscribed and sworn to before me this	
day of,	
Notary Public	
******************	***********
AFFIDAVIT WHERE BIDD	ERS IS A CORPORATION
RICHARA VESPERANCE I am the President of the above named	SS:
RICHARA LESPERANCE	being duly sworn says:
I am the President of the above named	corporation whose name is subscribed to and which executed
the foregoing bid. I reside at 94 Country Crus De. PT. I have knowledge of the several matters therein stated, and they	are in all respects true.
,	$0 / o i \ell$
(Simple)	ire of Corporate Officer who signed the Bid)
Subscribed and sworn to before me this	ne of Corporate Officer who signed the bld)
16 day of Semension 2015	
Notary Publicel BACOLAS	
NOTARY PUBLIC - STATE OF NEW YORK	
No. 01BA5014881	

Qualified in Rockland County

CITY OF NEW YOR My Commission Expires July 12, 2015 20/9 16

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

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

PROJECT ID: CO300ELV2

Queens Supreme Court Elevator Modernization Re-Bid 88-11 Sutphin Boulevard Queens 11435

Name of Bidder:
Date of Bid Opening:
Bidder is: (Check one, whichever applies) Individual () Partnership () Corporation ()
Place of Business of Bidder:
Bidder's Telephone Number: Bidder's Fax Number:
Bidder's Email Address:
Residence of Bidder (If Individual):
If Bidder is a Partnership, fill in the following blanks: Names of Partners Residence of Partners
If Bidder is a Corporation, fill in the following blanks: Organized under the laws of the State of
Name and Home Address of President:
Name and Home Address of Secretary:
Name and Home Address of Treasurer:

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BID FORM

he above-named Bidder affirms and declares:

- 1. The said bidder is of lawful age and the only one interested in this bid; and no person, firm or corporation other than hereinbefore named has any interest in this bid, or in the Contract proposed to be taken.
- 2. By submission of this bid, each bidder and each person signing on behalf of any bidder certifies, and in the case of a joint bid each party thereto certifies as to its own organization, under penalty of perjury, that to the best of its knowledge and belief: (1) the prices in this bid have been arrived at independently without collusion, consultation, communication or agreement, for the purpose of restricting competition, as to any matter relating to such prices with any other bidder or with any competitor; (2) unless otherwise required by law, the prices quoted in this bid have not been knowingly disclosed by the bidder and will not knowingly be disclosed by the bidder prior to opening, directly or indirectly, to any other bidder or to any competitor; and (3) no attempt has been made or will be made by the bidder to induce any other person, partnership or corporation to submit or not to submit a bid for the purpose of restricting competition.
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- 9. The bidder has visited and examined the site of the work and has carefully examined the Contract in the form approved by the Corporation Counsel, and will execute the Contract and perform all its items, covenants and conditions, and will provide, furnish and deliver all the work, materials, supplies, tools and appliances for all labor and materials necessary or required for the hereinafter named work, all in strict conformity with the Contract, for the prices set forth in the Bid Schedule:

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I hereby:

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

BID FORM

PROJECT ID: CO300ELV2

A.	LUMP SUM PRICE - Total pri forth below. Total Price shall in Work, described and shown in to	nclude all costs and expenses, i	.e. labor, material overhead a	
	Total Price for Material Sold and Delivered	Total Price For Labor		
	\$ +	\$	Total Price for Ite	m A= \$
B.	ALLOWANCE for Incidental A (Section 028013 of the Specifica			\$15,000.00
C.	PRICE FOR ELEVATOR MAIN (See Bid Booklet pages 15-0, 15	·		\$
	TOTAL BID PRICE (Add A + F (a/k/a BID PROPOSAL)	3 + C)		\$
	F	BIDDER'S SIGNATURE AN	D AFFIDAVIT	
*	SUBCONTRACTOR IDENTIFIC Subcontractors" (page 19) at the to (BID ENVELOPE #2). In the eve Agency to shred the form entitled	CATION: You MUST complete a time you submit your bid. You n nt an award of contract is not m	and submit the form entitled " nust submit this form in a sepa ade to the Bidder, the Bidder	rate, sealed envelope hereby authorizes the
*	SUBCONTRACTOR IDENTIFIC Subcontractors" (page 19) at the to (BID ENVELOPE #2). In the eve Agency to shred the form entitled	CATION: You MUST complete a time you submit your bid. You n nt an award of contract is not m	and submit the form entitled " nust submit this form in a sepa ade to the Bidder, the Bidder	rate, sealed envelope hereby authorizes the
lder	SUBCONTRACTOR IDENTIFIC Subcontractors" (page 19) at the to (BID ENVELOPE #2). In the eve Agency to shred the form entitled	CATION: You MUST complete a time you submit your bid. You n nt an award of contract is not m	and submit the form entitled " nust submit this form in a sepa ade to the Bidder, the Bidder	rate, sealed envelope hereby authorizes the
* dder By:	SUBCONTRACTOR IDENTIFIC Subcontractors" (page 19) at the to (BID ENVELOPE #2). In the eve Agency to shred the form entitled	CATION: You MUST complete a time you submit your bid. You n nt an award of contract is not m	and submit the form entitled "nust submit this form in a sepa ade to the Bidder, the Bidder contractors" Ye	rate, sealed envelope hereby authorizes the

CITY OF NEW YORK DDC

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Unit Price Schedule - Elevator Maintenance

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

price items on the Bid Form, Item C - Allowance for Unit Prices. The unit price bid for each item shall include all costs and expense for the item, i.e., labor, material, overhead and profit. Estimated quantities shown are approximate and for bid comparison purposes only. Actual amounts to be determined when the work is performed.

SPARE PARTS - Elevator Maintenance (section 142123, Article 1.2, sub-article L)

Item #	Item Description	Quant.	Units	Unit Price	Total
1	GAL Hoistway Door Interlock Assembly	10	EA		
2	GAL Hoistway/Car hanger track	6	EA		
3	GAL Hoistway and Car Door Rollers	25	EA		
4	GAL Interlock Release Rollers	25	EA		
5	Door Detector Assembly	2	EA		
5A	Rope Gripper	1 .	EA		
6	Car and CTW Roller Guide Rollers	10	EA		
6A	Roller Wheels Complete of Each Type Used	25	EA		
7	Leveling Unit & Encoder	2	EA		
8 .	Hoistway Limit Switches	10	EA		
	GAL Car Door Clutch Assembly	2	EA		
10	Load Weighing Device	3	EA		
11	Brushes for Hoist Motor (Sets)	5	EA		
12	Hall & Car Push Button Assembly	24	EA		
12A	Vandal -Resistant Buttons for Each Type Used	24 .	EA		
12B	GAL, or approved equal Gate Switches	6	EA		
13	Toggle Switch & Keyswitch Assemblies	5	EA		
14	Keys for Each Different Type Used	20	EA		
15	LED Position Indicators & Drive Boards	10	EA		
16	Stop Switch	10	EA		
17	Printed Circuit Boards	5	EA		
18	High & Low Voltage Relays	6	EA		
19	Spare Parts Indicated in Intercommunications Section	3	EA		
20	Remote Fault Monitoring Computer System in Motor Room	1	EA		
21	Silicon Control (VVVF-AC) Power Drive	2	EA		
22	Monitors for each used, controllers and dispatcher	2	EA		
23	Brake coils for each type in use	2	EA		
_24	Brake assembles complete of each type in use	1	EA		
	Chokes and filters of each different type used	1	EA		
26	Power supplies of each different type used	6	EA]

27	Feedback tachometers of each type used	6	EA		
28	Encoders for each type used	6	EA	<u></u>	
29	Door gibs	100	EA		
30	Emergency lighting units complete of each different type used	3	EA		
31	Door operators of each type in use	2	EA		
32	Door motors of each type in use	4	EA		
33	Side and top Emergency exit switch assembles	2	EA		
34	Top of car run boxes complete	2	EA		
35	Hall Lantern bell/gong	24	EA		
36	Hall Lantern covers of each type used	5	EA		
37	EEPROM chips for all elevator controls and dispatcher, final as built	1	SET		
38	Fans for cabs	6	EA		
39	Lobby panel components, switches (keyed and toggle), glass doors	3	EA		

INTERIM MAINTENANCE - Elevator Maintenance (section 142123, article 1.5, sub-article A-3)

		(1)	(2)	(3)	(4)	(5)
Item #	Item Description	Prevailing Wage including Supplemental Benefits	Mark-Up %	Bid Price	Estimated # of Hours	Total
	EXAMPLE	\$53.15	1.15 (15% Mark-Up)	\$61.12	1000	\$61,120 (example not Includ Total Below)
1	Straight-Time Rate for Elevator/ Service Modernization Mechanic per Hour	\$77.83			1000	
2	Straight-Time Rate for Elevator/ Service Modernization Mechanic (Third Year) per Hour	\$58.58			1000	
3	Percent Mark-Up on \$10,000 Materials Allowance: (Insert Mark-up % in Column 2, multiply by \$10,000 and insert result in Column 5; example: 1.15% x \$10,000 = \$11,500)					
Total Ar	nount of INTERIM MAINTENANCE - Elevator Maintenance					

Guarantee Full Service Elevator Maintenance (section 142123, article 1.5, sub-article C)

Item #	Item Description	Quant.	Units	Unit Price	Total
1	Full Comprehensive preventative maintenance services for a period of twelve (12) months per each elevator car after the final completion and acceptance of the project.	 10	PER CAR		
Total Ar	nount of FULL SERVICE ELEVATOR MAINTENANCE	 			

Total Amount of Unit Price Work - Elevator Maintenance

SPARE PARTS plus INTERIM MAINTENANCE plus GUARANTEE FULL SERVICE ELEVATOR MAINTENANCE

* Insert Total amount of Unit Price Work on line C of Bid Form



BID FORM (TO BE NOTARIZED)

AFFIDAVIT WHERE BIDDERS IS AN INDIVIDUAL

STATE OF NEW YORK, COUNTY OF	
I am the person described in and who execute	being duly sworn says: d the foregoing bid, and the several matters therein stated are in all respects true.
	(Signature of the person who signed the Bid)
Subscribed and sworn to before me this day of,	
Notary Public	

STATE OF NEW YORK, COUNTY OF	ss: being duly sworn says:
I am a member ofsubscribed the name of the firm thereto on beh	the firm described in and which executed the foregoing bid. half of the firm, and the several matters therein stated are in all respects true.
Subscribed and sworn to before me this day of,	(Signature of Partner who signed the Bid)
Notary Public	

STATE OF NEW YORK, COUNTY OF	ss: being duly sworn says:
I am the of the foregoing bid. I reside at I have knowledge of the several matters therein	the above named corporation whose name is subscribed to and which executed n stated, and they are in all respects true.
Subscribed and sworn to before me this day of,	(Signature of Corporate Officer who signed the Bid)
Notary Public	

AFFIRMATION

f non	e, the b	idder shall insert the word "None" in the space	provided above.)
		Bidder:	
Add <u>res</u> City:	ss:	State:	Zip Code:
	В-	Partnership, Joint Venture or other unincorp EMPLOYER IDENTIFICATION NUMBER	
	C -	Corporation EMPLOYER IDENTIFICATION NUMBER	8
y: itle:		Signature:	

If a corporation, place seal here

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

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

BIDDER'S IDENTIFICATION OF SUBCONTRACTORS

NOTICE TO BIDDERS

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

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

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

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

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

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

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

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

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

Please note that the Agency will not award this contract for an amount greater than \$3 million.

BIDDER'S IDENTIFICATION OF SUBCONTRACTORS

Project ID: CO300ELV2

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

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

1.	PLUMBING CONTRACTOR:	Description of Plumbing Work:
	MARCAL PLUMBING	SUMP PUMPS
	(Print Name)	SUMP PUMPS SALINKLERS
	Agreed amont to be paid Subcontractor: § 244,600	Market State Company of the Company
2.	HVAC CONTRACTOR:	Description of HVAC Work:
	AMH MECHANICAL	A.C. UNITS
	(Print Name)	DUCTWORK
	Agreed amont to be paid Subcontractor: \$ //60,250	Children - The Children - The Children - Chi
3.	ELECTRICAL CONTRACTOR:	Description of Electrical Work:
	Holee Electric	
	(Print Name)	PANELS, BOARDS, FIRE ALARM
	Agreed amont to be paid Subcontractor: \$ 964,320	1 THE ITLINEIUS
וחופ	DED'S SICNATUDE. The Bidder Turk view and complete this	
<i>510</i> 1	DER'S SIGNATURE: The Bidder must sign and complete this	corm in the spaces provided below:
R	e Pictor	DI HELDERMIE
(Bidd	er's Standarde) (Print Name)	
41.6	25 47 st. ASTORIA N. X 11103	
(Addi	ess)	
72	and making the same in the	in all line
Title)	モ5。 713-726-79 00 716) (Phone #) (E	f-72f-02/7 9/16/13 ax#) (Date)

CITY OF NEW YORK DDC

BID BOOKLET December 2013

BIDDER'S IDENTIFICATION OF SUBCONTRACTORS

Project ID: CO300ELV2

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

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

1.	PLUMBING CONTRACTOR:	Description of Plumbing Work:	
	(Print Name)	<u> </u>	
	Agreed amont to be paid Subcontractor: \$		
2.	HVAC CONTRACTOR:	Description of HVAC Work:	
	(Print Name)		
	Agreed amont to be paid Subcontractor: \$		
3.	ELECTRICAL CONTRACTOR:	Description of Electrical Work:	
	(Print Name)		
	Agreed amont to be paid Subcontractor: \$		
BID	DER'S SIGNATURE: The Bidder must sign a	nd complete this form in the spaces provided below:	
(Bido	ler's Signature)	(Print Name)	
(Add			
(Title	e) (Phone #)	(Fax#) (Date)	

BID BOND 1 FORM OF BID BOND

KNOW ALL MEN BY THESE PRESENTS. That we,
Centennial Elevator Industries, Inc.
24-35 47th Street Astoria, NY 11103
hereinafter referred to as the "Principal", and
Fidelity and Deposit Company of Maryland
3910 Keswick Road, Baltimore Maryland 21203
hereinafter referred to as the "Surety" are held and firmly bound to THE CITY OF NEW YORK, hereinafter referred to as the "CITY", or to its successors and assigns in the penal sum of
Ten Percent of Amount Bid
(\$), Dollars lawful money of the United States, for the payment of which said sum of money well and truly to be made, we, and each of us, bind ourselves, our heirs, executors, administrators, successors and assigns, jointly and severally, firmly by these presents.
Whereas, the Principal is about to submit (or has submitted) to the City the accompanying proposal, hereby made a part hereof, to enter into a contract in writing for
Queens Supreme Court Elevator Modernization
Project I.D. # C0300ELV2
NOW, THEREFORE, the conditions of this obligation are such that if the Principal shall not withdraw said Proposal without the consent of the City for a period of forty-five (45) days after the opening of bids and in the event of acceptance of the Principal's Proposal by the City, if the Principal shall:
(a) Within ten (10) days after notification by the City, execute in quadruplicate and deliver to the City all the executed counterparts of the Contract in the form set forth in the Contract Documents, in accordance with the proposal as accepted, and
(b) Furnish a performance bond and separate payment bond, as may be required by the City, for the faithful performance and proper fulfullment of such Contract, which bonds shall be satisfactory in all respects to the City and shall be executed by good and sufficient sureties, and
(c) In all respects perform the agreement created by the acceptance of said Proposal as provided in the Information for Bidders, bound herewith and made a part hereof, or if the City shall reject the aforesaid Proposal, then this obligation shall be null and void; otherwise to remain in full force and effect.

BID BOND 2

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

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

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

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

BID BOND 3

	<u> ACKNOWLEDGEMEN</u>	IT OF PRINCIPAL, IF A CORPORATION
Same No 11	1 al comment O	
On this 17	day of Subsola	ss: , 2015, before me personally came ho, being by me duly sworn, did depose and say that he
Richard USSOR	ance to me known, w	tho, being by me duly sworn, did depose and say that he
resides at 94 Cour	try Glub Ar. Pt. Washin	ston Myllowo tennal Elevater Induction Inc
that he is the Boe	s, dent of Cen	tennal Elevater inductaes Inc
		foregoing instrument; that he knows the seal of said
	ie of the seals affixed to said insti rporation, and that he signed his r	rument is such seal; that it was so affixed by order of the
	· -	name inereto by fixe order.
	EL BACOLAS	
	- STATE OF NEW YORK	CINITE
,	BA5014881	Mult
	Reckland County	Notary Public
My Commission	Expires July 12, 2 015 3019	
	ACKNOWLEDGEMEN	IT OF PRINCIPÁL, IF A PARTNERSHIP
State of	County of	ss:
On this	day of	ss: before me personally appeared
The special control of the state of the stat	to me known a	nd known to me to be one of the members of the firm of
acknowledged to me		ed in and who executed the foregoing instrument, and he d for the act and deed of said firm.
months of the management of the	o that the oxedated the saline as all	5 107 the wat wild dod of one all my
		Notary Public
		2
	ACUNIONII EDOENIEN	TO OF DEDICTOR IT AND DESCRIPTION OF
	ACKNOWLEDGEMEN	IT OF PRINCIPAL, IF AN INDIVIDUAL
State of	County of	SS:
On this	day of	nd known to me to be the person described in and who
executed the forego	ing instrument and acknowledged	that he executed the same.
		Notes Dublic
		Notary Public

AFFIX ACKNOWLEDGEMENTS AND JUSTIFICATION OF SURETIES

CITY OF NEW YORK DDC

and a second as Annabas of Second	STATE OF NEW YORK COUNTY OF NASSAU	SS:
Deprá	On this day of Section in the year 2015 before known, who being by me duly sworn, did depose and say that he resides in the corporation that the seal affixed to said instrument is such corporate seal; the and that he signed his name thereto by like order.	which executed the above instrument: that he knows the seal of salut
	NOTARY PUBLIC STAMP RC BERT G. T.WAM Notary Public, State of New York No. 30-4046970 Qualified in Nassau County Commission Expires May 30, 20 19	NOTARY PUBLIC
	STATE OF COUNTY OF	SS:
	On this day of 20 before me, the undersigne personally known and known to me to be the individual described in and we executed the same.	d personally came and appeared to me /ho executed the foregoing instrument and duly acknowledged to me that
	NOTARY PUBLIC STAMP	
		NOTARY PUBLIC
	STATE OF NEWYORK COUNTY OF CROSS	SS:
Indi	On this 17 day of feptem La 201, before me came Richard	to me known, who, being by me duly sworn, did of control of control devices foregoing instrument as principal; that he/she knows the seal of said hat it was so affixed by order of the Board of Directors of said corporation,
	NOTARY PUBLIC STAMP No. 01BA5014881 Qualified in Rockland County 2019 My Commission Expires July 12, 2015	MOTARY PUBLIC
	PARTNERSHIP - PRINCIPAL STATE OF COUNTY OF	SS:
	On this day of 20 before me personally came me to be a member of the firm of purposes therein mentioned.	to me personally known, and known to ne duly acknowledged to me that he executed the same for the uses and
	NOTARY PUBLIC STAMP	
		NOTARY PUBLIC

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

KNOW ALL MEN BY THESE PRESENTS: That the ZURICH AMERICAN INSURANCE COMPANY, a corporation of the State of New York, the COLONIAL AMERICAN CASUALTY AND SURETY COMPANY, a corporation of the State of Maryland, and the FIDELITY AND DEPOSIT COMPANY OF MARYLAND a corporation of the State of Maryland (herein collectively called the "Companies"), by GERALD F. HALEY, Vice President, in pursuance of authority granted by Article V, Section 8, of the By-Laws of said Companies, which are set forth on the reverse side hereof and are hereby certified to be in full force and effect on the date hereof, do hereby nominate, constitute, and appoint Richard GUARINI, John H. TREIBER, Lois J. TREIBER-CURRAN and Mary Ann MENDEZ, all of Garden City, New York, EACH its true and lawful agent and Attorney-in-Fact, to make, execute, seal and deliver, for, and on its behalf as surety, and as its act and deed: any and all bonds and undertakings, and the execution of such bonds or undertakings in pursuance of these presents, shall be as binding upon said Companies, as fully and amply, to all intents and purposes, as if they had been duly executed and acknowledged by the regularly elected officers of the ZURICH AMERICAN INSURANCE COMPANY at its office in New York, New York., the regularly elected officers of the COLONIAL AMERICAN CASUALTY AND SURETY COMPANY at its office in Owings Mills, Maryland., and the regularly elected officers of the FIDELITY AND DEPOSIT COMPANY OF MARYLAND at its office in Owings Mills, Maryland., in their own proper persons.

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

IN WITNESS WHEREOF, the said Vice-President has hereunto subscribed his/her names and affixed the Corporate Seals of the said ZURICH AMERICAN INSURANCE COMPANY, COLONIAL AMERICAN CASUALTY AND SURETY COMPANY, and FIDELITY AND DEPOSIT COMPANY OF MARYLAND, this 11th day of May, A.D. 2015.

ATTEST:

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

SEAL





Du D. Bairf

Secretary Eric D. Barnes

State of Maryland County of Baltimore Vice President Gerald F. Haley

On this 11th day of May, A.D. 2015, before the subscriber, a Notary Public of the State of Maryland, duly commissioned and qualified, GERALD F. HALEY, Vice President, and ERIC D. BARNES, Secretary, of the Companies, to me personally known to be the individuals and officers described in and who executed the preceding instrument, and acknowledged the execution of same, and being by me duly sworn, deposeth and saith, that he/she is the said officer of the Company aforesaid, and that the seals affixed to the preceding instrument are the Corporate Seals of said Companies, and that the said Corporate Seals and the signature as such officer were duly affixed and subscribed to the said instrument by the authority and direction of the said Corporations.

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

Maria D. Adamski, Notary Public My Commission Expires: July 8, 2015

EXTRACT FROM BY-LAWS OF THE COMPANIES

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

CERTIFICATE

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

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

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

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

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







Thomas O. McClellan, Vice President

The o. millell

FIDELITY AND DEPOSIT COMPANY

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

Statement of Financial Condition As Of December 31, 2014

ASSETS

Bonds \$ 142,720,308 Stocks 21,816,223 Cash and Short Term Investments 2,077,768 Reinsurance Recoverable 10,375,303 Other Accounts Receivable 46,778,921 TOTAL ADMITTED ASSETS \$ 223,768,523 LIABILITIES, SURPLUS AND OTHER FUNDS Reserve for Taxes and Expenses \$ 1,321,332 Ceded Reinsurance Premiums Payable 49,965,411 Securities Lending Collateral Liability 4,009,064 TOTAL LIABILITIES \$ 55,295,807 Capital Stock, Paid Up \$ 5,000,000 Surplus 163,472,717 Surplus as regards Policyholders 168,472,716 TOTAL \$ 223,768,523			
Cash and Short Term Investments 2,077,768 Reinsurance Recoverable 10,375,303 Other Accounts Receivable 46,778,921 TOTAL ADMITTED ASSETS 223,768,523 LIABILITIES, SURPLUS AND OTHER FUNDS Reserve for Taxes and Expenses \$ 1,321,332 Ceded Reinsurance Premiums Payable 49,965,411 Securities Lending Collateral Liability 4,009,064 TOTAL LIABILITIES \$ 5,000,000 Surplus 163,472,717 Surplus as regards Policyholders 168,472,716	Bonds	\$	142,720,308
Cash and Short Term Investments 2,077,768 Reinsurance Recoverable 10,375,303 Other Accounts Receivable 46,778,921 TOTAL ADMITTED ASSETS 223,768,523 LIABILITIES, SURPLUS AND OTHER FUNDS Reserve for Taxes and Expenses \$ 1,321,332 Ceded Reinsurance Premiums Payable 49,965,411 Securities Lending Collateral Liability 4,009,064 TOTAL LIABILITIES \$ 5,000,000 Surplus 163,472,717 Surplus as regards Policyholders 168,472,716	Stocks		21,816,223
Other Accounts Receivable 46,778,921 TOTAL ADMITTED ASSETS 223,768,523 LIABILITIES, SURPLUS AND OTHER FUNDS Reserve for Taxes and Expenses \$ 1,321,332 Ceded Reinsurance Premiums Payable 49,965,411 Securities Lending Collateral Liability 4,009,064 TOTAL LIABILITIES \$ 55,295,807 Capital Stock, Paid Up \$ 5,000,000 Surplus 163,472,717 Surplus as regards Policyholders 168,472,716			
LIABILITIES, SURPLUS AND OTHER FUNDS Surplus Surpl	Reinsurance Recoverable		10,375,303
LIABILITIES, SURPLUS AND OTHER FUNDS Reserve for Taxes and Expenses \$ 1,321,332 Ceded Reinsurance Premiums Payable 49,965,411 Securities Lending Collateral Liability 4,009,064 TOTAL LIABILITIES \$ 55,295,807 Capital Stock, Paid Up \$ 5,000,000 Surplus 163,472,717 Surplus as regards Policyholders 168,472,716	Other Accounts Receivable		46,778,921
LIABILITIES, SURPLUS AND OTHER FUNDS Reserve for Taxes and Expenses \$ 1,321,332 Ceded Reinsurance Premiums Payable 49,965,411 Securities Lending Collateral Liability 4,009,064 TOTAL LIABILITIES \$ 55,295,807 Capital Stock, Paid Up \$ 5,000,000 Surplus 163,472,717 Surplus as regards Policyholders 168,472,716	TOTAL ADMITTED ASSETS	\$	223,768,523
Securities Lending Collateral Liability 4,009,064 TOTAL LIABILITIES \$ 55,295,807 Capital Stock, Paid Up \$ 5,000,000 Surplus 163,472,717 Surplus as regards Policyholders 168,472,716	Reserve for Taxes and Expenses		
TOTAL LIABILITIES \$ 55,295,807 Capital Stock, Paid Up \$ 5,000,000 Surplus 163,472,717 Surplus as regards Policyholders 168,472,716	Securities Lending Collateral Liability		
Surplus 163,472,717 Surplus as regards Policyholders 168,472,716	TOTAL LIABILITIES	\$	55,295,807
Surplus as regards Policyholders	Capital Stock, Paid Up\$	5,000,000	
Surplus as regards Policyholders 168,472,716 TOTAL \$ 223,768,523			
TOTAL	Surplus as regards Policyholders		168,472,716
	TOTAL	\$	223,768,523

Securities carried at \$58,191,540 in the above statement are deposited with various states as required by law.

Securities carried on the basis prescribed by the National Association of Insurance Commissioners. On the basis of market quotations for all bonds and stocks owned, the Company's total admitted assets at December 31, 2014 would be \$227,936,393 and surplus as regards policyholders \$172,640,586.

I, DENNIS F. KERRIGAN, Corporate Secretary of the FIDELITY AND DEPOSIT COMPANY OF MARYLAND, do hereby certify that the foregoing statement is a correct exhibit of the assets and liabilities of the said Company on the 31st day of December, 2014.

Corporate Secretary

State of Illinois City of Schaumburg

SS:

Subscribed and sworn to, before me, a Notary Public of the State of Illinois, in the City of Schaumburg, this 15th day of March, 2015.

Dough from Notary Public

DARRYL JOINER
OFFICIAL SEAL
Notary Public - State of Illinois
My Commission Expires
February 24, 2018

BID BOND 1 FORM OF BID BOND

KNOW ALL MEN BY THESE PRESENTS. That we,	
hereinafter referred to as the "Principal", and	
hereinafter referred to as the "Surety" are held and firmly bound to THE CITY OF NEW YORK, hereine referred to as the "CITY", or to its successors and assigns in the penal sum of	nafter
(\$), Dollars lawful money of the United States, for the payment of which said sum of mo and truly to be made, we, and each of us, bind ourselves, our heirs, executors, administrators, successo assigns, jointly and severally, firmly by these presents.	ney well
Whereas, the Principal is about to submit (or has submitted) to the City the accompanying proposition made a part hereof, to enter into a contract in writing for	sal, hereby
NOW, THEREFORE, the conditions of this obligation are such that if the Principal shall not with Proposal without the consent of the City for a period of forty-five (45) days after the opening of bids are event of acceptance of the Principal's Proposal by the City, if the Principal shall:	ndraw said
(a) Within ten (10) days after notification by the City, execute in quadruplicate and deliver all the executed counterparts of the Contract in the form set forth in the Contract Documents, in accord the proposal as accepted, and	r to the City ance with
(b) Furnish a performance bond and separate payment bond, as may be required by the Cit faithful performance and proper fulfullment of such Contract, which bonds shall be satisfactory in all reCity and shall be executed by good and sufficient sureties, and	y, for the espects to the
(c) In all respects perform the agreement created by the acceptance of said Proposal as pro Information for Bidders, bound herewith and made a part hereof, or if the City shall reject the aforesaid then this obligation shall be null and void; otherwise to remain in full force and effect.	vided in the Proposal,

BID BOND 2

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

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

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

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

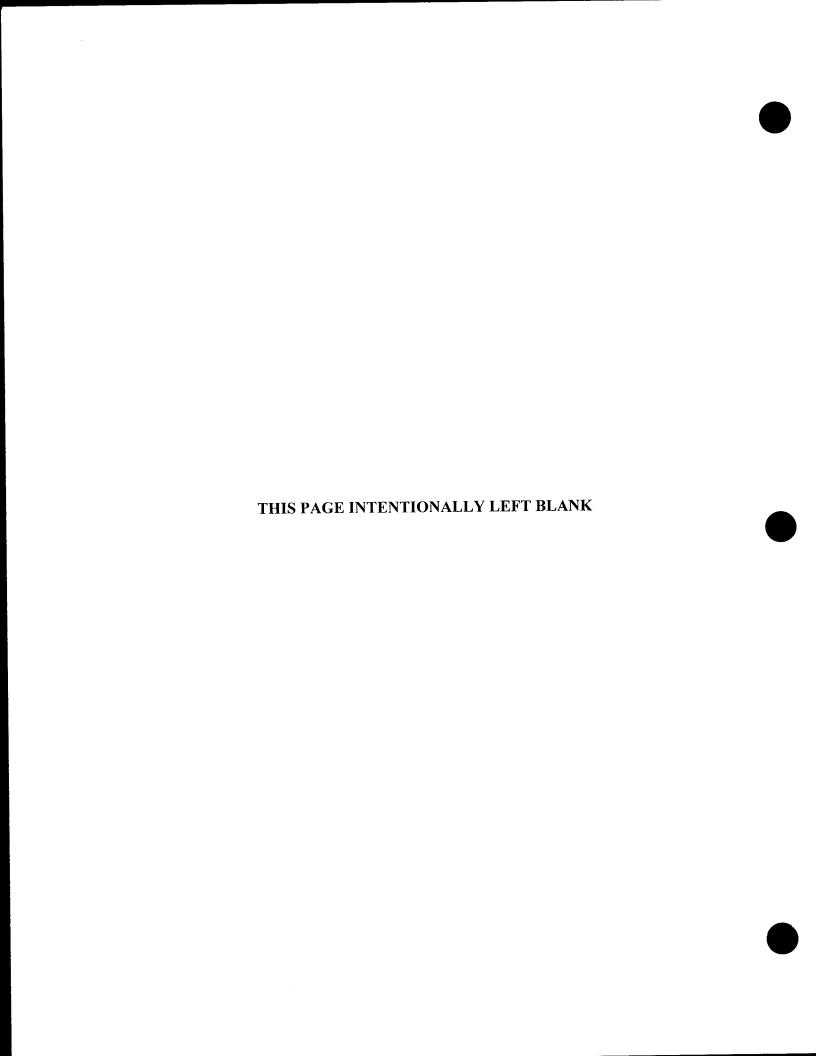
their proper officers the	day of	·	
(Seal)		Principal	(L.S.)
	Ву:		
(Seal)		Surety	

BID BOND 3

ACKNOWLEDGEMENT OF PRINCIPAL, IF A CORPORATION

State	of	County of	noun who being by	ss:			
On	this	day of	,	, bet	fore me	personally	came
		to me n	JIOWII. WIID DEILIO DV	me anny sw	orn aid de	epose and say t	that he
reside	s at		of				
that he	e is the		of	··			
corpoi	ration; that one of the	seals affixed to	uted the foregoing in said instrument is suc ned his name thereto	strument; th ch seal; that:	at ne know it was so af	rs the seal of sa ffixed by order	aid r of the
					Notary	Public	
	A	CKNOWLED	GEMENT OF PRIN	ICIPAL, IF	A PART	NERSHIP	
		to me	known and known to described in and wh ne as and for the act a	o executed t	e of the me	embers of the f	tirm of
					Notary	Public	
	<u>A</u>	CKNOWLEDO	GEMENT OF PRIN	ICIPAL, IF	AN INDI	VIDUAL	
State o On the	fised the foregoing instr	County of day of to me k	known and known to wledged that he exec	ss: ss: befo me to be the uted the sam	re me person des	personally app scribed in and	peared who
					Notary	Public	

AFFIX ACKNOWLEDGEMENTS AND JUSTIFICATION OF SURETIES



BID BREAKDOWN

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

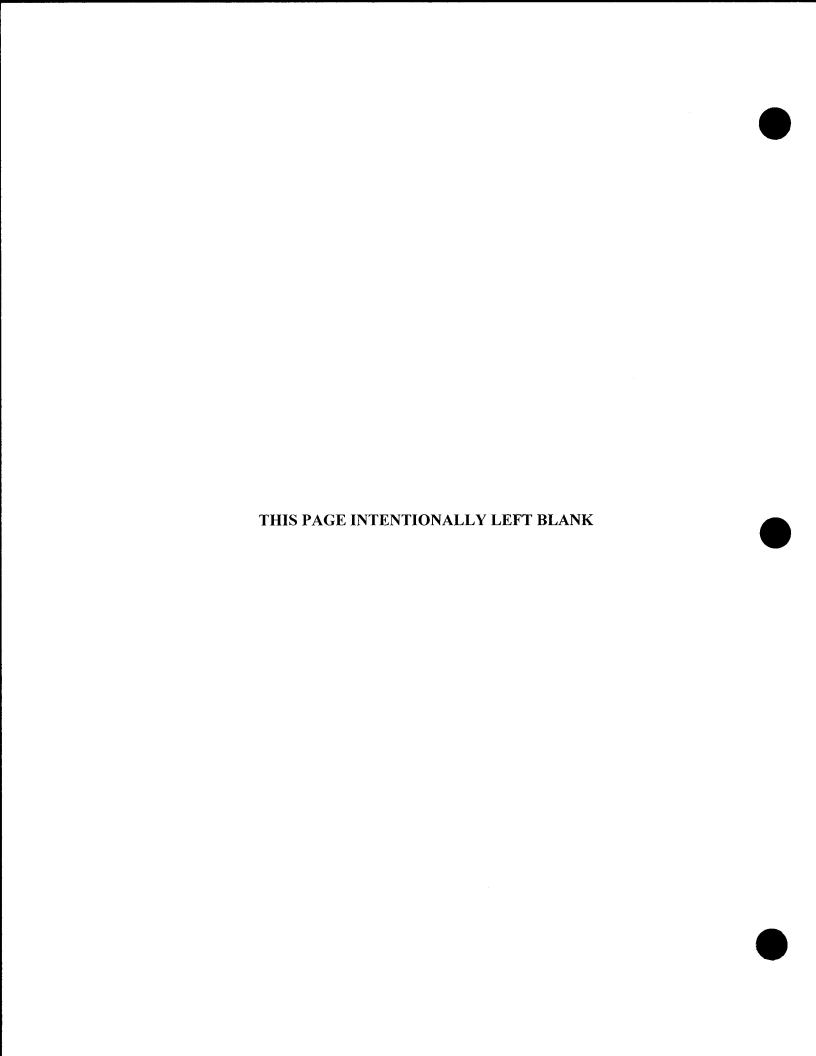
X	YES	NC

Limitations on Use of Bid Breakdown:

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

Instructions for Preparing Bid Breakdown:

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





PROJECT: Queens Supreme Court - Modernization of Elevators

LOCATION 88-11 Sutphin Boulevard, Opens NY 11435

BIDDER: Continual Elevation

CONTRACTOR BID BREAKDOWN FORM

CONTRACT 1 - GENERAL CONSTRUCTION WORK
FMS ID NUMBER CO300ELV2

CLIENT AGENCY DGS

CSI Numbe	Description	Quantity	Unit	Unit Cost Of Material	Total Cost Of Material	Unit Cost Of Labor	Total Cost Of Labor	Total Cost: Materials & Labor
C	ONTRACT 1 - GENERAL CONSTRUCTION WORK		***************************************			managaringsk principalities Video Makabaharangs og synsymmetristetering		
04.00.00		a Marie II agamy y gyard (gyarar 1977 - 1984 a libba ibba ibba ibba ibba ibg ing gyarar physiologia ibba ibba i Ing ing ing ing ing ing ing ing ing ing i			ras ar maghabatha air na d-rèire de ann an Aigh aigh ann ann an Aigh air agus air an an an an an an an an an a			Market or the Control of the Control
01 00 00	General Requirements Mobilization					1,	The second desired desired and the second desired desired and the second desired desired and the second desired desire	
Accession of the second	* The state of the	nderen mentali mente estente este en este este en en est d'insegnappent des metes deste estes este este este e	Ls	262,500	262,500	512,000	512,000	774 500
	Temporary Services	TO THE STATE OF TH	<u> </u>	200,000		400,000	400,000	774,500
The second of the second of the continuous	subtotal	n redik - seringhydydddddaesu y n ryd y shaan a baas spilannyly byllogeniae enw	The state of the state of the state of	and the second s	462,500	and an experience in a constitue administrative space and a space of the space of t	912,000	1,374500
02 00 00	EXISTING CONDITIONS		Control of the state of the sta			and a referent mountain a reason of a reason of mountain and an agent of the reason of the second		entry or management designed as a second
02 82 13	Asbestos Abatement		Ls	100,000	/00 -		\	1/2
on over months them obtained to be before	subtotal		 		100,000	60,000	60,000	160,000
The second section of the second section is a second section of the second section of the second section is a second section of the section of the second section of the section of the second section of the second section of the sect		and a consideration of the constraint of the constraint of the Appropriate con-		er mensumaninan ya karangan kirin er peningen njeloja finoromian manamanina ana manapa	100,000		00,000	160,000
03 00 00	CONCRETE						 Philip territological destruction of a consent to the consent of the	Managament (1981) is a final of a second companion designation of
03 01 00	Concrete Form Work	en forest of the forest of the special and depote the light should be depoted by the special and the special a			The second secon			
30 01 00	Form Work	and a consequence of the part	***************************************					
become a considerable of the constant	subtotal		Ls	4800	4800	3200	3200	8,000.00
	Sublotal				4800	The Mark Type and Mark to a special control or the last mark to the following the control of the	3200	8,000.00 8,000
03 20 00	Concrete Reinforcement							Managarina esperimente de la Managarina anticologo de secución y
	Reinforcement	r ; raranilare salve adole a salveni storeni storeni spalitica, as i cas il ci si si si	The state of the s		**************************************			The second secon
AND A TO THE PARTY OF THE PARTY AND AND ADDRESS OF THE PARTY.			Ls	4050	40.50	2700	2700	6,750,00
	subtotal	and a see of the first of the species of the decimal and the species of the second second second second second	and a second of the contract of the second o		41050		2700	6,750
03 30 00	Cast In Place Concrete	・・・・・・・・・・・・・・・・・・・・・・・・・・・・・・・・・・・・						
23 00 00	Concrete	100	0.4			The state of the s		
	subtotal	120	Cuft	60	7200	40	4800	12,000
	Subiolai			terms many recommendation and its obligated majorate security to law gave adjunctive a - of definition	1200	e e e e e e e e e e e e e e e e e e e	4800 -	12,000
		. Marine di senim perio any	No. of the Control of the State			annenga ja ja on annenga ja pananan an	and the second s	
The second secon						***************************************	a that appealment accounts of the for the count of the specific many polytops, appealment on a purple of the foreign of the count of th	4



PROJECT: Queens Supreme Court - Modernization of Elevators

LOCATION 88-11 Sutphin Boulevard, Queens NY 11435

BIDDER: Centennal Eloutel

CONTRACTOR BID BREAKDOWN FORM

CONTRACT 1 - GENERAL CONSTRUCTION WORK

FMS ID NUMBER

CO300ELV2

CLIENT AGENCY

001 Norma (n	D			Unit	Total Cost	Unit	Total Cost	Total Cost:
CSI Number	Description	Quantity	Unit	Cost Of	Of	Cost Of	Of	Materials &
040000	BAA AAN IPA			Material	Material	Labor	Labor	Labor
and the second contract of the second	MASONRY							
<u>04 01 40</u>	Maintenance of Stone Assemblies		LS	75,000	75,000	50,000	50,000	125,000
that are consistent to the constraint payment payment are served.	subtotal	The state of the			75,000		10,0a	125,000
05 00 00	METALS	de griend dels aux - e man produces have required base an enigenee glasse, and a specie				and the second section of the section of the second section of the section of the second section of the section of th		Marie Andrew Company of the Company
05 12 00	Structural Steel		es Principal de la reconstitue de la r		eller by Phone of Bostons, all the letting of the second account and a contract of the second account and the second account and the second account ac		The state of the s	The second section is a second
05 50 00	Metal Fabrications			The second sequence of profession of the second sequences are second second second second second second second	P ROY, William deployable and the Production of the Roy of the large of the large of the large deployment, when we	and the second section of the sectio		Provide the Charles the Secretary Representation of Control of the Control
05 59 63	Detention Enclosures			Transition (in the color of the		and the state of t		Andrew Control of the
	Guard Rails	9	Inft	300	2760	200	1,800	4,500
THE RESERVE OF THE PROPERTY OF	Miscellaneous Steel	1	Ls	15,000	15000	19000	10,000	
	metal plumbing grates	6	each	1500	9000	1,000	6000	25,000
n man em 1 ann each de Farence - produkteren geskenen e	removals and replacement as required		Ls	15,000	15000	10,000	10,000	15,000
and the second s	subtotal				41,700		27,800	69,500
07 00 00	Thermal and Moisture Protection		Ls	200	30.000	20,000	2	THE MANAGEMENT OF THE PARTY OF
	subtotal			30,000	30,000 36,000	3000	20,000	50,000
000000								30,000
The bear and the second of the	Openings							A fine fine of the second seco
08 11 13	Hollow Metal Doors and Frames		Ls	8,400	5 400	5600	5600	14,000
interest in a graph of the latter than the state of the latter than the latter	subtotal	allian ili yaqayang, ama gayar, qarkiy asaddir qayabig bayabayi hadini da asa as			8400		5600	14,000
08 31 13	Access Doors and Frames	Z	Ls	5,000	10,000	4,000	\$000	18,000
ente en constituen en seminatura de la constituent de la constitue	subtotal				10,000		8,000	18,000
08 62 00	Unit Skylights	aata aa ka		tinks the said of	deren generalis et permana esta del consciolo e que e per esta de partido de partido de la consciona de la con	Be already lands are seen to the second of t	•	* violeta vesardam Assistance Assistance (
	Removal and replacement of skylights	Н	Ls	6000	24,000	4000	16,000	40,000
	subtotal				24,000		16,000	
08 71 00	Door Hardware (Included with 08 11 13)	were the contract of the contr		V	189,100		127.400	40,000 316,500



PROJECT: Queens Supreme Court - Modernization of Elevators

LOCATION 88-11 Sutphin Boylevard, Queens NY 11435

BIDDER: Centennal Elevater

CONTRACTOR BID BREAKDOWN FORM

CONTRACT 1 - GENERAL CONSTRUCTION WORK

FMS ID NUMBER

CO300ELV2

CLIENT AGENCY

CSI Numbe	Description		Quantity	Unit	Unit Cost Of Material	Total Cost Of Material	Unit Cost Of Labor	Total Cost Of Labor	Total Cost: Materials & Labor
09 00 00	FINISHES	er verste verste verste verste verste verste verste verste gevolk gevolk de vikelig kan fan	and the same of th				and the mortified representation and the free operation which is a substitution of the		The state of the s
09 23 00	Gypsum Plastering	dell's bridge brance i communicati pulle prim (1977 (1974) de 1984) è un many 1970 (-Nation for the principal and a graph of the first incident the State of American Science (1)		Management of the Control of the Con
09 29 00	Gypsum Board	enteren er en deueg vide belandigen, ip enterprofessor hallen belande bleverde spekensen i sonson			and the second s		ermanner Facilität tillippen og er de pånngår til store i store delsk allere i skrans gar hypping storagage.	A Marie Control of the Control of th	mentalis and the state of the state and all and all and a place as an arrange or again as a
09 91 00	Painting	errane Mandrey (* autoritatis), metavara di etavatanean ne e a biograpia, ila yang apper	Activities and special constitutions are also become the second of the second or secon						er en
To a 1 de la companya	Elevator Doors, lobby areas, conduit etc	PAPET Terrende d'unes des mantes es la capital depart l'accessage en gra	THE STREET STREET, STR	Ls	70,400	70,400	(0)	1/3/	a the management of the title of the state o
	sump pits		7	each	1,800	the second secon	43,600	43,600	114,000
		subtotal	·····		11 300	3,600	1200	2,400	6000
10 00 00	FINISHES	and the continuous common and an appropriate for the contribution to the delivery of the contribution of t				74,000		46,000	120,000
<u>10 14 23</u>	Signage	e e e e e e e e e e e e e e e e e e e		Ls	13,200	13,200	8800	8800	22,000
Property of reference and specify and a specific and a specify and a specific and a		subtotal	Control of the Contro			13,200		9800	
			alle a fair, a gain to a gain an			13,200		3000	22,000
14 00 00	CONVEYING SYSTEM	The state of the s	The second secon	**************************************	The second distribution of the second of the		and the second s		The second of the second of the second of the second of
<u>14 12 00</u>	<u>Dumbwaiter</u>	The second secon	7	Ls	78,800	78,800	64,800	64,800	H3,600
erine and graph and a state and a subsequence and an annual state and an annual state and an annual state and a		subtotal				78, 800	- Yandipa De Car	64,800	143,600
440005	part	an disk til og den seggerske skalende skyller i knob er høylighet skyllen kanske				1 9 000	r register and species of the head of the head of the design a t the head of	Gut 800	1400
14 20 05	Elevator Cabs	and the state of t	10	Ls	82,000	820,000	86,400	864,000	1,684,000
		subtotal		The section of the se	-	829000			4684,000
14 21 23	Electronic Treaties Description		The second secon		manus — 1 pt Since the complete the deliberation		The state of the s		•
142123	Electronic Traction Passanger Elevator		10	Ls	认15 0元	2,750,000	138842	1,388,420	4,138 400
		subtotal		and and other property of the second second		2,750,000		1,388 420	4138420
22 00 00	PLUMBING WORK	The state of the s		to be in the control of the second of the se		//		11	110 71
22 05 13	Common Motor Requirements		Parity which the 13d or recommended to the 150 figure Ferry Parity date of the 150 figure	Maria a Maria and a proper with the constraint and the special special special special special special special					William Street S
	Float assembly and sump pump	and the second second section is a second section of the second section of the second second second second section second second section second second second section second section second section se	The state of the s						
MANUFACTURE CO. A. S.	and outlip partip	subtotal	5	each	2400	12,000	1600	8000	20,000
- THE STANDARD OF A PROBABLE STANDARD AND A STANDARD COMMO		Juniolai		THE TOTAL SERVICE SERVICE SERVICE SERVICE SERVICES		12,000		8,000	20,000
22 05 17	Sleeves and Sleeve seals for Plumbing Piping					3,746,000	A page that any or the state of	2380,020	6,124,020
	2 inch piping	erranen eta eta erranen eta	8	ł Łi	2/6	275			4-,
ALL MAIL OF THE PROPERTY OF TH	The first control of the control of		<u> </u>	Inft	360	2,880	240	1920	4800



CONTRACTOR BID BREAKDOWN FORM

CONTRACT 1 - GENERAL CONSTRUCTION WORK

FMS ID NUMBER

CO300ELV2

CLIENT AGENCY

DGS

PROJECT: Queens Supreme Court - Modernization of Elevators LOCATION 88-11 Sutphin Boulevard, Queens NY 11435

BIDDER: Continual Elocated

					Unit	Total Cost	Unit	Total Cost	Total Cost:
CSI Number	Description		Quantity	Unit	Cost Of	Of	Cost Of	Of	Materials &
			rent ender omder seldt kommune om en en skippe, men skyl skippe, om en	de transfero positivações	Material	Material	Labor	Labor	Labor
han yanda kaliba a maka kaliba ka a kaliba kalib	1 inch piping	······································	340	Inft	120	40,800	80	27,200	68,000
	coring	the distribution of the section of t	8	each	510	4080	340	2,720	6, 800
n Titor - Politica - Peter Arthur Market Te Prince, a 27 Automorphism	piping fittings	geli in direction in the deligible on a proposation was a second or second or second or second or second or se		Ls	12000	12000	8000	8000	20,000
e. Dan Danada da Militar da agrico de de del defensión que estra en granda dels		subtotal		Marian managara dipicana		59,760		37, 840	99,600
22 05 23	General- Duty Valves for Plumbing Piping			Ls	7200	7200	4800	4800	12,000
		subtotal	er e sjirker for namkoningsbookstrapsdisen, sen apdesse na astronom	Salas 18th Particulation - Equity is for Managery Stippin requirement	The state of the s	7200		4,800	D,000
<u>22 05 29</u>	Hangers & Supports For Plumbing Piping & Equip	<u>ments</u>						an a	and the state of the
annani energy por at the Pathernoon everyon al alabanania	Hangers		1	EA	3,600	3600	2400	2400	6000
		subtotal		and a green or a between purposed and an experience of		3600		2400	6000
<u>22 05 53</u>	Identification for Plumbing Piping & Equipment			Ls	600	600	400	400	1000
		subtotal				600		400	1,000
<u>22 13 16</u>	Sanitary Waste and Vent Piping		/	} 	3600	3,600	2400	2400	6,000
		subtotal	e i referencia de la servició de la			3,600	***************************************	2400	6,000
22 14 29	Sump Pumps		3	each	10,000	50,000	5,000	25,000	75,000
		subtotal				20,000		25,000	75,000
23 00 00	HVAC		MARIONALION (MP 1 M2 m2) Marional and analysis and Antique decimalisms	- atala tapi - adan Amai ahtenholomita		The second secon	efekke els eldfærere om em som som en so	The Marine distribution and the control of the Cont	THE OWNER WAS ARREST LABOUR TO A STATE OF THE OWNER OWNER OF THE OWNER
<u>23 05 13</u>	Rigging		1	Ls	26,000	26000	19,000	19000	45,000
THE CONTRACT CONTRACT OF THE PERSON NAMED CON	<u>Demolition</u>			Ls	20,000	20,000	12,000	12,000	32,000
and the mark to the control of the formal of the state of	BMS Connection	nnin tut na swaaten after konstern af antalproperation of Value by so and become		Ls	4,800	4,800	3.200	3,200	8,000
THE STATE OF STATE AS A STATE OF STATE	Removal;s and reconnections as required	eraj Namojo Borazio e delo laco e e e e e e e e e e e e e e e e e e e		Ls	7200	7,200	3,200 4,500	4,800	12,000
Management of the state of the		subtotal				58,000		39,000	97,000
						182,760		113,840	296,600



PROJECT: Queens Supreme Court - Modernization of Elevators

LOCATION 88-11 Sutphin Boulevard, Queens NY 11435

BIDDER: Centernal Chrater

CONTRACTOR BID BREAKDOWN FORM

CONTRACT 1 - GENERAL CONSTRUCTION WORK

FMS ID NUMBER

CO300ELV2

CLIENT AGENCY

CSI Number	Description	Quantity	Unit	Unit Cost Of Material	Total Cost Of Material	Unit Cost Of Labor	Total Cost Of Labor	Total Cost: Materials & Labor
23 05 17	Sleeves and Sleeve seals for HVAC Piping	A STATE OF THE STA		унт на доставля до намерами у у г. и достав достав достав достава и под достава достав			Philips of the state of the sta	and the second s
THE POWER AND PROPERTY OF THE PARTY OF THE P	coring and sleeves		Ls	2700	2700	1800	1800	4500
	subto	otal			2700		1800	4,500
23 05 23	General Duty Valves For HVAC Piping		***************************************	and the state of t		Paper distribution of the design of plants and public consequences to be a substitution of the		
	Valves	1 -	EA	120	840	80	560	1,400
MATERIA (A. II.) I SINIA PARAMETRIA ANTANA (A. III.) I SINIA BARBARA ANTANA (A. III.) Materia Antana (A. III.) I SINIA BARBARA ANTAN	subto	otal			840		560	1,400
<u>23 05 29</u>	Hangers & Supports For HVAC Piping & Equipment					are providence and the special department from provided. Amount of the		
	Hangers	65	EA	120	7,800	80	5200	13000
	Anchors	130	EA	15	1,950	10	1300	3250
Process control and water and appeal and decisions and decisions are	Pipe Guides	65	EA	60	3,900	40	2600	6500
The Palachese should be server a space of the server and the serve	subto				13,650		9,100	22,750
23 05 48	Vibration and Seismic Controls for HVAC			anne and based for our contract of any english per subscriptionary ethicistus as				
· · · · · · · · · · · · · · · · · · ·	Seismic controls		Ls	4,800	4800	3,200	3200	8000.00
PRIN MAIN Many Addresses and constraint and an	subto	otal			4,800		3200	8,000
23 05 53	Identification For HVAC Piping & Equipment	Prince and American State of the Control of the Con		FF A ac 1988 Fills and the sea before the example and the second (1998), the Laborator (ang a Papina nga manganganganganganganganganganganganganga	
	Valve Tags, Pipe ID		LS	1800	1800	200	1200	3,000
12 - 1 1 1 1 1 Million Open desired the property specify open pages	subto	otal			1800		1200	3,000
23 05 93	Testing, Adjusting & Balancing		and the state of t					
er This condition has philippings gifts open tors, received a december	Testing and Balancing		Ls	6000	6000	4000	4000	10,000
Mara 15. habinahkittiya Andro Emiro Amerikani ili ili mara 10. a mila 10. a m	Commissioning		LS	3,600	3,600	2400	2,400	6,000
of a contract of a contract and accommensus accommen	subto	otal	-	em noman upus birmah dipatrian danda baya dirana a	9,600	Marie a company of the last the last of th	6,400	16,000
A CONTRACTOR OF THE PARTY AND		namentus and a second state of the second			33,3901	/	22,260	55,650



PROJECT: Queens Supreme Court - Modernization of Elevators

LOCATION 88-11 Sutphin Boulevard, Queens NY 11435

BIDDER: Contennal Elevator

CONTRACTOR BID BREAKDOWN FORM

CONTRACT 1 - GENERAL CONSTRUCTION WORK

FMS ID NUMBER

CO300ELV2

CLIENT AGENCY

CSI Numbe		Quantity	Unit	Unit Cost Of Material	Total Cost Of Material	Unit Cost Of Labor	Total Cost Of Labor	Total Cost: Materials & Labor
<u>23 07 13</u>	Duct Insulation							
	duct insulation		Ls	4800	4800	3200	3200	8000
	subtotal				4800		3200	\$000
23 07 19	HVAC Piping Insulation			The state of the control of the state of the			Address of the second of the s	
	Condensate Piping		Ls	3600	3660	2400	2400	6000
	Refrigeration Piping		Ls	3600	3600	2400	2400	6000
	Hydronic Piping				The second secon	ana magana, manandi mga atama at ang atama at ang atama at ang atama at ang at ang at ang at ang at ang at ang		And the second s
	1 1/2" L Condensate Piping	200	LF	36	7,200	24	4800	12,000
= 1 collywide. The agree 1 th, the activities of SAMA activity (see a city of	1" L Copper Tubing	100	LF	20,40	2040	13,60	1360	3.400
pandra ali kanaya kalah sapanya kanaya ka ka kalah ya jiya di di kalah ya iya di kanaya a kaya di kanaya ka k	3/4' L Copper Tubing	150	LF	12	1800	8.00	1200	3000
According to the control of the cont	Wrought Copper Fittings	60	EA	36	2160	1400	1440	3600
angulari i dalah 15 yang berdalari dalah i da salah angula da salah ang	Rod, Gas, Lubricants, Etc.	1	LS	3000	3000	2000	2000	5000
and the contract of the contra	1" L Copper Tubing	750	FT	12	9000	£	6000	15000
NA MARIE DE CONTRACTOR DE	Wrought Copper Fittings	1	EA	1200	1200	800	foo	2000
	Solder, Flux, and Gas	1	LS	1200	1200	£00	400	2000
	subtotal				34,800		23200	58000
23 08 00	Commissioning		Annurum and have an and have been as an		and the second of the second o			
	Commissioning	/	LS	1800	1800	1200	1200	3000
	subtotal				1600		1300	3000
23 23 00	Refrigerant Piping		and the State Section and Address to the Control of Con					- 1997, P. PP Frank Ph. 1986 (Ph. 1986) (St. 1986) (St. 1986) (St. 1986) (St. 1986) (St. 1986) (St. 1986)
	Refrigerant Piping	1	Ls	2400	2400	1600	1600	4000
manar Ballanda ka kalan ka kalan ka	Refrigerant	/	Ls	2400	2400	1600	1600	4000
	subtotal				4800		3200	8600



PROJECT: Queens Supreme Court - Modernization of Elevators

LOCATION 88-11 Sutphin Boulevard, Queens NY 11435

BIDDER: Centennal Elevator Industries he

CONTRACTOR BID BREAKDOWN FORM

CONTRACT 1 - GENERAL CONSTRUCTION WORK

FMS ID NUMBER

CO300ELV2

CLIENT AGENCY

CSI Number	Description	Quantity	Unit	Unit Cost Of Material	Total Cost Of Material	Unit Cost Of Labor	Total Cost Of Labor	Total Cost: Materials & Labor
23 31 13	Metal Ducts							20001
	Galvanized Ductwork	1390	LBS	48	58560	32	39640	97600
	Cont. Sheetmetal Plenum W/ Acoustic Lining	The state of the s	LF			Paris Constitution of the		galanter
-46	Mixing Boxes		Ls	7500.	7.500_	5000	5000	13500
n nilingdah ang gip alih nob <u>ang gapan pangan pangan</u> ninggapan	Fire Wrap		Ls	5100	5100	. 3400	3400	8500
	subtotal				71,160	***************************************	47440	118600
23 33 00	Air Duct Accessories		-			-		
***Colors and the colors in the colors	Plenum Baffles	6	EA	15000	90000	10000	60000	150000
	Volume Dampers	6	EA	12000	72000	8000	48000	120000
	Filters	6	EA	1200	7200	800	4800	12000
	Wire Mesh Screens	6	EA	1200	7200	800	4800	12000
nia sasansanan - v - acquirigo	Fire Dampers	6	EA	9000	54000	6000	36000	90000
	subtotal	, ave			230,400		153600	384000
23 37 13	Diffusers, Registers & Grilles	**** - 3n	100 100 100			er empregation of relative en ex-		ļ
-	Diffuser/Register/Grills	(Ls	14400	14400	9600	9600	24000
Person of the property of the production of the	Kynar Finish Louvers	(Ls	9000	9000	6000	6000	15000
	Roof Curbs	1	Ls	3600	3600	2400	2,400	6000
*****	subtotal			,	27000		18000	45000
23 81 13	Packaged Terminal Air Conditioners), or related the contribution of the contribu		328,560		219,040-	
2001 10	Split system Units	***************************************		100		and the second		-
The state of the s	Exhaust Fans	3	EA	18000	5400	<u> </u> [4000	36000	90000
	Refrigeration Accessories	<u> </u>	EA	15000	60000	(0000	4000	100000
	low ambiant kits	<u> </u>	Ls ·	2400	2400	1600	1600	4000
	line attiniant vita	<u> </u>	Ls	18000	18000	17000	12000	30000



PROJECT: Queens Supreme Court - Modernization of Elevators

LOCATION 88-11 Sutphin Boulevard, Queens NY 11435

BIDDER: Centennal Elevate

CONTRACTOR BID BREAKDOWN FORM

CONTRACT 1 - GENERAL CONSTRUCTION WORK

FMS ID NUMBER

CO300ELV2

CLIENT AGENCY

SI Number	Pa			Unit	Total Cost	Unit	Total Cost	Total Cost
51 Number	Description	Quantity	Unit	Cost Of	Of	Cost Of	Of	Materials 8
and the same of th				Material	Material	Labor	Labor	Labor
merconers and the state of the continue of the state of t	condensate pumps		Ls	12000	19000	8000	8000	20,000
- Whichdan dagle eyy - am . An amanager so m	subtotal			a Maria Pi I (). 1 Villagaga (Pharis) ar Armanian ann an Saoch (Saoch Village) ann an Airm (Saoch Village) an	146,400		97,600	244,000
3 81 26	Split System Air Conditioning Units			- Proceedings and the population of the contract of the contra				
······································	split system	4	EA	9000	36000	6000	24000	60,000
	low ambiant kits	1	ls	18000	18000	12000	12000	70,000
	condensate pump[s	1	Ls	12000	12000	8000	8000	2000
errett er tremmenteller trette problemenge	subtotal				66000		44000	110,000
26 00 00	ELECTRICAL				andalista estillar de alacer que manum magan departe como e augum no en esta esta que esta elemente.	erantina et del tradições autorioris mentarior per la constitució e tota los e tota popularioris professiones		
<u>26 05 19</u>	Low-voltage Electrical Power Conductors, Cables and Condui	t		The state of the s		n yn 19 m Mae Philippe (New York and a de bronne an		
	Demolition	1	LS	60000	60,000	140 000	140000	2000
	3/4 inch conduit	2100	LF	6	12600	0	18 900	
	1 inch conduit	1170	LF	10	11700	15		315
	1 1/2 inch conduit	550	LF	19	10450	29	17500	2925
	2 inch conduit	640	LF	25	16000	38	24320	4032
	2 1/2 inch conduit	500	LF	31	15 500	46	23000	3850
	3/0	3000	LF	Ψ'	12000	7	18000	3000
	2/0	3000	LF		3000	2	6000	9000
This case and a second consequence of the second	#4	3500	LF	2	7000	3	10500	
"NORMAN III TO A STANFARAN MANA MANAMANINA AND AND AND AND AND AND AND AND AND A	#6	4500	LF		13500	Ŭ	18000	1756
*	#8	2000	LF	3	4000	3	6000	31500 1000
han an abandan an ann an an ann an an an an an an an	#10	3000	LF	3	9000	4	12000	21000
To delay a series and a series a	#12	2000	LF	Ÿ	80000	6.		20000
regularise (ex initi sale) i conquele sepesyong propin	Communication and Control wiring	1000	LF	8	8000	12	12000	20000
	subtotal				19020		334,220	524,9
				. /	403,150		334220 475820	275 a-



PROJECT: Queens Supreme Court - Modernization of Elevators

LOCATION 88-11 Sutphin Boulevard, Queens NY 11435

BIDDER: Centermal Elevater

CONTRACTOR BID BREAKDOWN FORM

CONTRACT 1 - GENERAL CONSTRUCTION WORK

FMS ID NUMBER

CO300ELV2

CLIENT AGENCY

DGS

CSI Number	Description	Quantity	Unit	Unit Cost Of Material	Total Cost Of Material	Unit Cost Of Labor	Total Cost Of Labor	Total Cost: Materials & Labor
<u>26 05 26</u>	Grounding & Bonding For Electrical Systems	- Marie de como e Marie de Casa de Cas		reference in the second of the		And the Sale of E	Labor	Lauvi
	Grounding and bonding		Ls	8840	8840	13260	13260	22100
•	subtotal	go half half half he show you a code and the square analysis and shipped a light appearance.			8840		13260	22/00
<u>26 05 33</u>	Raceway & Boxes For Electrical Systems	fuelly latter by the field and if the submitted by a particular any annual and year of the desire and	MATERIAL PROPERTY IN CONTINUES AND ARTHUR		The state of the s		Ballines e quant to transcent y or a public top yith stage ballines and any public to the second sec	to man a man depth (A. A. S. P. William). A few life annual a seaso, and report was the
	terminations		Ls	1750	18750	15750	15750	17,500
MINISTER OF THE STATE OF THE ST	subtotal	Military and the Mark Control of the			1750		15750	17,500
<u>26 05 53</u>	Identification For Electrical Systems				Provide and principles and a gas consequence of the second principles of the first second particles and the second partic		an Million I I allegatively controversial funding prompany and the light is loss to properly up may	
	tag and commissioning	<u> </u>	Prophilade State Sta	526	526 526	4735	4735	5261
	subtotal				526		4735	5261
<u>26 24 16</u>	Panelboards		the filter the state of the sta		artingka interliging declarate (semining and declarate properties, the state of the	жен обит и повет повет в потом се том в повет пред пред обет у повет пред обет повет в повет в повет в повет в		
10 (1887) kali da 1888 kali add Aglildoù yk a le filozovyty fyryraddar gallyg yn	100 Amp Panel Board subtotal		EA_	337	1685	1348	6740	8425
mente dimensione de la minima de la companya de la	Subiotai	-halfan (Majara din 1949) dinkan basar 1943) i ir Milinia dinkan basar 1948 (Majaba) i i	erroriteren besterre	The state of the s	1653	were transfer frank f	6743	8425
and the same of th	Wiring Devices					and the second		
	Switches	19	EA	69	1311	277	5263	6574
The second secon	FSD	7	EA	60	420	240	1680	
	Motors Controlers	4	EA	153	612	610	2440	2100 3052
IPPA whiteepy care hiterary and annual particles	Pumps		EA	57	399	229	1603	2002
PT NOT - \$100 THANKS AND	subtotal				2742		10986	13728
<u> 26 28 16</u>	Enclosed Switches & Circuit Breakers		Personal reference de la companya d	that the shall shall go any company shall be the filler of the shall are a second or the company we	annet Planet inner påret yr minneyn y ja kallende fly yk att trythyddydd Flyndwindd yr car en		MET ABOUTT I WITH THE THE THE PROPERTY OF THE	mention of the control of the contro
	Disconnects/ enclosures	1	Ls	1392	1392	5568	5568	6960
	subtotal		and the second section of the section of the second section of the	and the state of the participation of the state of the st	1392	The Artistan Control of Control o	5568	6960 6960
		* *	L		16,935		57,039	73,974



Department of Design and Construction

CONTRACT 1 - GENERAL CONSTRUCTION WORK

FMS ID NUMBER **CLIENT AGENCY**

CONTRACTOR BID BREAKDOWN FORM

CO300ELV2

DGS

PROJECT: Queens Supreme Court - Modernization of Elevators

LOCATION 88-11 Sutphin Boulevard, Queens NY 11435

BIDDER: Centermal Elevator

	Description	Quantity	Unit	Unit Cost Of Material	Total Cost Of Material	Unit Cost Of Labor	Total Cost Of Labor	Total Cost: Materials &
26 41 13 L	Lighting Protection for Structures		Ls	5,840	5840	8760	5760	Labor
· ····································	subtotal				5840	5700	8740	14600
26 51 00 <u>l</u>	Interior Lighting				and the state of t			
li	lighting fixtures	21	EA	115	2415	11/ 0	0/16	
li	lighting fixtures	16	EA		1232	460	9660	12075
6	exit fixtures	-18	EA	95	95	309	4944 380	6476
	subtotal				3742	380	14,984	18.726
27 00 00 C	COMMUNICATIONS	- Martin Madifference attended in his figured makes the major patterning of the contract of th						
Į.	Communications	7	LS	50,000	50,000	70,000		60
The Class Step 1755 Action was blances of the party bearings.	subtotal			20,000	50,000	1 1500	30,000	80,000 80,000
28 00 00 S	SECURITY AND FIRE ALARM							54000
	Security and Database Management System							and a second his house spek me and states a second spekishinger objects to be before a september on pa
28 23 00 V	Video Surveillance	Non-Pibert chalange expression and a sext property with materials and			······································			
	ire Alarm System		Water Committee Supplementary of the State o	- The state of the				martina investiga esta prija. Envillabelar en muyer parkentekan et for a menyeriskan.
fii	ire alarm devices	7	each	2400	711 400	1850	1000	The state of the s
C	Controlers	6	each	2500	216 800		112950	129150
F*	Fire Smoke Dampers	7	each		15000	7250	13500	28,500
M	Monitor modules	4	each	4200	253008	2850	17/00	42300
F	Fire Alarm Conduit and wiring 1 inch	1000	Inft	_9650	579000	80000	48000	105900
	subtotal	1900	11111	800 _	15200	_ 1600 _	30 400	4564
The state of the s		1 - 1 - 1 - 1 - 1 - 1 - 1 - 1 - 1 - 1 -		tendenti ilaj lilaturja telebumba mana mana a use aperaturia, a titala deskapana peraturia da talah dalam dapan	189682		12/950	252050
TOTAL	CONTRACT 1 - GENERAL CONSTRUCTION WORK				5716327		4.584.613	10,300,94



CONTRACTOR BID BREAKDOWN FORM

CO300ELV2 DGS

CONTRACT 1 - GENERAL CONSTRUCTION WORK

FMS ID NUMBER CLIENT AGENCY

PROJECT: Queens Supreme Court - Modernization of Elevators

LOCATION 88-11 Sutphin Boulevard, Queens NY 11435 BIDDER:

				Ilnit	Total Cost	i i	Total Cost	Total Cost:
CSI Number	Description	Quantity	Unit	Cost Of	ō	Cost Of	ģ	Materials &
		•		Material	Material	Labor	Labor	Labor
S	CONTRACT 1 - GENERAL CONSTRUCTION WORK					Mar Area		
01 00 00	General Requirements							
	Mobilization		Ls			-		
	Temporary Services		Ls					
	subtotal							
				The state of the s		and the second s	4	
02 00 00	EXISTING CONDITIONS							
02 82 13	Asbestos Abatement		Ls					
03 00 00	CONCRETE					M. C. C.		
03 01 00	Concrete Form Work							
			Ls			san Marina and American		
	subtota							-
03 20 00	Concrete Reinforcement							
			Ls					
	subtotal					oo oo oo ka isaa		
						watering shifteed	,	
						AAAA SHIRIY YOO OO		
03 30 00	Cast In Place Concrete							
			Cuff					
	subtotal							
						ma Arib Ara, and Silver		



PROJECT: Queens Supreme Court - Modernization of Elevators LOCATION 88-11 Sutphin Boulevard, Queens NY 11435

BIDDER:

CONTRACTOR BID BREAKDOWN FORM

CO300ELV2 DGS CONTRACT 1 - GENERAL CONSTRUCTION WORK FMS ID NUMBER CLIENT AGENCY

			ľ					
				Unit	Total Cost	żi S	Total Cost	Total Cost:
CSI Number	Description	Quantity	Cnit	Cost Of	ŏ	Cost Of	ច់	Materials &
				Material	Material	Labor	Labor	Labor
04 00 00	MASONRY							
04 01 40	Maintenance of Stone Assemblies		ST					
	subtotal					Marketine shared a		
						- Name of the American		
02 00 00	METALS					\$ 000mm		
05 12 00	Structural Steel							
05 50 00	Metal Fabrications					a and a second		
05 59 63	Detention Enclosures					матрация, для		
	Guard Rails		Inft			Firmship Young		
	Miscellaneous Steel		rs			\$100 × 2000× 00		
	metal plumbing grates		each			and set a sector		
	removals and replacement as required		Ls					
	subtotal							
00 00 20	Thermal and Moisture Protection		S]					
	subtotal							
						have by tweeter		
00 00 80	Openings					MODELET SERVICE A A AND		
08 11 13	Hollow Metal Doors and Frames		Ls					
	subtotal							
representation of the second								
08 31 13	Access Doors and Frames		Ls					
	subtotal							
08 62 00	Unit Skylights					en constant a constant		- And a state of the state of t
	Removal and replacement of skylights		Ls			PO. P. S		
	subtotal							
						V-0		
08 71 00	Door Hardware (Included with 08 11 13)							



PROJECT: Queens Supreme Court - Modernization of Elevators LOCATION 88-11 Sutphin Boulevard, Queens NY 11435 BIDDER:

CONTRACTOR BID BREAKDOWN FORM

CO300ELV2 DGS CONTRACT 1 - GENERAL CONSTRUCTION WORK
FMS ID NUMBER C03006 CLIENT AGENCY

Cost Of Labor					, , ,				
Pescription Quantity Unit Cost of of octor of the cost of					Control	lotal Cost	=======================================	Total Cost	Total Cost:
FINISHES Gyosum Plestering Gyosum Pleste	CSI Number		Quantity	C C C	Cost Of	ŏ	Cost Of	ō	Materials &
FINISHES Gypsum Plastering Gypsum Board Painting Elevator Doors, lobby areas, conduit etc sump pits Signage CONVEYING SYSTEM Dumbwaiter Elevator Cabs Signage Subtotal Elevator Cabs Subtotal Elevator Cabs Subtotal Elevator Requirements Float assembly and sump pump Subtotal Float assembly and sump pump Sieeves and Sieeve seals for Plumbing Piping 2 inch piping					Material	Material	Labor	Labor	Labor
FINISHES							and the control of th		
Gypsum Plastering Gypsum Board Beauting Elevator Doors, lobby areas, conduit etc subtotal Signage subtotal CONVEYING SYSTEM subtotal Elevator Cabs subtotal Electronic Traction Passanger Elevator subtotal PLUMBING WORK subtotal Common Motor Requirements subtotal Float assembly and sump pump subtotal Sleeves and Sleeve seals for Plumbing Piping subtotal 2 inch piping 2 inch piping	00 00 60	FINISHES							
Signage CONVEYING SYSTEM Elevator Cabs Electronic Traction Passanger Elevator Common Motor Requirements Float assembly and sump pump Sileeves and Sileeve seals for Plumbing Piping Painting Elevator Cabs Subtotal	09 23 00	Gypsum Plastering					- Gaz-y		
Painting. Elevator Doors, lobby areas, conduit etc sump pits Signage Signage CONVEYING SYSTEM Dumbwaiter Elevator Cabs Elevator Cabs Electronic Traction Passanger Elevator Common Motor Requirements Float assembly and sump pump Sieeves and Sieeve seals for Plumbing Piping. 2 inch piping	09 29 00	Gypsum Board			100 to 10				
Elevator Doors, lobby areas, conduit etc sump pits sump pits Signage CONVEYING SYSTEM Dumbwaiter Elevator Cabs Electronic Traction Passanger Elevator Common Motor Requirements Float assembly and sump pump Sleeves and Sleeve seals for Plumbing Piping 2 inch piping	09 91 00	Painting							
subtotal Signage Signage CONVEYING SYSTEM Dumbwaiter Elevator Cabs Electronic Traction Passanger Elevator Common Motor Requirements Float assembly and sump pump Sleeves and Sleeve seals for Plumbing Piping 2 inch piping		Elevator Doors, lobby areas, conduit etc		Ls		The state of the s			
Signage Signage Signage Subtotal CONVEYING SYSTEM Dumbwaiter Dumbwaiter Subtotal Elevator Cabs Electronic Traction Passanger Elevator Subtotal Float assembly and sump pump Sieeves and Sleeve seals for Plumbing Piping 2 inch piping		sump pits		each					
Signage Signage Signage CONVEYING SYSTEM Dumbwaiter Dumbwaiter Elevator Cabs Electronic Traction Passanger Elevator Common Motor Requirements Float assembly and sump pump Sleeves and Sleeve seals for Plumbing Piping 2 inch piping		subtotal							
Signage CONVEYING SYSTEM Dumbwaiter Dumbwaiter Elevator Cabs Elevator Cabs Electronic Traction Passanger Elevator Subtotal PLUMBING WORK Common Motor Requirements Float assembly and sump pump Sleeves and Sleeve seals for Plumbing Piping 2 inch piping	10 00 00	FINISHES							
CONVEYING SYSTEM Dumbwaiter Elevator Cabs Elevator Cabs Electronic Traction Passanger Elevator Common Motor Requirements Float assembly and sump pump Sleeves and Sleeve seals for Plumbing Piping 2 inch piping	10 14 23	Signage		S					
CONVEYING SYSTEM Dumbwaiter Bubtotal Elevator Cabs Electronic Traction Passanger Elevator Common Motor Requirements Float assembly and sump pump Sleeves and Sleeve seals for Plumbing Piping 2 inch piping		subtotal							
CONVEYING SYSTEM Dumbwaiter Buttotal Elevator Cabs Electronic Traction Passanger Elevator Electronic Traction Passanger Elevator Subtotal Float assembly and sump pump Sleeves and Sleeve seals for Plumbing Piping 2 inch piping									
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Subtotal Elevator Cabs Electronic Traction Passanger Elevator Electronic Traction Passanger Elevator BLUMBING WORK Common Motor Requirements Float assembly and sump pump Sleeves and Sleeve seals for Plumbing Piping 2 inch piping	14 12 00	Dumbwaiter		Ls					
Elevator Cabs_ Electronic Traction Passanger Elevator Electronic Traction Passanger Elevator Electronic Traction Passanger Elevator Subtotal Common Motor Requirements Float assembly and sump pump Float assembly and sump pump Sleeves and Sleeve seals for Plumbing Piping 2 inch piping		subtotal					W		
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Electronic Traction Passanger Elevator BLUMBING WORK Common Motor Requirements Float assembly and sump pump Sleeves and Sleeve seals for Plumbing Piping 2 inch piping	14 20 05	Elevator Cabs		Ls					
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PLUMBING WORK Common Motor Requirements Float assembly and sump pump subtotal Sleeves and Sleeve seals for Plumbing Piping.	14 21 23	Electronic Traction Passanger Elevator		Ls					
PLUMBING WORK Common Motor Requirements Float assembly and sump pump Sleeves and Sleeve seals for Plumbing Piping.		subtotal							
PLUMBING WORK Common Motor Requirements Float assembly and sump pump Subtotal Sleeves and Sleeve seals for Plumbing Piping.									
Common Motor Requirements Float assembly and sump pump Sleeves and Sleeve seals for Plumbing Piping 2 inch piping	22 00 00	PLUMBING WORK					······································		
Float assembly and sump pump subtotal subtotal subtotal Sleeves and Sleeve seals for Plumbing Piping.	22 05 13	Common Motor Requirements					NO 4 A MARKAGES CONTRACTOR CONTRA		
Sleeves and Sleeve seals for Plumbing Piping. 2 inch piping	-	Float assembly and sump		each					
Sleeves and Sleeve seals for Plumbing Piping. 2 inch piping		subtotal							
Sleeves and Sleeve seals for Plumbing Piping 2 inch piping									
	22 05 17	Sleeves and Sleeve seals for Plumbing Piping					- 100 4440		
		2 inch piping		Inft			w mus w m		



Department of Design and Construction

PROJECT: Queens Supreme Court - Modernization of Elevators LOCATION 88-11 Sutphin Boulevard, Queens NY 11435 BIDDER:

CONTRACTOR BID BREAKDOWN FORM

CO300ELV2 DGS CONTRACT 1 - GENERAL CONSTRUCTION WORK FMS ID NUMBER CLIENT AGENCY

				74 - 11	-			
		;	:	Onic	lotal Cost		l otal Cost	l otal Cost:
CSI Number	Description	Quantity	<u> </u>	Cost Of	ō ;	Cost Of	5 -	Materials &
				Material	Material	Labor	Labor	Labor
	1 inch piping		Inft					
	coring		each					
	piping fittings		Ls					
	subtotal					Main Facessan M. According		
22 05 23	General- Duty Valves for Plumbing Piping		Ls			and make typiger		
	subtotal					uenamun.		
						~~····································		
22 05 29	Hangers & Supports For Plumbing Piping & Equipments					2000 tarrest formation		
	Hangers		EA					
	subtotal							
						#sitto con furti senso		
22 05 53	Identification for Plumbing Piping & Equipment		Ls					
	subtotal					- Markon and Constant		
22 13 16	Sanitary Waste and Vent Piping		Ls			denny wonger grand (g		
	subtotal							
						arvenium suu ses		
22 14 29	Sump Pumps		each	:				
	subtotal	·				on we		
23 00 00	HVAC							
23 05 13	Rigging		s T			277 6-14 6/80/00		
	<u>Demolition</u>		Ls			***************************************		
	BMS Connection		Ls					
	Removal;s and reconnections as required		Ls	,				
	subtotal							



CONTRACTOR BID BREAKDOWN FORM

PROJECT: Queens Supreme Court - Modernization of Elevators LOCATION 88-11 Sutphin Boulevard, Queens NY 11435 BIDDER:

CONTRACT 1 - GENERAL CONSTRUCTION WORK
FMS ID NUMBER CO300ELV2
CLIENT AGENCY DGS

				Ilnit	Total Cost	ļ	Total Cost	Total Cost:
CSI Number	Description	Quantity	Unit	Cost Of	Ō	Cost Of	ŏ	Materials &
				Material	Material	Labor	Labor	Labor
					-			
23 05 17	Sleeves and Sleeve seals for HVAC Piping					W-1 (2000)		
	coring and sleeves		Ls					
	subtotal					A CONTRACTOR OF THE STATE OF TH		
23 05 23	General Duty Valves For HVAC Piping							
	Valves		EA			***************************************		
	subtotal							
						v v m		
23 05 29	Hangers & Supports For HVAC Piping & Equipment							
	Hangers		EA			and a second	1 - 1 - 1 - 1 - 1 - 1 - 1 - 1 - 1 - 1 -	
	Anchors	•	EA			decide		
	Pipe Guides		EA					
	subtotal	ĸ.				do Clay - go no		
		. 1						
23 05 48	Vibration and Seismic Controls for HVAC							
		1	Ls					
	subtotal					i.		
-		-				in the state of th		
23 05 53	Identification For HVAC Piping & Equipment							
	Valve Tags, Pipe ID		LS			UN TAY HOLD I LOUGH		
	subtotal				100			
23 05 93	Testing, Adjusting & Balancing							
	Testing and Balancing		Ls					
	Commissioning		LS					
	subtotal	,		And pulled to be seen				



Department of Design and Construction

PROJECT: Queens Supreme Court - Modernization of Elevators LOCATION 88-11 Sutphin Boulevard, Queens NY 11435 BIDDER:

CONTRACTOR BID BREAKDOWN FORM

CONTRACT 1 - GENERAL CONSTRUCTION WORK FMS IC CLIEN.

CO300ELV2	DGS
D NUMBER	NT AGENCY

	·		<u>:</u>	Unit	Total Cost	Unit O	Total Cost	Total Cost:
	Cescription	Quantity	<u> </u>	Material	Material	Cost Of	Labor	Materials & Labor
23 07 13	23.07.13 Duct Insulation							
	duct insulation		Ls			· · · · · · · · · · · · · · · · · · ·		
	subtotal					Sharey - Armir		
23 07 19	HVAC Piping Insulation					and whom a show		
			Ls					
	Refrigeration Piping		Ls			***************************************	t en	
	Hydronic Piping							,
	1 1/2" L Condensate Piping		F			et service de la company		
	1" L Copper Tubing		F			vanav sanad		
-	3/4' L Copper Tubing		LF			A Monaco I M I I Flore		
	Wrought Copper Fittings		EA					
	Rod, Gas, Lubricants, Etc.		ST			No. of Late 1		
	1" L Copper Tubing		FT					
	Wrought Copper Fittings		EA					
	Solder, Flux, and Gas		LS					
	subtotal					· · · · · · · · · · · · · · · · · · ·		
23 08 00	Commissioning					32		
	Commissioning		rs					
	subtotal							
23 23 00	Refrigerant Piping							
	Refrigerant Piping		Ls	-		7-7 ASManuscript		
	Refrigerant		Ls			Me town wedgesond		
	subtotal							



PROJECT: Queens Supreme Court - Modernization of Elevators LOCATION 88-11 Sutphin Boulevard, Queens NY 11435 BIDDER:

CONTRACTOR BID BREAKDOWN FORM

CONTRACT 1 - GENERAL CONSTRUCTION WORK

FMS ID NUMBER CO300ELV2 CLIENT AGENCY DGS

				Unit	Total Cost	Unit	Total Cost	Total Cost:
CSI Number	Description	Quantity	Unit	Cost Of	ŏ	Cost Of	ŏ	Materials &
				Material	Material	Labor	Labor	Labor
23 31 13	Metal Ducts							
	Galvanized Ductwork		LBS					
	Cont. Sheetmetal Plenum W/ Acoustic Lining		F.					
	Mixing Boxes		Ls			***************************************		
	Fire Wrap		Ls					
	subtotal							
23 33 00	Air Duct Accessories							
	Plenum Baffles		Æ					
	Volume Dampers		EA					
	Filters		EA		-	*** of the second		-
	Wire Mesh Screens		젚					
	Fire Dampers		EA					
	subtotal							
						·		
23 37 13	Diffusers, Registers & Grilles		,					
	Diffuser/Register/Grills		Ls					
-	Kynar Finish Louvers		Ls			Marcada, administra		
	Roof Curbs		Ls			and a suppose		
	subtotal							
						No. of the command that		
23 81 13	Packaged Terminal Air Conditioners							
	Split system Units		EA			(cycloperox - Drop		
	Exhaust Fans		EA					
	Refrigeration Accessories		Ls					
	low ambiant kits		Ls					



Department of Design and Construction

PROJECT: Queens Supreme Court - Modernization of Elevators LOCATION 88-11 Sutphin Boulevard, Queens NY 11435 BIDDER:

CONTRACTOR BID BREAKDOWN FORM

CONTRACT 1 - GENERAL CONSTRUCTION WORK
FMS ID NUMBER CO300ELV2
CLIENT AGENCY DGS

			\	ביים	lotal Cost	5	l otal Cost	otal Cost:
CSI Number	Description	Quantity	Cnit	Cost Of	ŏ	Cost Of	ŏ	Materials &
				Material	Material	Labor	Labor	Labor
	condensate pumps		Ls			O O OO O O O O O O O O O O O O O O O O		
	subtotal							
						www.genno.gen		
23 81 26	Split System Air Conditioning Units					anagara ranga-		
	split system		Æ			***************************************		
	low ambiant kits		<u>8</u>					
	condensate pump[s		Ls					
	subtotal							
				-				
26 00 00	ELECTRICAL							
26 05 19	Low-voltage Electrical Power Conductors, Cables and Conduit							
ı	Demolition		S			**************************************		
	3/4 inch conduit		L					
	1 inch conduit		띡					
	1 1/2 inch conduit		T.			000000000000000000000000000000000000000		
	2 inch conduit		占			lmas steriormi		
	2 1/2 inch conduit		느			(managerillane-print)		
	3/0		H.					
,	2/0		LF			- The Spinor of Man - Spinor o		
	#4		F					
	#6		LF					
	#8		F.			The state of the s		
-	#10		Ľ			0 · · · · · · · · · · · · · · · · · · ·		
	#12		Ŧ					
	Communication and Control wiring		Ľ.					
	subtotal					**************************************		



PROJECT: Queens Supreme Court - Modernization of Elevators

LOCATION 88-11 Sutphin Boulevard, Queens NY 11435

BIDDER:

CONTRACTOR BID BREAKDOWN FORM

CO300ELV2 DGS CONTRACT 1 - GENERAL CONSTRUCTION WORK FMS ID NUMBER **CLIENT AGENCY**

מוטטומ								
				Cnit	Total Cost	Cait	Total Cost	Total Cost:
CSI Number	Description	Quantity	Unit	Cost Of	ŏ	Cost Of	ğ	Materials &
				Material	Material	Labor	Labor	Labor
26 05 26	Grounding & Bonding For Electrical Systems					Let your man		
			Ls					
	subtotal							
26 05 33	Raceway & Boxes For Electrical Systems							
	terminations		Ls			· James		
	subtotal					and the second second		
26 05 53	Identification For Electrical Systems					VALUE		
	tag and commissioning			·		process solder a source		
	subtotal					la a convención		
26 24 16	Panelboards							
	_		EA					
	subtotal							
						-		
26 27 26	Wiring Devices							
			EA					
	FSD		EA					
	Motors Controlers		EA	-				
	Pumps		EA					
	subtotal					nonnoù de 1845 d'		
26.28.16	Enclosed Switches & Circuit Breakers							
	\top		Ls					
	subtotal							
_								



Department of Design and Construction

PROJECT: Queens Supreme Court - Modernization of Elevators LOCATION 88-11 Sutphin Boulevard, Queens NY 11435 BIDDER:

CONTRACTOR BID BREAKDOWN FORM

CO300ELV2 CONTRACT 1 - GENERAL CONSTRUCTION WORK FMS ID NUMBER CLIENT AGENCY

				Unit	Total Cost	Unit	Total Cost	Total Cost:
CSI Number	Description	Quantity	Unit	Cost Of	ŏ	Cost Of	ŏ	Materials &
				Material	Material	Labor	Labor	Labor
26 41 13	Lighting Protection for Structures		Ls			Section Co. Co. And Co.		
	subtotal					Name to be restrongujus.		
						(MACE) SOCIOTES AND AND		
26 51 00	Interior Lighting							
	lighting fixtures		EA					
	lighting fixtures		EA					
	exit fixtures		EA			Depart to Assaulanton		
	subtotal							
						on Massimond II		
27 00 00	COMMUNICATIONS					-		
	Communications		ST					
	subtotal					personal data and selection of the selec		
28 00 00	SECURITY AND FIRE ALARM					Processor		
28 13 16	Security and Database Management System						:	
28 23 00	Video Surveillance							
28 31 00	Fire Alarm System							
	fire alarm devices		each	,				
	Controlers		each					
	Fire Smoke Dampers		each					
	Monitor modules		each					
	Fire Alarm Conduit and wiring 1 inch		Inft					
	subtotal					Marie Ver consultant of the second		
						No to Management to their		
TOTA	TOTAL CONTRACT 1 - GENERAL CONSTRUCTION WORK							

ATTACHMENT 1 - BID INFORMATION PROJECT ID: CO300ELV2 (REBID 2)

DESCRIPTION AND LOCATION OF WORK:

QUEENS SUPREME COURT ELEVATOR MODERNIZATION

88-11 Sutphin Boulevard Queens, New York 11435

E-PIN: 85016B0028 / DDC PIN: 8502016CT0005C

DOCUMENTS AVAILABLE AT:

Department of Design and Construction, Contract Section 30-30 Thomson Avenue - First Floor, Long Island City, NY 11101

SUBMISSION OF BIDS BEFORE BID OPENING:

TIME TO SUBMIT:

On or Before: TUESDAY, SEPTEMBER 22, 2015

BIDS MUST BE CLOCKED IN PRIOR TO BID OPENING

PLACE TO SUBMIT:

Department of Design and Construction, Contract Section (located behind Security Desk) 30-30 Thomson Avenue - First Floor, Long Island City, NY 11101

BID OPENING:

PLACE OF BID OPENING:	Department of Design and Construction
	Contract Section
	30-30 Thomson Avenue – First Floor
	Long Island City, NY 11101
DATE AND HOUR:	TUESDAY, SEPTEMBER 22, 2015 AT 2:00 PM
	LATE BIDS WILL NOT BE ACCEPTED

BID SECURITY:

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

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

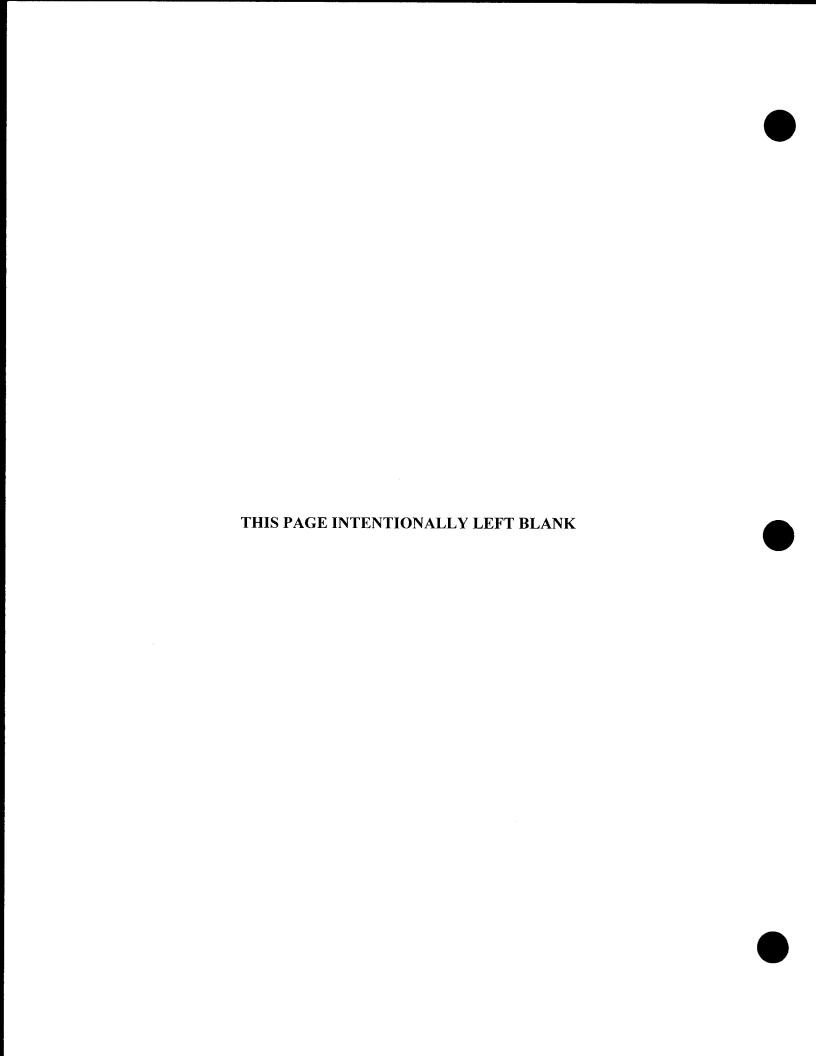
PERFORMANCE AND PAYMENT SECURITY:

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

AGENCY CONTACT PERSON:

Lorraine Holley, 30-30 Thomson Avenue - First Floor, Long Island City, Queens, NY 11101 Telephone (718) 391-3170 or (718) 391-1016 Fax: (718) 391-2615

BID BOOKLET PART B



SAFETY QUESTIONNAIRE

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

20000	,	
DDC Project Number: <u>CO300ELV2</u>	2	
Company Size: Ten (10)	employees or less	
Greater :	than ten (10) employees	
Company has previously worked for DDC	YES	NO
2. Type(s) of Construction Work		
TYPE OF WORK General Building Construction	LAST 3 YEARS	THIS PROJECT
Residential Building Construction		
Nonresidential Building Construction		and the state of t
Heavy Construction, except building Highway and Street Construction		- water and the company of the compa
Heavy Construction, except highways		and the state of t
Plumbing, Heating, HVAC	· · · · · · · · · · · · · · · · · · ·	The second distribution of the second
Painting and Paper Hanging	The second secon	на на настрания до на при при на настрания на настрания на настрания на настрания на настрания на настрания на Настрания на настрания на настран
Electrical Work		
Masonry, Stonework and Plastering		
Carpentry and Floor Work		**************************************
Roofing, Siding, and Sheet Metal	AT COLUMN TO STATE OF THE STATE	Name of the last of the first o
Concrete Work		NAMES OF THE PROPERTY OF THE P
Specialty Trade Contracting Asbestos Abatement		
Aspestos Abatement Other (specify)	-14	
ELEVATOR UPGRADE	2012	ELEVATORUPGRADE STUDIO MUSEUM
ECCURIOR OT GRAVE	LOLL	of Harlem

insurance. The contractor may obtain its EMR by contacting its insurance broker or the NCCI. If the contractor

cannot obtain its EMR, it must submit a written explanation as to why.

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

YEAR	<u>INTRA</u> STATE RATE	<u>INTER</u> STATE RATE
2014-2015	25% CHARLE	25% CHARGE
2013-2014	14% CHARSE	14 /2 CANALE
2012-2013	4% CHARGE	46 CHARDE

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

4	. OSHA Information:	
YE	s NO	Contractor has received a willful violation issued by OSHA or New York City Department of Buildings (NYCDOB) within the last three years.
YE	s <u>v</u> no	Contractor has had an incident requiring OSHA notification within 8 hours (all work-related fatalities) or an incident requiring OSHA notification within 24 hours (all work-related impatient hospitalizations, all amputations and all losses of an eye).

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

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

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

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

Incident Rate = Total Number of Incidents X 200,000

Total Number of Hours Worked by Employees

YEAR	TOTAL NUMBERS OF HOURS WORKED BY EMPLOYEES	INCIDENT RATE
2014	426,400	3,752
2013	434,740	5,520
9012	37650	5.811
for the type of c	r's Incident Rate for any of the past three years is construction it performs (listed below), the contract tion for the relatively high rate.	one point higher than the Incident Rate or must attach, to this questionnaire, a
General Building	Construction	8.5
Residential Build	ling Construction	7.0
Nonresidential B	uilding Construction	10.2
Heavy Construct	ion, except building	8.7
Highway and Str	eet Construction	9.7
Heavy Construct	ion, except highways	8.3
Plumbing, Heatin		11.3
Painting and Pape Electrical Work	er rianging	6.9
	ork and Plastering	9.5
Carpentry and Flo	or Work	10.5 12.2
Roofing, Siding,	and Sheet Metal	10.3
Concrete Work		8.6
Specialty Trade C	Contracting	8.6
5. Safety Perfor	mance on Previous DDC Project(s)	
_yes _no	Contractor previously audited by the DDC Office	ce of Site Safety.
7	DDC Project Number(s):	
YES /_NO	Accident on previous DDC Project(s),	
	DDC Project Number(s):	
_YES <u>√</u> NO	Fatality or Life-altering Injury on DDC Project([Examples of a life-altering injury include loss of sight, hearing), or loss of neurological function]	of limb, loss of a sense (e.g.,
Date: 9/16/15	By: (Signature Moviner, Partner,	Corporate Officer)

Bid Booklet-Safety Questionnaire EMR Rating.

The company has hired safety personnel to improve the safety of our workers, including training, and education. We perform random weekly job site inspections in order to ensure compliance with all safety procedures. The company has grown considerably over the past few years, and this has resulted in more accidents.

OSHA's Form 300A (Rev. 01/2004)

Summary of Work-Related Injuries and Illnesses



Form approved OMB no. 1218

to verify that the entries are complete and accurate before completing this summary. All establishments covered by Part 1904 must complete this Summary page, even if no work related injuries or litnesses occurred during the year. Remember to review the Log

Using the Log, count the individual entries you made for each category. Then write the totals below, making sure you've added the entries from every page of the Log. If you

its equivalent. See 29 CFR Part 1904.35, in OSHA's recordkeeping rule, for further details on the access provisions for these forms. Employees, former employees, and their representatives have the right to review the OSHA Form 300 in its entirely. They also have limited access to the OSHA Form 301 or

Number of Cases	Š			
Total number of T deaths co	Total number of cases with days away from work	Total number of cases with job transfer or restriction	Total number of other recordable cases	
(G) 8	(E)	0	(L)	
Number of Days	v			
Total number of days away from work		Total number of days of job transfer or restriction		
549		0		
3		(L)		
Injury and Illness Types	ss Types			
Total number of (M) (M) Injuries	∞	(4) Poisonings	0	
2) Skin disorders 9) Respiratory conditions	0	(5) Hearing loss (6) All other illnesses	0	

Post this Summary page from February 1 to April 30 of the year following the year covered by the form.

(718) 726

1 ,31 2015

knowledge the entries are true, accurate, and complete.

Richard L'Esperance Jr.

I certify that I have examined this document and that to the best of my

Public reporting burden for this collection of information is estimated to average 58 minutes per response, including time to review the instructions, search and gather the data noveded, and compides and review the cellection of information. Exposure are not required to respond to the collection of information unless it displays, a currently valid OMB control number. If you have any comments shout these restitutes or any other aspects of this data collection, contact. US Department of Labor, OSHA (Hitse of Statistical Analysis, Room N-3614, 290 Constitution Avenue, NV, Washington, D.C. 20210. Do not send the compileted forms to this office.

Knowingly falsifyi	Knowingly falsifying this document may result in a fine.
Sign here	10/14/2015
Total hours worked by all employees last year	all employees last year 350,000
Annual average number of employees	r of employees 230
Employment information (I): Worksher on the back of this page to estimate.	Employment information (If you don't have these figures, see the Worksheet on the back of this page to estimate.)

North American Indus	North American Industrial Classification (NAICS). if known (e.g., 336212)
OR	
Standard Industrial Cli	Standard Industrial Classification (SIC), it known (e.g., 3715)
Industry description (c	Industry description (e.g., Manufature of mater truck trailers) Elevator repair and maintenance
City Astoria	State NY ZIP 11103
Street 24-35 47th Street	th Street
Your establishment name (Centennial Elevator Industries
Establishment information	Information

OSHA'S Form 300 (Rev. 01/2004)

Log of Work-Related Injuries and Illnesses

Attention: This form contains information relating to employee health and must be used in a manner that protects the confidentiality of employees to the extent possible while the information is being used for occupational safety and health purposes.

Year 20 14 WWW.
U.S. Department of Lab
Occupational Safety and Health Administrat

orm. If you're not sure whether a case is recordable, call your local OSHA office for help. ise two lines for a single case if you need to. You must complete an injury and illness incident Report (OSHA Form 301) or equivalent form for each injury or illness recorded on this ou must record information about every work-related death and about every work-related injury or illness that involves loss of consciousness, restricted work activity or job transfer, tays away from work, or medical treatment beyond first aid. You must also record significant work-related injuries and illnesses that are diagnosed by a physician or iscensed health are professional. You must also record work-related injuries and illnesses that meet any of the specific recording criteria listed in 29 CFR Part 1904 8 through 1904 12. Feet free to

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Form approved t/MB no. 1218-0

Establishment name Centennial Elevator Industries

City Astoria

State NY

City Astoria

ntify the person		Describe the case	ie case		Class	ify the case	se			
(8) Employee's name	Job title	(D) Date of injury	(E) Where the event occurred	(F) Describe injury or illness, parts of body affected,	based on that case:	CHECK ONLY ONE box for each case based on the most serious outcome for that case:	box for eacl serious out	t case come for	Enter the number of days the injured or ill worker was:	Check the "Injury" colum
	(e.g., steam)	of illness	१८३- रजाबनाडु पठार भगात छात्र)	or made person ill (e.g., Scond degree hirus on			Remaine	Remained at Work		лу n
				right foreurn from acetylene torch)	Douth	Days away .	Job transfer or restriction	Other record- able cases	from transfer or work restriction	Injury Skin disc Respirate condition Poiswain
					(G)	3	3	(£)	(₹)	(2) (3) (4)
Mark Kurisko	Mechanic	1 /6	501 7th Avenue	broken right ankle		Ø			61 days days	
John Bellofatto	Mechanic	2 /4	Washington Houses	injured right shoulder		Ø			24 days days	
Michael Przyborowski	Mechanic	2 /6	129 Columbia Hts	injured left shoulder		Ø			99 days days	0 0 0 0
Kyle Laverty	Mechanic	5 /8	1790 Broadway	Lower back injury		Ø			99 days days	
Raymond Rossler	Mechanic	6 / 23	55 East 87th Street	Lower back injury		×			99 days days	
Robert Nici	Mechanic	7 / 28 manbuday	205 West 39th St	shocked by electrical joit & cut left hand		×			68 days days	
Nemin Paljevic	Apprentice	8 /5	103 East 86th St	right shoulder, neck and center of back		Ø			99 days days	
Calvin Schoch	Apprentice	9 / 3	59 West 12th Street	cut on nose	0	×			O days days	
		увручения /							days days	
		respilation /						O	days days	
		month/day							days days	
		musch/ossy						0	days days	
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'ublic reporting burden for this collection of information is estimated to average 14 minutes per response, including time to review he instructions, search and gather the data needed, and complete and review the collection of information, between are not required to respond to the collection of information unless it displays a currently valid (AB) control number. If you have any comments about these estimates or any other aspects of this data collection, contact. 18 Department of Labor, 1814 Oillic of Sansatral unlysis, Room N-3644, 200 Constitution Avenue, NW, Washington, DC 20210. Do not send the completed forms to this office.

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1 Injury
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condition
A Poisoning
D Hearing less

Page of

OSHA's Form 300A (Rev. 01/2004)

Summary of Work-Related Injuries and Illnesses

Year 2013 WWW U.S. Department of Labor Occupational Safety and Health Administration

Form approved OMB no. 1218-0176

All establishments covered by Part 1904 must complete this Summary page, even if no injuries or linesses occurred during the year. Remember to review the Log to verify that the entries are complete

Using the Log, count the individual entries you made for each category. Then write the totals below, making sure you've added the entries from every page of the log. If you had no cases write "0."

Employees former employees, and their representatives have the right to review the OSHA Form 300 in its entirety. They also have limited access to the OSHA Form 301 or its equivalent. See 29 CFR 1904.35, in OSHA's Recordkeeping rule, for further details on the access provisions for these forms.

904.35, III OSHA'S Reco	rakeeping rule, for luttin	904.35, in OSHA's Recordkeeping rule, for runner details on the access provisions for these forms.	s for these forms.
lumber of Gases			
otal number of leaths	Total number of cases with days away from work	Total number of cases with job transfer or restriction	Total number of other recordable cases
0	12	0	0
(G)	(H)	(I)	(J)
lumber of Days			
Fotal number of days away from		Total number of days of job transfer or restriction	•
216 (K)		(t)	
າງບຸດy and Illiness Ty	pes		
Fotal number of (M) (1) Injury	12	(4) Poisoning	0
(3) Respiratory Condition	0	(6) All Other Illnesses	0

Post this Summary page from February 1 to April 30 of the year following the year covered by the form

Public reporting burden for this collection of information is estimated to average 50 minutes per response, including time to review the instruction, search and gather the data needed, and complete and review the collection of information. Persons are not required to respond to the collection of information unless it displays a currently valid OMB control number. By you have any comments about these estimates or any specytis of this data collection, contact: US Department of Labor, OSHA Office of Statistics, Room N-3644, 200 Constitution Ave. NW. Washinaton. DC 20210. Do not send the completed forms to this office.

(718) 726-5900 Ext. 221 24/2014 Phone Date	William Hind All W Chief Financial Offic	I certify that I have examined this document and that to the best of my knowledge the entries are true, accurate, and complete.	Knowingly falsifying this document may result in a fine.	ign here	Total hours worked by all employees last year 378,748	Annual average number of employees238	imployment information	DR North American Industrial Classification (NAICS), if known (e.g., 336212)	lassi	Industry description (e.g., Manufacture of motor truck trailers) Elevator Repair & Maintenance	City ASTORIA State NY Zip 11103	Street 24-35 47TH STREET	Your establishment name CENTENNIAL ELEVATOR INDUSTRIES INC	stablishment information	
2014	Offic										103	1	-		

OSHA's Form 300 (Rev. 01/2004)

Log of Work-Related Injuries and Illnesses

for occupational safety and health purposes. that protects the confidentiality of employees to the to employee health and must be used in a manner extent possible while the information is being used Attention: This form contains information relating



U.S. Department of Labor

Occupational Safety and Health Administration

injuries and illnesses that meet any of the specific recording criteria listed in 29 CFR 1904.8 through 1904.12. Feel free to use two lines for a single case if you need to. You must complete an injury and illness incident report (OSHA Form 301) or equivalent form for each injury or illness recorded on this form. If you're not sure whether a case is recordable, call your local OSHA office beyond first aid. You must also record significant work-related injuries and illnesses that are diagnosed by a physician or licensed health care professional. You must also record work-related You must record information about every work-related injury of liness that involves loss of consciousness, restricted work activity or job transfer, days away from work, or medical treatment beyong first aid. You must also record charifferent under advanced handow and involves loss of consciousness, restricted work activity or job transfer, days away from work, or medical treatment beyong first aid. You must also record charifferent under advanced handow and involves loss of consciousness, restricted work activity or job transfer, days away from work, or medical treatment

Case No.

Identify the person 10 MEDNIK, YEVGENIY PETROCELLI, LEON MEURER, KENNETH SANTOLIQUITO, RICHARD KROHN, JOHN ASTORE, RICHARD HARRISON, JARRET CACIOPPO, RICHARD, JR SENA, JOHN LUCIANO, VINCENT ERRO, PAUL Employee's Name 0 (C) Job Title (e.g., Maintenance M TELPER. Date of injury or onset of (mo./day) illness 04/24 03/08 03/06 02/13 09/16 09/11 11/21 08/22 06/13 02/25 11/07 Where the event occurred (e.g. Loading dock north end) Ħ Describe injury or illness, parts of body affected, and object/substance that directly injured or made person ill (e.g. Second degree burns on right forearm from acetylene torch) BACK BACK BACK BACK SPRAINS, STRAINS, ANKLE, RIGHT BACK OTHER (NOT LISTED), OTHER, BACK KNEE, LEFT MULTIPLE LIFTING, , SHOULDER, RIGHT Be sure to transfer these totals to the Summary page (Form 300A) before you post it. Page totals the most serious outcome for that case: CHECK ONLY ONE box for each case based on Death Days eway Remained at work 0 0 11 Œ or restriction Establishment name Job transfer able cases ASTORIA Other recordworker was: days the injured or ill Enter the number of (days) Work From Away 28 27 න 19 CENTENNIAL ELEVATOR INDUSTRIES INC restriction transfer or (days) On job Check the "injury" column or choose one type 3 Injury Skin Disorder Respiratory Condition Poisoning Hearing Loss All other illnesses

Department of Labor, OSHA Office of Statistics, Room N-3644, 200 Constitution Ave, NW, Washington, DC 20210. Dc number. If you have any comments about these estimates or any aspects of this data collection, contact: US to review the instruction, search and gather the data needed, and complete and review the collection of information. Public reporting burden for this collection of information is estimated to average 14 minutes per response, including time not send the completed forms to this office. Persons are not required to respond to the collection of information unless it displays a currently valid OMB control

Page

1 of 2

3 \mathfrak{D} Skin Disorder Respiratory Condition £ Poisoning 6 Hearing Loss All other illnesses

OSHA's Form 300 (Rev. 01/2004)

Log of Work-Related Injuries and Illnesses

Attention: This form contains information relating to employee health and must be used in a manner that protects the confidentiality of employees to the extent possible while the information is being used for occupational safety and health purposes.



U.S. Department of Labor

Occupational Safety and Health Administration

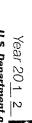
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	stics, Room N-3644, 2	f information is estimated the data needed, and collection of information these estimates or any														MAINTENENCE			**Cider)	(C) Job Title (e.g.,			pecific recording criteri m 301) or equivalent fo
	00 Constitutio	ed to average complete and n unless it dis														12/16		illness (mo./day)	onset of	(D) Date of			a listed in 29 on for each in
	Department of Labor, OSHA Utrice of Statistics, Room N-3644, 200 Constitution Ave, NW, Washington, DC 20210. Do not send the completed forms to this office.	Public reporting burden for this collection of information is estimated to average 14 minutes per response, including time to review the instruction, search and gather the data needed, and complete and eview the collection of information. Persons are not required to respond to the collection of information unless it displays a currently valid OMB control number. If you have any comments about these estimates or any aspects of this data collection, contact. US																	Loading door roun only	(E) Where the event occurred (e.g.	S		DFR 1904.8 through 1904.12. Feel free jury or illness recorded on this form. If the state of the
		Be sure to transfer these totals to the Summary page (Form 300A) before you post it.	Page totals													AMPUTATION, FINGER, LEFT		right forearm from acetylene torch)	made person III (e.g. Second degree burns on		Describe the case		injuries and illnesses that meet any of the specific recording criteria listed in 29 CFR 1904,8 through 1904,12. Feel free to use two lines for a single case if you need to. You must complete an injury and illness incident report (OSHA Form 301) or equivalent form for each injury or illness recorded on this form. If you're not sure whether a case is recordable, call your local OSHA office
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	Page	300A) before	0														S	ed at work. Other recordable cases		CHECK ONLY ONE box for each case based on the most serious outcome for that case:		ASTORIA	ent name
	2 of 2	you post i	216		28					53	27	88	19			29	3	Away From Work (days)			Enter the number		<u>R</u>
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	3	Injury	0														3	Injury	3	10		State	T ELEA
	2	Skin Disorder	0														(2)	Skin Disorder	20 000	he "injur			ATOR
	3	Respiratory Condition	0					_		L	L	_			_		(3)	Respiratory Condition		Check the "injury" column or choose one type of illness:			INDU
Share	(4)	Poisoning	0	_	_				_	_		_	L	igspace		L	(4)	Poisoning		on or chu		Ŋ	STRIE
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	6)	All other illnesses	0														6)	All other illnes	ses	e type			

OSHA's Form 300 (Rev. 01/2004)

Log of Work-Related Injuries and Illnesses

occupational safety and health purposes. possible while the information is being used for protects the confidentiality of employees to the extent employee health and must be used in a manner that Attention: This form contains information relating to



U.S. Department of Labor

Occupational Safety and Health Administration Form approved OMB no. 1218-0176

use tw form. It You must record information about every work-related death and about every work-related injury or illness that involves loss of consciousness, restricted work activity or job transfer, days away from work, or medical treatment beyond first aid. You must also record significant work-related injuries and illnesses that are diagnosed by a physician or licensed health care professional. You must also record work-related injuries and illnesses that meet any of the specific recording criteria listed in 29 CFR Part 1904.8 through 1904.12. Feel free to

days away from work, or medical treatment beyond tirst act, root must also record sighting care professional. You must also record work-related injuries and illnesses that meet any use two lines for a single case if you need to. You must complete an injury and illness income the work of the professional o	yond lifst ald, rou i related injuries and You must complete relable, call vour loo	tillnesses that mee an Injury and Illne al OSHA office for	ignificant work-terated in pures in it any of the specific recording ss Incident Report (OSHA Fort help.	days away from work, or medical treatment beyond titist act, not must also record significant wountercast in turnes and interesses and not be provided to the professional you must also record work-related highwise and linesses that meet any of the specific recording criteria listed in 29 CFR Part 1904. 8 through 1904. 12. Feet free to use two lines for a single case if you need to. You must complete an injury and illness incident Report (OSHA Form 301) or equivalent form for each injury or illness recorded on this form it works or single case if you need to. You must complete an injury and illness incident Report (OSHA Form 301) or equivalent form for each injury or illness recorded on this form it works or single case if you need to. You must complete an injury or illness incident Report (OSHA Form 301) or equivalent form for each injury or illness recorded on this	free to on this				Establishment name <u>Cen</u> City Astoria	Establishment name Centennial Elevator City Astoria State NY
identify the person		Describe the case	e case		Classi	ssify the case	ase		Enter the number of	
(A) (B) Case Employee's name	(C) Job title	(D) Date of injury	(E) Where the event occurred	(F) Describe injury or illness, parts of body affected,	based of that car	in the mos	sed on the most serious autcome i at case:	ed on the most serious autcome for case:	days the injured or ill worker was:	Check the "Injury" column or choose one type of illness:
	(e.g., Welder)		(e.g., Loading dock north end)	and object/substance that directly injured or made person ill (e.g., Sacond degree burns on			Remai	Remained at Work	Away On job	sorder story on
				right forearm from acatylene torch)	Death	Days away from work	Job transfer or restriction	r Other record-	3 4	
					(G)	Ĵ]≘] ⓒ	(K)	(1) (2) (3) (4) (5) (6)
1 Perry Minando	Supervisor	3 / 7	20 West 84 St	Pain right knee, wear and tear		Ø			32 days days	
2 Igor Vdovitsky	Mechanic	5 / 1	auto accident	Lower back pain		0		O	days days	
3 Tom Hyde	Mechanic	5 / 7	2109 Broadway	Torn hand tendon caught in shaft					days days	
4 Eddie Torres	Apprentice	5 / 8	450 Clarkson	Thumb laceration, lifting		×	₽	O	13 days days	
5 Michael Dineen	Mechanic	6 / 1	120 East 86 St	Cut finger, adjusting equipment		×	D	Ó	66 days days	
6 Ian Brennan	Mechanic	6 /26	242 West 27 St	Injured shoulder, fall from ladder		×	D	- -	125 days days	
7 Mike Cassellano I	M <u>echanic</u>	7 /1	2109 Broadway	Groin injury, carrying cable		⊠	O		5 days days	
8 William Matero	Driver	10/19	2 Rector St	Knee, fell, hit knee on curb	O	×			47 days days	
9 Martin Molina	Mechanic	12/13	99-60 64 Ave	Pain shoulder down arm, lifting		Ø		O	10 days days	
10 Matthew McCourt	Mechanic	12/27	236 West 30 St	Crushed fingers, rebuilding brake		×		O	4 days days	
11 Mike Pertell	Mechanic	12/28	65 Columbia St	Pain wrist, lifting door		⊠		0	3 days days	
		nonth/day						O	days days	
	- Address of the second							O	days days	
		month/day		Page totals		9			<u>305</u>	y y l
Public reporting burden for this collection of information is estimated to average 14 minutes per response, including time to review the instructions, search and gather the data needed, and complete and review the collection of information. Persons are not required the instructions, search and gather the data needed, and complete and review the collection of information. Persons are not required the instruction and active for information in the large of the collection of information.	ation is estimated to a and complete and repair was	verage 14 minutes pe view the collection of i	r response, including time to review information. Persons are not require ther. If you have any comments	Be sure to transfer	hese totals t	o the Summa	ily page (Fom	these totals to the Summary page (Form 300A) before you post it	H.H.	Injury Skin disorde Respirator conditio Poisonin Flearing los All othe
about these estimates or any other aspects of this data collection, contact: US Department of Labor, OSHA Olitics of Statistical Analysis, Room N-3644, 20th Constitution Avenue, NW, Washington, DC 20210. Do not send the completed forms to this office.	ta collection, contact: I	OS Department of La 20210. Do not send th	bot, OSHA Office of Statistical e completed forms to this office.						Page of	(1) (2) (3) (4) (5) (6)

SAFETY QUESTIONNAIRE

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

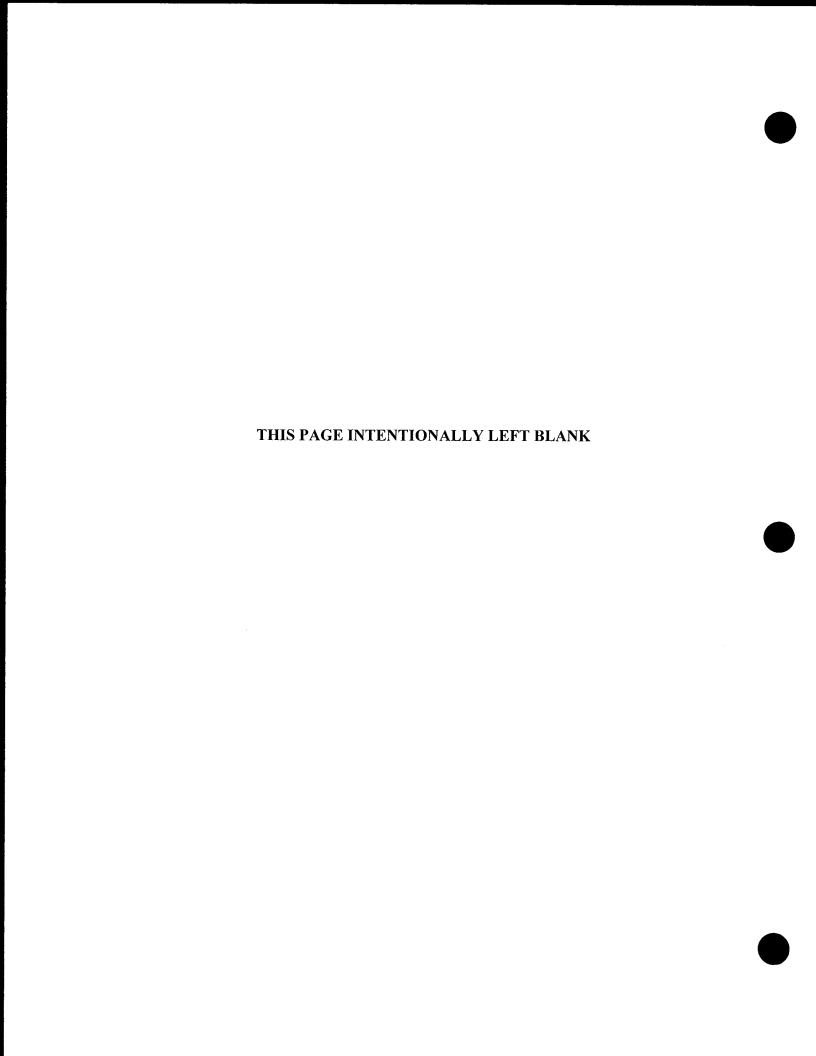
1. Bidder Information:		
Company Name:		
DDC Project Number:		
Company Size: Ten (10)	employees or less	
Greater t	han ten (10) employees	
Company has previously worked for DDC	YES	NO
2. Type(s) of Construction Work		
TYPE OF WORK	LAST 3 YEARS	THIS PROJECT
General Building Construction		
Residential Building Construction		
Nonresidential Building Construction		
Heavy Construction, except building		
Highway and Street Construction		
Heavy Construction, except highways		
Plumbing, Heating, HVAC	TAMA - 250 - 200 -	
Painting and Paper Hanging		
Electrical Work		
Masonry, Stonework and Plastering		
Carpentry and Floor Work	<u></u>	
Roofing, Siding, and Sheet Metal		
Concrete Work		
Specialty Trade Contracting		
Asbestos Abatement		
Other (specify)		

3. Experience Modification Rate:

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

The Contractor mus with less than three	t indicate its years of exp	s <u>Intra</u> state and <u>Inter</u> state EMR ferience, the EMR will be considered.	or the past three years. [Note: For contractors lered to be 1.00].
YEAR		INTRASTATE RATE	INTERSTATE RATE
must attach,	to this que	Interstate EMR for any of the pastionnaire, a written explanation situation resulting in that rating.	ast three years is greater than 1.00, the contractor for the rating and identify what corrective action
4. OSHA In	formation:		
YES	_NO	Contractor has received a willful vi Department of Buildings (NYCDO	olation issued by OSHA or New York City B) within the last three years.
YES	_ NO	related fatalities) or an incident re	quiring OSHA notification within 8 hours (all work- quiring OSHA notification within 24 hours (all work- all amputations and all losses of an eye).
employees, on a yearly	basis to com	n Act (OSHA) of 1970 requires emported and maintain on file the form s commonly referred to as the OSHA	entitled "Log of Work-related
The OSHA 300 Log m employees.	ust be submi	tted for the last three years for contr	actors with more than ten
The Contractor must for the past three year		e total number of hours worked l	by its employees, as reflected in payroll records
years. The Incider year, the total num	nt Rate is or ber of inci- The 200,000	calculated in accordance with dents is the total number of n	Injuries (the Incident Rate) for the past three the formula set forth below. For each given on-fatal injuries and illnesses reported on the lent of 100 employees working forty hours a
Incident Rate =		Total Number of Hours	of Incidents X 200,000 Worked by Employees

YEAR	TOTAL	NUMBERS OF HOURS WORKED BY EMPLOYEES	INCIDENT RATE
	-		
for the type of	constru	dent Rate for any of the past three years is etion it performs (listed below), the contract the relatively high rate.	
General Buildin	ig Constr	ruction	8.5
Residential Bui			7.0
Nonresidential I			10.2
Heavy Construc			8.7
Highway and St			9.7
Heavy Construc	ction, exc	ept highways	8.3
Plumbing, Heat	ing, HV	AC	11.3
Painting and Pa	per Hang	ging	6.9
Electrical Work			9.5
Masonry, Stone	work and	d Plastering	10.5
Carpentry and F			12.2
Roofing, Siding	g, and Sh	eet Metal	10.3
Concrete Work			8.6
Specialty Trade	Contrac	ting	8.6
5. Safety Perfo	ormance	on Previous DDC Project(s)	
YESN	Ю	Contractor previously audited by the DDC Of	ffice of Site Safety.
		DDC Project Number(s):	,,
YESN	О	Accident on previous DDC Project(s).	
		DDC Project Number(s):	,
YESN		Fatality or Life-altering Injury on DDC Proje [Examples of a life-altering injury include lossight, hearing), or loss of neurological functions.	s of limb, loss of a sense (e.g.,
		DDC Project Number(s):	,
Date:		Ву:	
		By:(Signature of Owner, Partn	er, Corporate Officer)
ł		Title:	



Pre-Award Process

The bidder is advised that as part of the pre-award review of its bid, it may be required to submit the information described in Sections (A) through (D) below. If required, the bidder must submit such information within five (5) business days following receipt of notification from DDC that it is among the low bidders. Such notification from DDC will be by facsimile or in writing and will specify the types of information which must be submitted.

In the event the bidder fails to submit the required information within the specified time frame, its bid may be rejected as nonresponsive.

- (A) **Project Reference Form**: If required, the bidder must complete and submit the Project Reference Form set forth on pages 28 through 30 of this Bid Booklet. The Project Reference Form consists of 3 parts: (1) Similar Contracts Completed by the Bidder, (2) Contracts Currently Under Construction by the Bidder, and (3) Pending Contracts Not Yet Started by the Bidder.
- (B) Copy of License: If required, the bidder must submit a copy of the license under which the bidder will be performing the work. Such license must clearly show the following: (1) Name of the Licensee, (2) License Number, and (3) Expiration date of the License. A copy of the license will be required from bidders for the following contracts: Plumbing Work, Electrical Work and Asbestos Abatement.
- (C) Financial Information: If required, the bidder must submit the financial information described below:
 - (1) Audited Financial Statements: Financial statements (Balance Sheet and Income Statement) of the entity submitting the bid, as audited by an independent auditor licensed to practice as a certified public accountant (CPA). Audited financial statements for the three most recent fiscal years must be submitted. Each such financial statement must include the auditor's standard report.

If the bidder does not have audited financial statements, it must submit an affidavit attesting to the fact that the bidder does not have such statements. In addition, the bidder must submit the following documentation covering the three most recent fiscal years: signed federal tax returns, unaudited financial statements, and a "certified review letter" from a certified public accountant (CPA) verifying the unaudited financial statements.

Unless the most recent audited or unaudited financial statement was issued within ninety (90) days, the bidder must submit interim financial information that includes data on financial position and results of operation (income data) for the current fiscal year. Such information may be summarized on a monthly or quarterly basis or at other intervals.

- (2) Schedule of Aged Accounts Receivable, including portion due within ninety (90) days.
- (D) **Project Specific Information**: If required, the bidder must submit the project specific information described below:
 - (1) Statement indicating the number of years of experience the bidder has had and in what type of construction.
 - (2) Resumes of all key personnel to be involved in the project, including the proposed project superintendent.
 - (3) List of significant pieces of equipment expected to be used for the contract, and whether such equipment is owned or leased.

- (4) Description of work expected to be subcontracted, and to what firms, if known.
- (5) List of key material suppliers.
- (6) Preliminary bar chart time schedule
- (7) Contractor's expected means of financing the project. This should be based on the assumption that the contractor is required to finance 2X average monthly billings throughout the contract period.
- (8) Any other issues the contractor sees as impacting his ability to complete the project according to the contract.

In addition to the information described in Sections (A) through (D) above, the bidder shall submit such additional information as the Commissioner may require, including without limitation, an explanation or justification for specific unit price items.

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

<u>></u> PROJECT REFERENCES - SIMILAR CONTRACTS COMPLETED BY THE BIDDER

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

*

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NYCHOSINX NYCHOSINX		9-20-12	+8,006,613	MOBBOATA TOWN	MANTENANCE + SERVICE FOR FLEURTOR +6,006,613
NYC Hous, 236	LOUIS CALLEGARI 7/8-709-5746 9/7-99/-6001	8-2-15	*11,190,310	MODERNZATION \$11,190,310	MANUFACE REHABILITATION MANUEL SERVICE FOR 20 ELEMTORS AT WASH WASTON NOUSES
NYCDCAS	MKMEL POSOZIN	10-27-14	+1,607,061	MODERNIZATION +1,607,061	AT 280 BROADWAY
NYS OFFICE OF	914-557-4235 NIGEL MELEAN	9-11-15	+7,093.856	REHABILITATION +7,093,656	DOWNSTATE
NYS DOEMITORY	718-25-4-85.70	51-13	MODERATION +382,208	ELENATOR MODERNATATION	MAMM HALL-ELEVATOR MODERANZATION - NYC. COLLEGE OF TECHNOLOGY
Architect/Engineer Reference & Tel. No. if different from owner	Owner Reference & Tel. No.	Date Completed	Contract Amount (\$000)	Contract Type	Project & Location

^{*} TO MODERNIZE ADDITIONAL ELEVATORS

æ PROJECT REFERENCES - CONTRACTS CURRENTLY UNDER CONSTRUCTION BY THE BIDDER

List all contracts currently under construction even if they are not similar to the contract being awarded.

180 Madison Avenue	138 Lafayette	463 Seventh Avenue	180 Water Street	Brooklyn Navy Yard C/O Plaza Constuction Corp	DASNY 300 Jay Street Namm Hall Elevators	Project & Location
Modernization & Maintenance	Modernization & Maintenance	Modernization & Maintenance	Modernization & Maintenance	Modernization & Maintenance	Elevator Mod & Maintenance	Contract Type
1.9 Million	1.3 Million	1.7 Million	2.8 Million	4.5 Million	3 Million	Contract Amount (\$000)
					\$900,000.00	Subcontracted to Others (\$000)
95% 1,800,000	50% \$650,000.00	50% \$850,000.00	90% \$2,520,000	66%\$3,000,000	2.5% \$75,000	Uncompleted Portion (\$000)
June 2016	January 2016	January 2016	September 16 2016	April 2017	Change order Pending to build 2 additional Elevators	Date Scheduled to Complete
CBRE Laura Bruno 212-576-1566	RFR Realty Jerry Schume 212-308-0700	Adams Real Estate Elev. Consultant Ken Walsh 917-326-5520 212-868-9090	CCM MGMT Mike Sciliani 212-937-3040	Oscor Morales Project Manager Plaza Const. 718-943-4793	John Kelly DASNY Project Manager 718-254-8570	Owner Reference & Tel. No.
Elev Consultant BOCA DannyGirgis 212-983-7010	Elev. Consultant BOCA 212-983-7010	Elev. Consultant VDA 212-868-9090	Elev. Consultant VDA 212-868-9090	Elev Consultant VDA Mike Wentworth 212-868-9090	Ken Baumgarten STV Construction 718- 243-2441	Architect/En gineer Reference & Tel. No. if different from owner

C. PROJECT REFERENCES – PENDING CONTRACTS NOT YET STARTED BY THE BIDDER

List all contracts awarded to or won by the bidder but not yet started.

	A SEX AMOUNTS TAXES	*	89 WAShington Place	143 W. 20 th Strat moderniens	BAY Park 142	50 Broadway	65 E 55 x STreet Modernization 4,600,000 Dec 2015	Project & Location
	OBDANIENTON 4	Modernization	Moderni z stom	Male tenane	markenous	Moderatzatun 3,086.000	Modern/2 stran	Contract Type
	1893181	375000 JAN 2016	265,800	523,000	2,400,000	3,086.00	4,609,000	Contract Amount (\$000)
Wide Statement of Strange or the Asternational Strange of Strange of Statement Statement of Strange	4,893,181 DEC 2015	And the state of t	Feb 2016	Feb 2016	2,400,000 April 2018	Dec 2015		Date Scheduled to Start
PARES-BOLSH	NYC Howard Authority Callegar	Chand Registy	MAYWELL KATESTER TOSH HOLZO	143-Sounes	Cremident Coremident Patrick Loristo	CASSIDY TORKEY	Bort Office	Owner Reference & Tel. No.
	NYC Howing NYCHA. Authority TIS-709-5746.	MANARASTY IBA	DTM ELLER CONSULTANTS CONSULTANTS		212-30-648 212868-9090 Cremider BOCA PATICLE BLUMBE CONSULTO 118-240-4111 312002 1111	ELWISTO CONSIAN BOD CUZZ	Bart Office ELer consultat	Architect/Engineer Reference & Tel. No. if different from

À PROJECT REFERENCES – SIMILAR CONTRACTS COMPLETED BY THE BIDDER

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

			Project & Location
			Contract Type
			Contract Amount (\$000)
			Date Completed
			Owner Reference & Tel. No.
			Architect/Engineer Reference & Tel. No. if different from owner

Β. PROJECT REFERENCES – CONTRACTS CURRENTLY UNDER CONSTRUCTION BY THE BIDDER

List all contracts currently under construction even if they are not similar to the contract being awarded.

			Project & Location
			Contract Type
			Contract Amount (\$000)
			Subcontracted to Others (\$000)
			Uncompleted Portion (\$000)
			Date Scheduled to Complete
			Owner Reference & Tel. No.
			Architect/En gineer Reference & Tel. No. if different from owner

C. PROJECT REFERENCES – PENDING CONTRACTS NOT YET STARTED BY THE BIDDER

List all contracts awarded to or won by the bidder but not yet started.

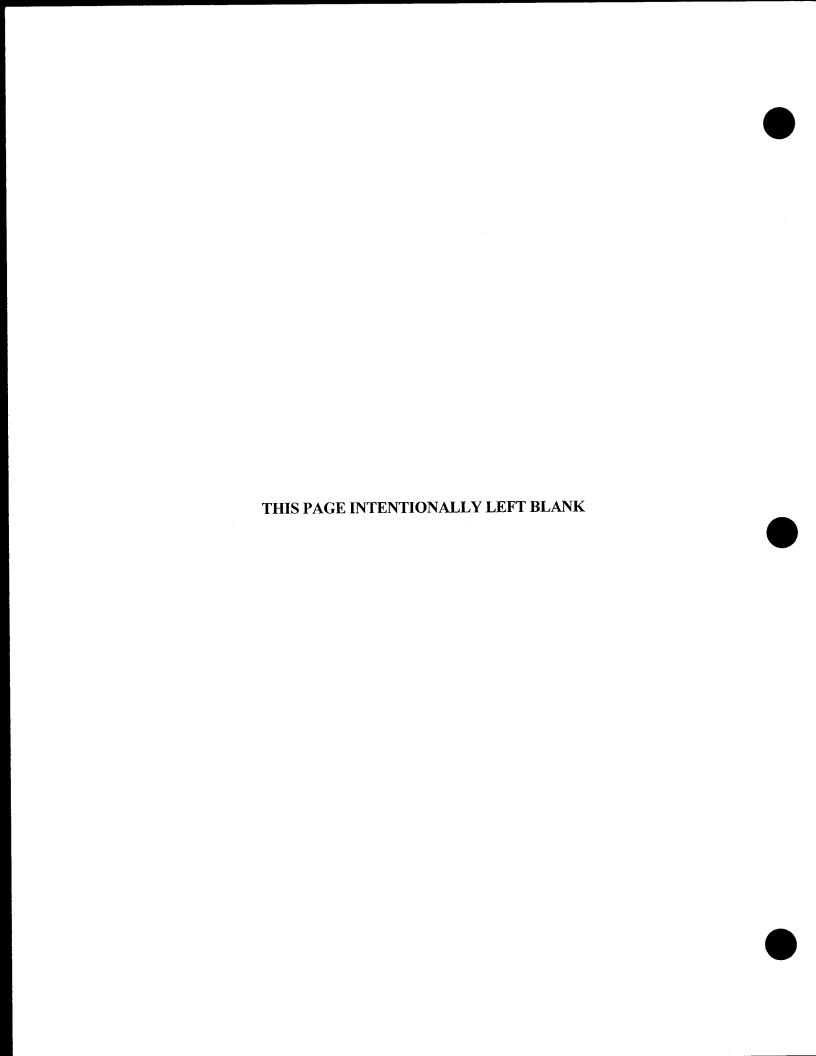
			Project & Location
			Contract Type
			Contract Amount (\$000)
			Date Scheduled to Start
			Owner Reference & Tel. No.
			Architect/Engineer Reference & Tel. No. if different from owner

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OFFICE OF THE MAYOR BUREAU OF LABOR SERVICES CONTRACT CERTIFICATE

10 be completed if the contract is less tha	an \$1,000,000
Contractor:	
Address:	
Telephone Number:	
Contracting Agency or Owner:	
Project Number:	
Proposed Contract Amount:	
Description and Address of Proposed Cor	ntract:
Names of Subcontractors in the amount of tate indicating that trades will be subcon	of 750,000 or more on this contract (if not known at this time, so stracted):
I, (fill in name of person signing)	4h- 1h
roposed contract with the above-named	the above-named contractor to certify that said contractor's owner or city agency is less than \$1,000,000. This affirmation der No. 50 (1980) as amended and its implementing regulations.
Date	Signature

WILLFUL OR FRAUDULENT FALSIFICATION OF ANY DATA OR INFORMATION SUBMITTED HEREWITH MAY RESULT IN THE TERMINATION OF ANY CONTRACT BETWEEN THE CITY AND THE BIDDER OR CONTRACTOR AND BAR THE BIDDER OR CONTRACTOR FROM PARTICIPATION IN ANY CITY CONTRACT FOR A PERIOD OF UP TO THREE YEARS. FURTHER, SUCH FALSIFICATION MAY RESULT IN CRIMINAL PROSECUTION.



VENDEX COMPLIANCE

- (A) Vendex Fees: Pursuant to Procurement Policy Board Rule 2-08(f)(2), the contractor will be charged a fee for the administration of the VENDEX system, including the Vendor Name Check process, if a Vendor Name Check review is required to be conducted by the Department of Investigation. The contractor shall also be required to pay the applicable required fees for any of its subcontractors for which Vendor Name Check reviews are required. The fee(s) will be deducted from payments made to the contractor under the contract. For contracts with an estimated value of equal to \$1,000,000, the fee will be \$175 per Vendor Name Check review. For contracts with an estimated value of greater than \$1,000,000, the fee will be \$350 per Vendor Name Check review.
- (B) <u>Confirmation of Vendex Compliance</u>: The Bidder shall submit this Confirmation of Vendex Compliance to the Department of Design and Construction, Contracts Section, 30-30 Thomson Avenue First Floor, Long Island City, NY 11101.

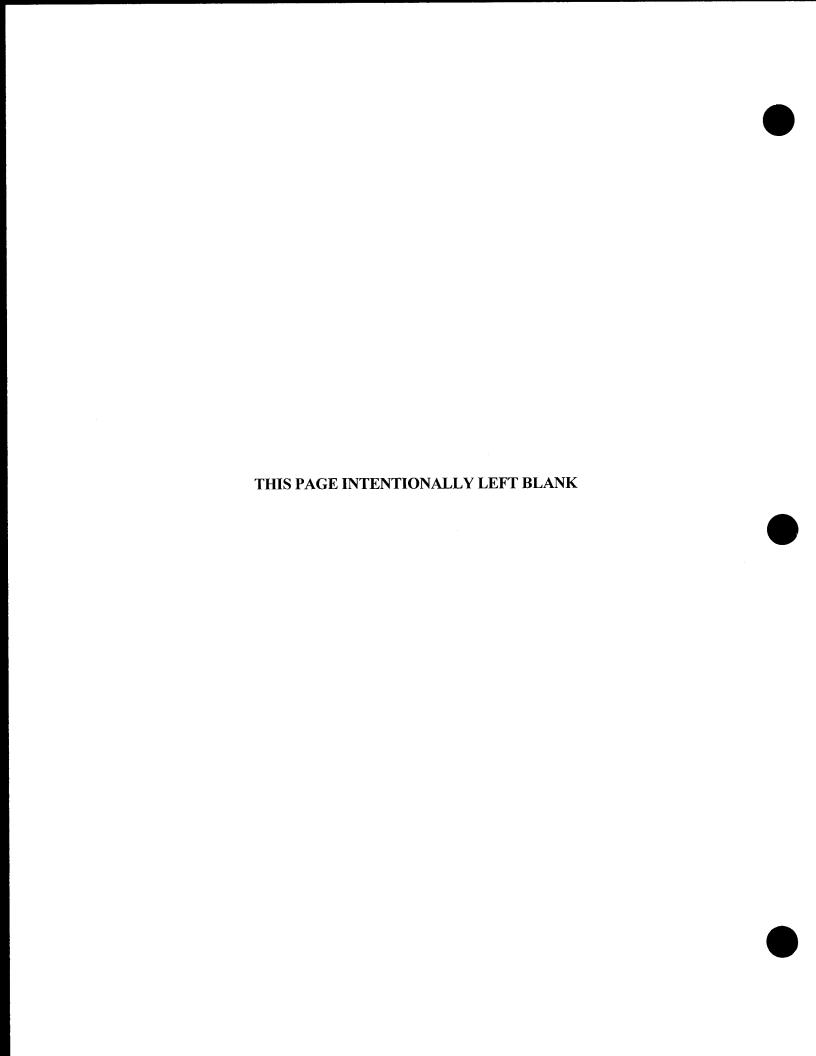
Bid Information: The Bidder shall complete the bid information set forth below. Name of Bidder: CENTENNIAL ELEVATOR /NOUSTRIES /NC Bidder's Address: 24-35 474 Aszoria 14/1103 Bidder's Telephone Number: 7/4-726-5900 Bidder's Fax Number: 7/4-724-0217 Date of Bid Opening: 9/20/15 Project ID: Co 300 1≥LV3 Vendex Compliance: To demonstrate compliance with Vendex requirements, the Bidder shall complete either Section (1) or Section (2) below, whichever applies. Submission of Vendex Questionnaires to MOCS: By signing in the space provided below, the Bidder certifies (1) that as of the date specified below, the Bidder has submitted Vendex Questionnaires to the Mayor's Office of Contract Services, Attn: VENDEX, 253 Broadway, 9th Floor, New York, New York 10007. By: And Pres.

(Signature of Partner or corporate officer) Print Name: RICHMO 1 ESPERANCE Submission of Certification of No Change to DDC: By signing in the space provided below, the Bidder (2) certifies that it has read the instructions in a "Vendor's Guide to Vendex" and that such instructions do not require the Bidder to submit Vendex Questionnaires. The Bidder has completed TWO ORIGINALS of the Certification of No Change set forth on the next page of this Bid Booklet. By: _____ (Signature of Partner or corporate officer) Print Name:

VENDEX COMPLIANCE

- (A) <u>Vendex Fees</u>: Pursuant to Procurement Policy Board Rule 2-08(f)(2), the contractor will be charged a fee for the administration of the VENDEX system, including the Vendor Name Check process, if a Vendor Name Check review required to be conducted by the Department of Investigation. The contractor shall also be required to pay the applicable required fees for any of its subcontractors for which Vendor Name Check reviews are required. The fee(s) will be deducted from payments made to the contractor under the contract. For contracts with an estimated value of equal to \$1,000,000, the fee will be \$175 per Vendor Name Check review. For contracts with an estimated value of greater than \$1,000,000, the fee will be \$350 per Vendor Name Check review.
- **(B)** Confirmation of Vendex Compliance: The Bidder shall submit this Confirmation of Vendex Compliance to the Department of Design and Construction, Contracts Section, 30-30 Thomson Avenue First Floor, Long Island City, NY 11101.

Bid Information: The Bidder shall complete the bid information set forth below. Name of Bidder: Bidder's Address: Bidder's Telephone Number: Bidder's Fax Number: Date of Bid Opening: Project ID: Vendex Compliance: To demonstrate compliance with Vendex requirements, the Bidder shall complete either Section (1) or Section (2) below, whichever applies. (1)Submission of Vendex Questionnaires to MOCS: By signing in the space provided below, the Bidder certifies that as of the date specified below, the Bidder has submitted Vendex Questionnaires to the Mayor's Office of Contract Services, Attn: VENDEX, 253 Broadway, 9th Floor, New York, New York 10007. Date of Submission: (Signature of Partner or corporate officer) Print Name: (2) Submission of Certification of No Change to DDC: By signing in the space provided below, the Bidder certifies that it has read the instructions in a "Vendor's Guide to Vendex" and that such instructions do not require the Bidder to submit Vendex Questionnaires. The Bidder has completed TWO ORIGINALS of the Certification of No Change set forth on the next page of this Bid Booklet. (Signature of Partner or corporate officer) Print Name:



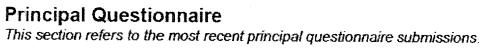
DIRECTIONS: Please execute two originals (both with original signature). Please forward directly to the agency (not M.O.C.S.).

Certificate of No Change Form



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

 A materially false statement willfully or fraudulently made in connection with this certification may subject the person making the false statement to criminal charges
I, PICHARA LESPERANCE, being duly swom, state that I have read
and understand all the items contained in the vendor questionnaire and any submission of change as identified on page one of this form and certify that as of this date, these items have not changed. I further certify that, to the best of my knowledge, information and belief, those answers are full, complete, and accurate; and that, to the best of my knowledge, information, and belief, those answers continue to be full, complete, and accurate.
In addition, I further certify on behalf of the submitting vendor that the information contained in the principal questionnaire(s) and any submission of change identified on page two of this form have not changed and have been verified and continue, to the best of my knowledge, to be full, complete and accurate.
I understand that the City of New York will rely on the information supplied in this certification as additional inducement to enter into a contract with the submitting entity.
Vendor Questionnaire This section is required. This refers to the vendor questionnaire(s) submitted for the vendor doing business with the City.
Name of Submitting Entity: GENTENNIAL ELEVATER (NOVSTRIES INC
Vendor's Address: 24-35 47th STREET, ASTORIA, N. Y-11103
Vendor's EIN or TIN: 11-2379315 Requesting Agency: NYCD.D.C.
Are you submitting this Certification as a parent? (Please circle one) Yes No
Signature date on the last full vendor questionnaire signed for the submitting vendor: 4-28-3014.
Signature date on change submission for the submitting vendor:





Principal Name	Date of signature on last full Principal Questionnaire	Date(s) of signature on submission of change
1 RICHARD LESPERANCE	4-28-14	
2 RICHARD TIESGRANCE 3 GUS CATANZARO	42814	
3 bus CATANZARD	4-28-14	
4 ERIC L'ESPERANCE	42544	
5	·	
6	·	→
Check if additional changes were submitted	d and attach a document with th	e date of additional submissions.
Certification This section is require This form must be signed and notarized. P Certified By: Temper Lesperance Name (Print)	ed. lease complete this twice. (Copies will not be accepted.
Pres / C.E.O. Title		
CENTENNIAL ELEVATOR INC	oustries luc	
Name of Submitting Entity Signature		9-28-15 Date
Notarized By:		
Notary Public	County License Issued	License Number
Sworn to before me on: 9-28-15 Date	NOTARY PUBL	NUEL BACOLAS IC - STATE OF NEW YORK 01BA5014881

Qualified in Rockland County My Commission Expires July 12, 2015-2019 DIRECTIONS: Please execute two originals (both with original signature).

Please forward directly to the agency (not M.O.C.S.).

Certificate of No Change Form



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

I,Enter Your Name	, being duly sworn, state that I have read
and understand all the items contained in the vendor as identified on page one of this form and certify that changed. I further certify that, to the best of my know are full, complete, and accurate; and that, to the best those answers continue to be full, complete, and accurate	as of this date, these items have not dedge, information and belief, those answers of my knowledge, information, and belief,
In addition, I further certify on behalf of the submitting principal questionnaire(s) and any submission of char not changed and have been verified and continue, to and accurate.	nge identified on page two of this form have
I understand that the City of New York will rely on the additional inducement to enter into a contract with the	• •
Vendor Questionnaire This section is requ This refers to the vendor questionnaire(s) submitted t	
Name of Submitting Entity:	
Vendor's Address:	
Vendor's EIN or TIN:Requ	ıesting Agency:
Are you submitting this Certification as a parent? (Ple	ease circle one) Yes No
Signature date on the last full vendor questionnaire si	gned for the submitting vendor:
Signature date on change submission for the submitti	na vendor:



Principal Questionnaire
This section refers to the most recent principal questionnaire submissions.

Principal Name	Date of signature on last full Principal Questionnaire	Date(s) of signature on submission of change
1		
2		
3		
4		
5		
6		
Check if additional changes were subm	nitted and attach a document with th	e date of additional submissions.
This form must be signed and notarized Certified By: Name (Print)	d. Please complete this twice. C	opies will not be accepted.
Title		
Name of Submitting Entity		
Signature		Date
Notarized By:		
Notary Public	County License Issued	License Number
Sworn to before me on: Date		

DIRECTIONS: Please execute two originals (both with original signature).

Please forward directly to the agency (not M.O.C.S.).

Certificate of No Change Form



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

I,, being duly swom, state that I have read
Enter Your Name
and understand all the items contained in the vendor questionnaire and any submission of change as identified on page one of this form and certify that as of this date, these items have not changed. I further certify that, to the best of my knowledge, information and belief, those answers are full, complete, and accurate; and that, to the best of my knowledge, information, and belief, those answers continue to be full, complete, and accurate.
In addition, I further certify on behalf of the submitting vendor that the information contained in the principal questionnaire(s) and any submission of change identified on page two of this form have not changed and have been verified and continue, to the best of my knowledge, to be full, complete and accurate.
I understand that the City of New York will rely on the information supplied in this certification as additional inducement to enter into a contract with the submitting entity.
Vendor Questionnaire This section is required. This refers to the vendor questionnaire(s) submitted for the vendor doing business with the City.
Name of Submitting Entity:
Vendor's Address:
Vendor's EIN or TIN: Requesting Agency:
Are you submitting this Certification as a parent? (Please circle one) Yes No
Signature date on the last full vendor questionnaire signed for the submitting vendor:
Signature date on change submission for the submitting vendor:





Principal Name	Date of signature on last full Principal Questionnaire	Date(s) of signature on submission of change
1		
2		
3		
4		
5		
6		
Check if additional changes were s	submitted and attach a document with the	e date of additional submissions.
Certified By: Name (Print)	rized. Please complete this twice. C	Copies will not be accepted.
Title		
Name of Submitting Entity		
Signature		Date
Notarized By:		
Notary Public	County License Issued	License Number
Sworn to before me on:		

IRAN DIVESTMENT ACT COMPLIANCE RIDER

FOR NEW YORK CITY CONTRACTORS

The Iran Divestment Act of 2012, effective as of April 12, 2012, is codified at State Finance Law ("SFL") §165-a and General Municipal Law ("GML") §103-g. The Iran Divestment Act, with certain exceptions, prohibits municipalities, including the City, from entering into contracts with persons engaged in investment activities in the energy sector of Iran. Pursuant to the terms set forth in SFL §165-a and GML §103-g, a person engages in investment activities in the energy sector of Iran if:

- (a) The person provides goods or services of twenty million dollars or more in the energy sector of Iran, including a person that provides oil or liquefied natural gas tankers, or products used to construct or maintain pipelines used to transport oil or liquefied natural gas, for the energy sector of Iran; or
- (b) The person is a financial institution that extends twenty million dollars or more in credit to another person, for forty-five days or more, if that person will use the credit to provide goods or services in the energy sector in Iran and is identified on a list created pursuant to paragraph (b) of subdivision three of Section 165-a of the State Finance Law and maintained by the Commissioner of the Office of General Services.

A bid or proposal shall not be considered for award nor shall any award be made where the bidder or proposer fails to submit a signed and verified bidder's certification.

Each bidder or proposer must certify that it is not on the list of entities engaged in investment activities in Iran created pursuant to paragraph (b) of subdivision 3 of Section 165-a of the State Finance Law. In any case where the bidder or proposer cannot certify that they are not on such list, the bidder or proposer shall so state and shall furnish with the bid or proposal a signed statement which sets forth in detail the reasons why such statement cannot be made. The City of New York may award a bid to a bidder who cannot make the certification on a case by case basis if:

- (1) The investment activities in Iran were made before the effective date of this section (i.e., April 12, 2012), the investment activities in Iran have not been expanded or renewed after the effective date of this section and the person has adopted, publicized and is implementing a formal plan to cease the investment activities in Iran and to refrain from engaging in any new investments in Iran: or
- (2) The City makes a determination that the goods or services are necessary for the City to perform its functions and that, absent such an exemption, the City would be unable to obtain the goods or services for which the contract is offered. Such determination shall be made in writing and shall be a public document.

BIDDER'S CERTIFICATION OF COMPLIANCE WITH IRAN DIVESTMENT ACT

Pursuant to General Municipal Law §103-g, which generally prohibits the City from entering into contracts with persons engaged in investment activities in the energy sector of Iran, the bidder/proposer submits the following certification:

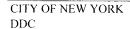
[Please	e Check One]	
BIDDE	R'S CERTIFICATION	
4	bidder/proposer certifies, and in the organization, under penalty of perjur	each bidder/proposer and each person signing on behalf of any case of a joint bid each party thereto certifies as to its own y, that to the best of its knowledge and belief, that each d pursuant to paragraph (b) of subdivision 3 of Section 165-a of
		nd the name of the bidder/proposer does not appear on the list bdivision 3 of Section 165-a of the State Finance Law. I have in detail why I cannot so certify.
Dated:	2 2 , New York 9/16, 20/1	SIGNATURE RICHMO LESPERANCE PRINTED NAME FRES. TITLE
	to before me this day on 19/1/2015	
Notary I	Public	
Dated:	EMANOET PASCE (C	
	NOTARY PUBLIC - STATE OF NEW YORK	
	No. 01BA5014881	

Qualified in Rockland County My Commission Expires July 12, 2015 00/9

BIDDER'S CERTIFICATION OF COMPLIANCE WITH IRAN DIVESTMENT ACT

Pursuant to General Municipal Law §103-g, which generally prohibits the City from entering into contracts with persons engaged in investment activities in the energy sector of Iran, the bidder/proposer submits the following certification:

[Pleas	e Check One]			
BIDDE	R'S CERTIFICATION			
	By submission of this bid or proposal, each bidder/proposer and each person signing on behalf of any bidder/proposer certifies, and in the case of a joint bid each party thereto certifies as to its own organization, under penalty of perjury, that to the best of its knowledge and belief, that each bidder/proposer is not on the list created pursuant to paragraph (b) of subdivision 3 of Section 165-a of the State Finance Law.			
	created pursuant to paragraph (b)	me and the name of the bidder/proposer does not appear on the list of subdivision 3 of Section 165-a of the State Finance Law. I have forth in detail why I cannot so certify.		
Dated:	, New York			
		SIGNATURE		
		PRINTED NAME		
	o before me this ay of, 20	TITLE		
Notary I	Public			
Dated:				



CITY OF NEW YORK

DIVISION OF LABOR SERVICES

CONSTRUCTION EMPLOYMENT REPORT

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The City of New York Department of Small Business Services Division of Labor Services Contract Compliance Unit 110 William Street, New York, New York 10038

Phone: (212) 513 - 6323

Fax: (212) 618-8879 CONSTRUCTION EMPLOYMENT REPORT

GEN	NERAL INFORMATION
1.	Your contractual relationship in this contract is: Prime contractor Subcontractor
1a.	Are M/WBE goals attached to this project? Yes No
2.	Please check one of the following if your firm would like information on how to certify with the City of New York as a:
	Minority Owned Business EnterpriseLocally Based Business EnterpriseLocally Based Business EnterpriseEmerging Business EnterpriseDisadvantaged Business Enterprise
2a.	If you are certified as an MBE, WBE, LBE, EBE or DBE, what city/state agency are you certified with? Are you DBE certified? Yes No
3.	Please indicate if you would like assistance from SBS in identifying certified M/WBEs for contracting opportunities: YesNo/
4.	Is this project subject to a project labor agreement? Yes No
5.	Are you a Union contractor? Yes No If yes, please list which local(s) you affiliated with Local 3 _ I.S.E.W
6.	Are you a Veteran owned company? Yes No
PART	I: CONTRACTOR/SUBCONTRACTOR INFORMATION
7.	11-2379315 Employer Identification Number or Federal Tax I.D. Email Address
8.	CENTENNIAL ELEVATOR /NOUSTRIES /NC Company Name
9.	2435 47st Astoria, NY 11103 Company Address and Zip Code
10.	Richard T. L'Esperances 718-726-7900 Chief Operating Officer Telephone Number
11.	Partition T Lesperance 714-726-79-00 Designated Equal Opportunity Compliance Officer (If same as Item #10, write "same") Telephone Number
12.	Name of Prime Contractor and Contact Person (If same as Item #8, write "same")

13.	Number of employees in your company: 237
14.	Contract information:
	(a) NYCPDC (b) 10,975793 Contracting Agency (City Agency) Contract Amount
	(c) 850 6 B00 2 (d) UNENUWN Procurement Identification Number (PIN) Contract Registration Number (CT#)
	(e) UNKNUWN (f) 540 CACONDINATION S. Projected Commencement Date
	(g) Description and location of proposed contract: Queens Suffere Court Elevator Modernization +
	UPBRADE
15,	Has your firm been reviewed by the Division of Labor Services (DLS) within the past 36 months and Issued a Certificate of Approval? Yes No
	If yes, attach a copy of certificate. SEENTRENET
16.	Has DLS within the past month reviewed an Employment Report submission for your company and issued a Conditional Certificate of Approval? Yes No
	If yes, attach a copy of certificate.
W	OTE: DLS WILL NOT ISSUE A CONTINUED CERTIFICATE OF APPROVAL IN CONNECTION THE THIS CONTRACT UNLESS THE REQUIRED CORRECTIVE ACTIONS IN PRIOR NDITIONAL CERTIFICATES OF APPROVAL HAVE BEEN TAKEN.
17.	Has an Employment Report already been submitted for a different contract (not covered by this Employment Report) for which you have not yet received compliance certificate? YesNoV If yes,
	Date submitted:
	Agency to which submitted: Name of Agency Person: Contract No:
	Contract No: Telephone:
18.	Has your company in the past 36 months been audited by the United States Department of Labor, Office of Federal Contract Compliance Programs (OFCCP)? Yes No
	If yes,
Page 2 Revised FOR O	ا 8/13 FFICIAL USE ONLY: File No. و المرابع ا
	•

(a) Na 	ame and address of OFCCP office.
(b) W	as a Certificate of Equal Employment Compliance issued within the past 36 months?
lf y	es, attach a copy of such certificate.
(c) We	ere any corrective actions required or agreed to? Yes No
If y	res, attach a copy of such requirements or agreements.
(d) We	ere any deficiencies found? Yes No
if y	es, attach a copy of such findings.
is respi	company or its affiliates a member or members of an employers' trade association which onsible for negotiating collective bargaining agreements (CBA) which affect construction ing? Yes No
If yes, a	attach a list of such associations and all applicable CBA's.
RTII: DOC	CUMENTS REQUIRED SEE NITHE HEA
Diochui	following policies or practices, attach the relevant documents (e.g., printed booklets, es, manuals, memoranda, etc.). If the policy(ies) are unwritten, attach a full explanation ractices. See instructions.
es (a)	Health benefit coverage/description(s) for all management, nonunion and union employees (whether company or union administered)
Yes (b)	
No (c)	Employee Policy/Handbook
N ₀ (d)	Personnel Policy/Manual
No (e)	Supervisor's Policy/Manual
Yes (f)	Pension plan or 401k coverage/description for all management, nonunion and union employees, whether company or union administered
¥€1 (9)	Collective bargaining agreement(s).
(h)	Employment Application(s)
<u>// v</u> (i)	Employee evaluation policy/form(s).
<u>No</u> (j)	Does your firm have medical and/or non-medical (i.e. education, military, personal, pregnancy, child care) leave policy?
	(b) We If y (c) We If y (d) We If y (d) We If y (d) We If y (e) If y (f) Is your is responsite hirition of the p (b) (c) (d) (e) (f) (f) (g) (h) (h) (i)

21.	To comply with the Immigration Reform and Control Act of 1986 when <u>and of whom</u> does your firm require the completion of an I-9 Form?
	(a) Prior to job offer Yes No (b) After a conditional job offer Yes No (c) After a job offer Yes No (d) Within the first three days on the job Yes No (e) To some applicants Yes No (f) To all applicants Yes No (g) To some employees Yes No (h) To all employees Yes No
22.	Explain where and how completed I-9 Forms, with their supportive documentation, are maintained and made accessible. I-9 FORMS ARE FILED & MAINTAINED IN HR. DEPT IN EMPLOYEE FILE
23.	Does your firm or any of its collective bargaining agreements require job applicants to take a medical examination? Yes No
	If yes, is the medical examination given:
	(a) Prior to a job offer (b) After a conditional job offer (c) After a job offer (d) To all applicants (e) Only to some applicants Yes No Yes No Yes No No
	If yes, list for which applicants below and attach copies of all medical examination or questionnaire forms and instructions utilized for these examinations. MEDICAL PEPT. MEDICAL PEPT.
24.	Do you have a written equal employment opportunity (EEO) policy? Yes X No
	If yes, list the document(s) and page number(s) where these written policies are located.
25.	Does the company have a current affirmative action plan(s) (AAP) Minorities and Women Individuals with handicaps Other. Please specify
26.	Does your firm or collective bargaining agreement(s) have an internal grievance procedure with respect to EEO complaints? Yes No
	If yes, please attach a copy of this policy. Local 3, I.B. E.W.
	If no, attach a report detailing your firm's unwritten procedure for handling EEO complaints.
Page 4 Revised FOR OF	8/13 FICIAL USE ONLY: File No.

If yes, attach an internal complaint log. See instructions. Has your firm, within the past three years, been named as a defendant (or respondent) in any administrative or judicial action where the complainant (plaintiff) alleged violation of any anti-discrimination or affirmative action laws? Yes No	27.	Has any employee, within the past three years, filed a complaint pursuant to an internal grievance procedure or with any official of your firm with respect to equal employment opportunity? Yes No_★
administrative or judicial action where the complainant (plaintiff) alleged violation of any anti- discrimination or affirmative action laws? Yes No		If yes, attach an internal complaint log. See instructions.
29. Are there any jobs for which there are physical qualifications? Yes No If yes, list the job(s), submit a job description and state the reason(s) for the qualification(s). Are there any jobs for which there are age, race, color, national origin, sex, creed, disability, marital status, sexual orientation, or citizenship qualifications? Yes No	28.	administrative or judicial action where the complainant (plaintiff) alleged violation of any anti-
If yes, list the job(s), submit a job description and state the reason(s) for the qualification(s). Are there any jobs for which there are age, race, color, national origin, sex, creed, disability, marital status, sexual orientation, or citizenship qualifications? Yes No		If yes, attach a log. See instructions.
O. Are there any jobs for which there are age, race, color, national origin, sex, creed, disability, marital status, sexual orientation, or citizenship qualifications? Yes No	9.	Are there any jobs for which there are physical qualifications? Yes No_X
marital status, sexual orientation, or citizenship qualifications? Yes No		If yes, list the job(s), submit a job description and state the reason(s) for the qualification(s).
If yes, list the job(s), submit a job description and state the reason(s) for the qualification(s).).	Are there any jobs for which there are age, race, color, national origin, sex, creed, disability, marital status, sexual orientation, or citizenship qualifications? Yes No
		If yes, list the job(s), submit a job description and state the reason(s) for the qualification(s).

SIGNATURE PAGE

I, (print name of authorized official signing) Richard LESPERANCE hereby certify that
I, (print name of authorized official signing) Wichen Lespendice hereby certify that the information submitted herewith is true and complete to the best of my knowledge and belief and
submitted with the understanding that compliance with New York City's equal employment
requirements, as contained in Chapter 56 of the City Charter, Executive Order No. 50 (1980), as
amended, and the implementing Rules and Regulations, is a contractual obligation. I also agree on
behalf of the company to submit a certified copy of payroll records to the Division of Labor Services on
a monthly basis.
CENTENNIAL ELEVATION MOUSTRIES /NC.
Contractor's Name
Pres.
Name of person who prepared this Employment Report Title
Richard Les renance Paes. Name of official authorized to sign on behalf of the contractor Title
Name of official authorized to sign off behalf of the contractor
718-726-5900
Telephone Number
1) he de gliple
Signature of authorized official Date
to the boundary title and self-under in any sign band board or Chapter
If contractors are found to be underutilizing minorities and females in any given trade based on Chapter 56 Section 3H, the Division of Labor Services reserves the right to request the contractor's workforce
data and to implement an employment program.
Contractors who fail to comply with the above mentioned requirements or are found to be in
noncompliance may be subject to the withholding of final payment.
Willful or fraudulent falsifications of any data or information submitted herewith may result in the
termination of the contract between the City and the bidder or contractor and in disapproval of future
contracts for a period of up to five years. Further, such falsification may result in civil and/and or
criminal prosecution.
To the extent permitted by law and consistent with the proper discharge of DLS' responsibilities under
Charter Chapter 56 of the City Charter and Executive Order No. 50 (1980) and the implementing Rules
and Regulations, all information provided by a contractor to DLS shall be confidential.
Only original signatures accepted.
Sworn to before me this 16 day of Veptonker, 20/5
Aut 5 9/16/15
Notary Public Authorized Signature Date
EMANUEL BACOLAS
NOTARY PUBLIC - STATE OF NEW YORK No. 019A5014881
Qualified in Rockland County
Page 6 My Commission Expires July 12, 2015 3019
Revised 8/13
FOR OFFICIAL LISE ONLY: File No.

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

- Do you plan to subcontractor work on this contract? Yes _ No____
- If yes, complete the chart below.

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

Fre STAR	Hyler Cleans	ANA Massacar	MARSA RUMBUL	SUBCONTRACTOR'S NAME*
ASTAN	しだす	16.Aw	D'ALE	OWNERSHIP (ENTER APPROPRIATE CODE LETTERS BELOW)
Cremsey Cre	Fax Alany	Will Office	Springers	WORK TO BE PERFORMED BY SUBCONTRACTOR
(Jepans	Electoral	#OA	Number	TRADE PROJECTED FOR USE BY SUBCONTRACTOR
276,000	964,320	1,160,350	C09,4126	PROJECTED DOLLAR VALUE OF SUBCONTRACT

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

OWNERSHIP CODES W: White

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

Page 8

FORM B: PROJECTED WORKFORCE

TRADE
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(J) Journeylevel Workers(H) Helper

(TOT) Total by Column

(A) Apprentice (TRN) Trainee

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

Trade:			>	MALES				FE	FEMALES		
FLEVENDA		(1) (1)	Rlack	(3)	4	(5)	(6)	D (7)	(8)	(9)	(10)
Jnion Affiliation, if applicable		Non Hisp.	Non Hisp.	Hisp.	Asian	Native Amer.	Non Hisp.	Non Hisp.	Hisp.	Asian	Native Amer.
otal (Col. #1-10):	ر	W		***************************************	0	0	0	0	0	0	0
Total Minority, Male & Female	I	0	0	0	0	0	0	Ö	0	0	C
Col. #2,3,4,5,7,8,9, & 10):	A	(V)	months.	^{Magagatour}	8	0	0	0	0	0	С
Col. #6 – 10):	TRN	0	0	0	0	0	0	0	0	0	0
	TOT	8	N	N	0	C	O	0	0	0	0

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

FORM C: CURRENT WORKFORCE

TRADE CLASSIFICATION CODES

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

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

	(Col. #6 7 10):	Total Eamala	Total Minority, Male & Female	Total (Çol. #1-10):	Union Affiliation, if applicable Local 3		Trade:
		я Го).	& Female	į	pplicable		
TOT	TRN	>	- =	د			
134	0	40	7	12	Non Hisp.	(1)	
134 29	0	9	4	16	Non Hisp.	B (2)	2
36	0	\$	2	26	Hisp.	(3)	MALES
4	0	0	C	4	Asian	(4)	
c	0	O	0	8	Native Amer.	(5)	
					_		
_	B	0	0		Non Hisp	(6)	
0	0	6	ઉ	0	Non Hisp.	(7)	FE
Ø	Ø	6	6	B	Hisp.	(8)	FEMALES
Ø	G	6	8	O	Asian	(9)	
0	0	U	C	O	Native Amer.	(10)	

Revised 8-13 Pare 1 What are the recruitment sources for you projected hires (i.e., unions, government employment office, job tap center, community outreach)?

FOR OFFICIAL USE ONLY: File Ne.



Maria Torres-Springer Commissioner

215IC053

March 25, 2015

Mr. Emanuel Bacolas Payroll Manager Centennial Elevator 24-35 47th Street Astoria, NY 11103

RE:

Department of Finance Contract; sub to Newgrange Construction Company construction manager to Soho Hotel Owner; Block 209, Lot 19; Elevator work located at 138 Lafayette Street; Borough of Manhattan; Contract Value: \$1,128,361; **Continued Certificate of Approval.**

Dear Mr. Bacolas:

Please be advised that Centennial Elevator has already received notice of its approval status for the three (3) year period indicated in the Department of Small Business Services/Division of Labor Services' (DLS) Certificate of Approval letter effective May 23, 2013 for file number 213IC043.

As your organization continues to meet the equal employment opportunity requirements of the City of New York, DLS approves the awarding of the above-referenced contract. This approval does not extend the initial 3-year approval (May 23, 2013 to May 23, 2016) referred to above.

If you have any questions, please call Lisa Middleton at (212) 618-8823 or email her at limiddleton@sbs.nyc.gov.

Very truly yours,

Helen Wilson

Assistant Commissioner Division of Labor Services

CC:

Lisa Middleton

Flor A. Micaela Perry

FILE

110 William Street, New York, NY 10038
Tel 212.513.6300 *Fax 212.618.8991*TDD 212.513.6306
WWW.nyc.gov/sbs



QUESTION 24

EQUAL EMPLOYMENT OPPORTUNITY POLICY

It is the policy of Centennial Elevator Industries not to discriminate against any employee or applicant for employment because of race, creed, color, national origin, sex, age, disability, marital status, sexual orientation, or citizenship status. We will take specific action to ensure that applicants are employed and that employees are treated during employment, without regard to their race, creed, color, national origin, sex, age, disability, marital status, sexual orientation, or citizenship status. Such action shall include, but not be limited to the following: recruitment, hiring, compensation, training, and apprenticeship, promotion, upgrading, demotion, downgrading, transfer, layoff and termination, and all other terms and conditions of employment except as provided by law.

GERARD L'E SPERANCE has been appointed Director of our Equal Employment Opportunity programs. As Director of Centennial Elevator Industries' Equal Employment Opportunity programs, Contact Person's responsibility includes:

- 1. Developing policy statement, equal employment programs, internal and external communication techniques and programs;
- 2. Assisting in the identification of problem areas;
- 3. Assisting line management in arriving at solutions to problems;
- 4. Designing and implementing audit and reporting systems that will:
 - (a) measure effectiveness of the policy and implementing programs, including supervisors' and management's adherence to the Equal Employment Opportunity Policy;
 - (b) indicate need for remedial action; and
 - (c) determine the degree to which the equal employment objectives have been met.
- 5. Serve as liaison between the company and enforcement agencies;

Centennial Elevator Industries

EEO Policy Statement

Page 2

6. Serve as liaison between the company and minority organizations, women's organizations, and advocate organizations for other protected groups and community action groups concerned with Equal Employment Opportunity.

To ensure adherence to this policy, performance evaluations for supervisory personnel shall include ratings on their Equal Employment Opportunity efforts and results.

Additionally, in the furtherance of our Equal Employment Opportunity commitment GENERO L'EXPENCE shall insist that labor union and other recruiting sources actively recruit and refer members of all protected groups for all positions; incorporate non-discriminatory provisions in all its contracts and purchase orders; include the EEO logo, slogan or statement in all solicitations or advertisements for employees.

Centennial Elevator Industries

Contact Person Fever MyacoreuA.

SIGNATURE

HEALTH \$1500.00 out of pocket-family

\$250.00 " a " -slukuidud

Prepared For: Centennial Elevator Inc.

Queens County, NY 11103

Prepared By: Gallagher Benefit Services, Inc. - (516)622-2512

Prepared By: Gallagher Benefit Services, Inc. - (516)622-2512

	CD EPO	Emblem EPO 5 100%\$\$,800 HDHP(HSA)
	In-Network	Out-Network
Deposition of the second		UÇR=NVA
Prescription Card	100% after ded	UCH-IWA
Appropriate and the second		
Deductible Ind/Fam	\$5,800/\$11,600	
Co-Insurance	NA	
Out-at-Packet	(beb ban) 003,112,0008,22	
Office Co-pay	No charge after ded	
DXL/Lab Fees	No charge after ded	
Specialist Co-pay	No charge after ded	·
Ulelime Maximum	Unlimited ·	
Prospirate and the second		
Hospital In-Patient	No charge after ded	
Hospital Out-Patient	No charge after ded	
Emergency Room	No charge after ded (waived if admit)	
Private Nursing	Not covered	
Sungical in-Patient	No charge after ded	
Surgical Out-Patient	No charge after ded	1
Mental Nervous In-Patient	No charge after ded 30 days/cal yr Unlimit blo-based	led
Substance Abuse In-Palient	No charge after ded Rehati-30 days/cal yr Detox-7 days/cal yr	1
lental Nervous Out-Patient	No charge after ded 30 visitsical yr Unlinika tilo-based	54
ubstance Abuse Out Patient	No charge after ded 60 visits/cal yr Up to 20 family visits	
hand or in 2008 (\$2000) to		
eli Care(Up to 19)	No charge	1
utine Adult Care	No charge (annual physical)	
ropractic Care	No charge after ded	
ne Health Care	No charge after ded; 200 visits/cal yr	l
Authorizatio n	Refer to carrier	



Policyholder: Centennial Elevator **Effective Date: 12/01/2007**

The Principal Dental insurance - Preferred Provider Organization (PPO) for The Principal Plan. This summary of dental coverage from Principal Life Insurance Company supplements any materials presented by your employer. You have been enrolled in The Principal Plan PPO network. This handout is for illustrative purposes. You'll receive a benefit booklet with details about your coverage. If there is a discrepancy between this handout and your benefit booklet, the benefit booklet prevails.

Predetermination of Benefits: Before treatment begins for inlays, onlays, single crowns, prosthetics, periodontics and oral surgery, you may file a dental treatment plan with Principal Life Insurance Company before treatment begins. Principal Life will provide a written response indicating benefits that may be payable for the proposed treatment.

Your Benefits at a Glance Covered Charges	Calendar-Year Deductible		Coinsurance (policy pays/you pay)		Calendar Year Maximum Benefit	
	In - Network	Non- Network	In - Network	Non- Network	In - Network	Non- Network
Unit 1 — Preventive Procedures	\$0	\$50	100%	100%	\$1500 per person per calendar year	\$1500 per person per calendar year
Unit 2 – Basic Procedures	\$50	\$50	90/10%	80/20%	Combined with above	Combined with above
Unit 3 – Major Procedures	\$50	\$50	60/40%	50/50%	Combined with above	Combined with above

- Your family deductible maximum is 3 times the per person deductible amount.
- In-network deductibles for basic and major procedures are combined.
- Out-of-network deductibles for preventive, basic and major procedures are combined.
- Maximums for preventive, basic and major procedures are combined.

Schedule Of Dental Procedures

Unit 1 - Preventive procedures

- Routine exams two per calendar year
- Routine cleanings (prophylaxis) two per calendar year (Expectant mothers, diabetics and those with heart disease receive one additional routine or periodontal cleaning within a calendar year.)
- Emergency exams subject to Routine exam frequency limit
- Second Opinion Consultation
- Fluoride one treatment each calendar year (covered only for dependent children under age 14)
- Space maintainers covered only for dependent children under age 14; repairs not covered





- Sealants on first and second permanent molars for dependent children under age 14; one each tooth each 36
- Harmful Habit Appliance covered only for dependent children under age 14
- X-rays Full mouth survey (one every 60 months), extraoral
- X-rays Bitewing (one set every calendar year), occlusal, periapical

Unit 2 - Basic Procedures

- Periodontal prophylaxis if three months have elapsed after active surgical periodontal treatment; subject to routine cleaning frequency limit (Expectant mothers, diabetics and those with heart disease receive one additional routine or periodontal cleaning within a calendar year.)
- Fillings and stainless steel crowns
- General Anesthesia/IV Sedation
- Simple Oral Surgery
- Complex Oral Surgical Procedures
- Non-surgical Periodontics, including scaling and root planing once each quadrant each 24 months (For expectant mothers, diabetics and those with heart disease, this procedure is provided with no deductible and 100% coinsurance.)
- Simple Endodontics (root canal therapy for anterior teeth)
- Complex Endodonties (root canal therapy for molar teeth)

Unit 3 - Major procedures

- Periodontal Surgical Procedures one each quadrant each 36 months
- Repairs to Partial Denture, Bridge, Crown, Relines, Rebasing, Tissue Conditioning and Adjustment to Bridge/Denture, within policy limitations
- Crowns each 60 months per tooth if tooth cannot be restored by a filling.
- Inlays, Onlays, Cast Post and Core, Core Buildup each 60 months per tooth
- Bridges Initial placement / Replacement of bridges 60 months old.
- Dentures Initial placement of complete or partial dentures / Replacement of complete or partial dentures over 60 months old

Coordination of Benefits

As allowed by state law, this coverage coordinates coverage with other group policies. This coordination gives us the right to recover benefit payments from another person or company liable for covering your dental loss. See your employer for details.

Dependent Coverage

You may be able to elect coverage for eligible dependents. See your employer for details on the definition of eligible dependent.

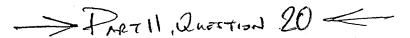
Need Answers?

If you have any questions about The Principal Plan or dental care in general, call our toll-free Benefit Advice line listed on your insurance card. The Benefit Advice staff helps employees use and understand their benefits.

How do I know if my dentist participates with The Principal Plan?

Confirm Network participation with your provider when making your appointment. Always present your insurance ID card. This tells your provider you're eligible for network benefits.





What if my dentist is currently not a Network provider?

You may nominate your dentist for inclusion in The Principal Plan Dental network. Please submit the dentist's name, address, phone and specialty by calling 1-800-832-4450, or submit through www.principal.com. Note: We may use your name when contacting your dentist to let him/her know you're interested in your dentist becoming a network member. Principal Life retains final authority for approving membership in the provider network.

What if a Network dentist refers me to a specialist?

Ask your dental provider to refer you to another In-Network provider. You receive greater benefits when you visit In-Network providers.

How often do I pay deductibles?

You must meet your deductibles each calendar year (January 1 to December 31) before the policy begins paying.

Do I pay separate deductibles if I use both In-Network and Non-Network dentists? No. Amounts you pay toward your In-Network deductible also count toward your Non-Network deductible and vice-

The proposed policy contains restrictions and limitations. Before making a purchase decision, review the following limitations and resolve any questions. The following limitations and restrictions are applied as required by state law or as otherwise described in the group policy.

The insurance does not pay for treatment or services: for veneers, anterior 1/2 cast crowns, personalization or cosmetic reasons / performed by an immediate family member / performed by any person who is not a dentist, dental hygienist, or other authorized provider / that do not meet professionally recognized standards of quality / that are not for a Covered Charge / that exceed prevailing charges / for implants / to alter or maintain vertical dimension or restore or maintain occlusion / that are temporary / for provisional and permanent splinting / for a work related sickness or injury / paid for by U.S. government or its agencies (except Medicaid or as required under state or federal law) / resulting from participation in certain criminal activities / resulting from war or an act of war / for which there would be no cost in the absence of insurance /for duplicating or replacing lost or stolen appliances or prosthetic devices / not expected to correct your dental condition for more than 3 years / for services performed outside a dental office / for patient management / occlusal guards / that are an experimental or investigational measure / paid for by a Medicare Supplement Insurance Plan. The insurance also does not cover: drugs or medicines other than antibiotic injections / instructions for plaque control, oral hygiene, or diet control / bite registration or occlusal analysis / orthodontic treatment, service, appliance, or bands.

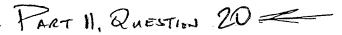
Coinsurance: The percentage of covered charges you pay and the percentage of covered charges the insurance pays after you and your dependents satisfy your calendar year deductible.

Calendar Year: A 12 month period starting January 1.

Calendar Year Deductible: The total amount you and/or your dependents pay in a calendar year before the insurance

Calendar Year Maximum: The amount of payments for covered dental services that the insurance will make in a calendar year. Any amounts incurred during the year that are above the maximum are your responsibility. In-Network/Non-Network: If you choose a Non-Network dentist for dental treatment, your benefits may be paid at a lower level (you pay more) than if you choose an In-Network dentist





Prevailing Charge: The price most providers in your area charge for a specific service. When using non-network providers, you pay any amount over the prevailing charge.

Note: This announcement supplements any materials presented by your employer. It does not state all insurance contract provisions, restrictions of coverage, benefits, conditions, limitations, or provisions required by state or federal law. If any provision presented here is found to be in conflict with state or federal law, that provision will be applied to comply with state or federal law. A more complete description is in the benefit bookdet that will be issued to each member. Ask your employer for details.



- PART 11, QUESTION 20 6

GROUP TERM LIFE INSURANCE SCHEDULE

Employee Basic Term Life Insurance

Your Basic Term Life Insurance **Amount**

CGP-3-R-SCH-90

B265.0011

Age

Reduction of Basic If an employee is less than age 65 when his or her insurance under this plan starts, his or her insurance amount is reduced, on the date he or she Amount Based on reaches age 65, by 35% of the amount which otherwise applies to his or her classification and/or option. But in no case will such reduced amount be less than \$1,000.00.

The preceding reduction also applies to an employee's initial insurance amount if his or her insurance starts after he or she reaches age 65 but before he or she reaches age 70.

If an employee is less than age 70 when his or her insurance under this plan starts, the employee's basic life insurance amount is reduced, when he or she reaches age 70, by 60% of the amount which otherwise applies to his or her classification and/or option. But in no case will such reduced amount be less than \$1,000.00.

The preceding reduction also applies to an employee's initial insurance amount if his or her insurance starts after he or she reaches age 70.

CGP-3-R-SCH-90

B265.0483

Limitations For **Future Entrants**

However, regardless of any of the above reductions, we limit the amount of insurance for which you are eligible if your insurance under this plan starts both: (a) after this plan's effective date; and (b) after you reach age 70.

If you provide us with proof of insurability, and we approve it in writing, the amount of your insurance will be 50% of the amount which otherwise applies to your classification and/or option. But in no event will this reduced amount be less than \$1,000.00.

If we do not approve the proof, your insurance amount will be \$1,000.00.

CGP-3-R-SCH-90

8265.0569

Employee Basic Accidental Death and Dismemberment Insurance (AD&D)

CGP-3-R-SCH-90

B265.0029

Your Basic AD&D Insurance Amount

Insurance Amount

\$52,000.00

B265.0031

CGP-3-R-SCH-90

Spousal Education and Retraining Benefit

Lifetime Maximum \$20,000 Benefit

PART 11 QUESTION 20 b

Employee Basic Accidental Death and Dismemberment Insurance (AD&D) (Cont.)

Maximum Number Of Benefit Payments	Full-Time Post Secondary Education
Lifetime Maximum Benefit	\$20,000.00 per eligible dependent
Maximum Number Of Benefit Payments	8 per lifetime per eligible dependent
Maximum Benefit Period	6 years from the date the first education benefit is made; per eligible dependent. CGP-3-R-SCH-90 B265.0848
Reduction of Basic	If an employee is less than age 65 when his or her insurance under this plan

AD&D Amount starts, his or her insurance amount is reduced, on the date he or she Based on Age reaches age 65, by 35% of the amount which otherwise applies to his or her classification and/or option. But in no case will such reduced amount be less than \$1,000.00.

The preceding reduction also applies to an employee's initial insurance amount if his or her insurance starts after he or she reaches age 65 but before he or she reaches age 70.

If an employee is less than age 70 when his or her insurance under this plan starts, the employee's insurance amount is reduced, when he or she reaches age 70, by 60% of the amount which otherwise applies to his on her classification and/or option. But in no case will such reduced amount be less than \$1,000.00.

The preceding reduction also applies to an employee's initial insurance amount if his or her insurance starts after he or she reaches age 70.

B265.0494 CGP-3-R-SCH-90

Limitations For However, regardless of any of the above reductions, we limit the amount of Future Entrants , insurance for which you are eligible if your insurance under this plan starts both: (a) after this plan's effective date; and (b) after you reach age 70.

If you provide us with proof of insurability, and we approve it in writing, the amount of your insurance will be 50% of the amount which otherwise applies to your classification and/or option. But in no event will this reduced amount be less than \$1,000.00.

If we do not approve the proof, your insurance amount will be \$1,000.00.

B265.0571 CGP-3-R-SCH-90



GROUP TERM LIFE INSURANCE SCHEDULE

Employee Basic Term Life Insurance

Life Insurance **Amount**

CGP-3-R-SCH-90

B265.0011

Age

Reduction of Basic If an employee is less than age 65 when his or her insurance under this plan starts, his or her insurance amount is reduced, on the date he or she Amount Based on reaches age 65, by 35% of the amount which otherwise applies to his or her classification and/or option. But in no case will such reduced amount be less than \$1,000.00.

The preceding reduction also applies to an employee's initial insurance amount if his or her insurance starts after he or she reaches age 65 but before he or she reaches age 70.

If an employee is less than age 70 when his or her insurance under this plan starts, the employee's basic life insurance amount is reduced, when he or she reaches age 70, by 60% of the amount which otherwise applies to his or her classification and/or option. But in no case will such reduced amount be less than \$1,000.00.

The preceding reduction also applies to an employee's initial insurance amount if his or her insurance starts after he or she reaches age 70.

CGP-3-R-SCH-90

B265.0483

Limitations For **Future Entrants**

However, regardless of any of the above reductions, we limit the amount of insurance for which you are eligible if your insurance under this plan starts both: (a) after this plan's effective date; and (b) after you reach age 70.

If you provide us with proof of insurability, and we approve it in writing, the amount of your insurance will be 50% of the amount which otherwise applies to your classification and/or option. But in no event will this reduced amount be less than \$1,000.00.

If we do not approve the proof, your insurance amount will be \$1,000.00.

CGP-3-R-SCH-90

B265.0569

Employee Basic Accidental Death and Dismemberment Insurance (AD&D)

CGP-3-R-SCH-90

B265.0029

Your Basic AD&D **Insurance Amount**

Insurance Amount

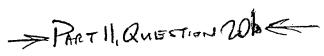
..... \$72,000.00

CGP-3-R-SCH-90

B265.0031

Spousal Education and Retraining Benefit

Lifetime Maximum \$20,000 Benefit



Employee Basic Accidental Death and Dismemberment Insurance (AD&D) (Cont.)

/	and Dismemberment Insurance (ADGD) (Comp
	. Ω
Maximum Number	Full-Time Post Secondary Education
Of Benefit Payments	Part-Time Post Secondary Education
Fayment	CGP-3-R-SCH-90
	Dependent Child Education Benefit
Lifetime Maximum Benefit	\$20,000.00 per eligible dependent
Maximum Number Of Benefit Payments	8 per lifetime per eligible dependent
Maximum Benefit	6 years from the date the first education benefit is made; per eligible
Period	dependent. B265.0848
Reduction of Basic AD&D Amount Based on Age	If an employee is less than age 65 when his or her insurance under this plan starts, his or her insurance amount is reduced, on the date he or she reaches age 65, by 35% of the amount which otherwise applies to his or her classification and/or option. But in no case will such reduced amount be less than \$1,000.00.
	The preceding reduction also applies to an employee's initial insurance amount if his or her insurance starts after he or she reaches age 65 but before he or she reaches age 70.
	If an employee is less than age 70 when his or her insurance under this plans starts, the employee's insurance amount is reduced, when he or she reaches age 70, by 60% of the amount which otherwise applies to his or her classification and/or option. But in no case will such reduced amount be less
	The preceding reduction also applies to an employee's initial insurance amount if his or her insurance starts after he or she reaches age 70.
	con a p-sch-su
Limitations For Future Entrants.	However, regardless of any of the above reductions, we limit the amount of insurance for which you are eligible if your insurance under this plan starts that (a) after this plan's effective date; and (b) after you reach age 70.
	If you provide us with proof of insurability, and we approve it in writing the amount of your insurance will be 50% of the amount which otherwise applies to your classification and/or option. But in no event will this reduced amount be less than \$1,000.00.
	De 1633 titul 7 17 1 200 00

If we do not approve the proof, your insurance amount will be \$1,000.00.

CGP-3-R-SCH-90

B265.0571

PRET 11, QUESTION 20 6

GROUP TERM LIFE INSURANCE SCHEDULE

Employee Basic Term Life Insurance

Life Insurance **Amount**

CGP-3-R-SCH-90

B265.0011

Reduction of Basic Life Insurance Amount Based on

If an employee is less than age 65 when his or her insurance under this plan starts, his or her insurance amount is reduced, on the date he or she reaches age 65, by 35% of the amount which otherwise applies to his or her classification and/or option. But in no case will such reduced amount be less than \$1,000.00.

The preceding reduction also applies to an employee's initial insurance amount if his or her insurance starts after he or she reaches age 65 but before he or she reaches age 70.

If an employee is less than age 70 when his or her insurance under this plan starts, the employee's basic life insurance amount is reduced, when he or she reaches age 70, by 60% of the amount which otherwise applies to his or her classification and/or option. But in no case will such reduced amount be less than \$1,000.00.

The preceding reduction also applies to an employee's initial insurance amount if his or her insurance starts after he or she reaches age 70.

CGP-3-R-SCH-90

B265.0483

Limitations For **Future Entrants** However, regardless of any of the above reductions, we limit the amount of insurance for which you are eligible if your insurance under this plan starts both: (a) after this plan's effective date; and (b) after you reach age 70.

If you provide us with proof of insurability, and we approve it in writing, the amount of your insurance will be 50% of the amount which otherwise applies to your classification and/or option. But in no event will this reduced amount be less than \$1,000.00.

If we do not approve the proof, your insurance amount will be \$1,000.00.

CGP-3-R-SCH-90

8265.0569

Employee Basic Accidental Death and Dismemberment Insurance (AD&D)

CGP-3-R-SCH-90

B265.0029

Your Basic AD&D **Insurance Amount** Insurance Amount

..... \$132,000.00

CGP-3-R-SCH-90

B265.0031

Spousal Education and Retraining Benefit

Lifetime Maximum Benefit

\$20,000

Employee Basic Accidental Death and Dismemberment Insurance (AD&D) (Cont.)

I II WAR THE	and Dismemberment mountain	
	8	
Maximum Number	Full-Time Post Secondary Education	
Of Benefit	Full-Time Post Secondary Education	
Payments	CGP-3-R-SCH-90	
	Dependent Child Education Benefit	
Lifetime Maximum	\$20,000.00 per eligible dependent	
Benefit Maximum Number	8 per lifetime per eligible dependent	
Of Benefit Payments	6 years from the date the first education benefit is made; per eligible	
Maximum Benefit Period	dependent. B265.0848	
	CGP-3-R-SCH-90	
Reduction of Basic AD&D Amount Based on Age	tf an employee is less than age 65 when his or her insurance under this plan starts, his or her insurance amount is reduced, on the date he or she starts, his or her insurance amount which otherwise applies to his or her reaches age 65, by 35% of the amount which otherwise applies to his or her reaches age 65, by 35% of the amount which otherwise applies to his or her reaches age 65, by 35% of the amount which otherwise applies to his or her reaches age 65, by 35% of the amount which otherwise applies to his or her reaches age 65, by 35% of the amount which otherwise applies to his or her reaches age 65, by 35% of the amount which otherwise applies to his or her reaches age 65, by 35% of the amount which otherwise applies to his or her reaches age 65, by 35% of the amount which otherwise applies to his or her reaches age 65, by 35% of the amount which otherwise applies to his or her reaches age 65, by 35% of the amount which otherwise applies to his or her reaches age 65, by 35% of the amount which otherwise applies to his or her reaches age 65, by 35% of the amount which otherwise applies to his or her reaches age 65, by 35% of the amount which otherwise applies to his or her reaches age 65, by 35% of the amount which otherwise applies to his or her reaches age 65, by 35% of the amount which otherwise applies to his or her reaches age 65, by 35% of the amount which otherwise applies to his or her reaches age 65, by 35% of the amount which otherwise applies to his or her reaches age 65, by 35% of the amount which otherwise applies to his or her reaches age 65, by 35% of the amount which otherwise applies to his or her reaches age 65, by 35% of the amount which otherwise applies to his or her reaches age 65, by 35% of the amount which otherwise applies to his or her reaches age 65, by 35% of the amount which otherwise applies to his or her reaches age 65, by 35% of the amount which otherwise age 65%	
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	If an employee is less than age 70 when his or her institutes starts, the employee's insurance amount is reduced, when he or she reaches starts, the employee's insurance amount which otherwise applies to his or her age 70, by 60% of the amount which otherwise applies to his or her classification and/or option. But in no case will such reduced amount be less	
	than \$1,000.00. The preceding reduction also applies to an employee's initial insurance amount if his or her insurance starts after he or she reaches age 70. B265.0494	
	CGP-3-R-SCH-90	
Limitations For Future Entrants	However, regardless of any of the above reductions, we limit the amount of however, regardless of any of the above reductions, we limit the amount of however, regardless of any of the above reductions, we limit the amount of however, regardless of any of the above reductions, we limit the amount of however, regardless of any of the amount of however, regardless of any of the amount of however, regardless of any of the above reductions, we limit the amount of however, regardless of any of the above reductions, we limit the amount of however, regardless of any of the above reductions, we limit the amount of however, regardless of any of the above reductions, we limit the amount of however, regardless of any of the above reductions, we limit the amount of however, regardless of any of the above reductions, we limit the amount of however, regardless of any of the above reductions, we limit the amount of however, regardless of any of the above reductions, we limit the amount of however, regardless of any of the above reductions, we limit the amount of how how he had a supplement of the above reductions.	
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be less than \$1,000.00.

If we do not approve the proof, your insurance amount will be \$1,000.00.

If we do not approve the proof 1925.0571

CGP-3-R-SCH-90

4.



The First Rehabilitation Life Insurance Company of America

Quarterly Premium Report - New York State Disability Benefits Law Policy

Idress changes must be submitted to First Rehabilitation in writing under separate cover.

CENTENNIAL ELEVATOR INDUSTRIES INC 23-82 BROOKLYN QUEENS EXPRESSWAY WEST NY 11103 LONG ISLAND CITY

Policy Number: D247852 Effective Date: 04/01/2006

Coverage Period: 07/01/2006 - 09/30/2006

Billing Date: 10/10/2006 Premium Due: 10/28/2006

Broker: 0000-5874

s is your QUARTERLY BILL for your Statutory DBL Policy. Please complete all parts of this report and return to First Rehabilitation in the envelope rided. Prompt payment is appreciated. If your payment is not received by the end of our grace period, a late fee will be added to your premium due.

ase indicate the number of employees covered each month for the past quarter, then ENTER THE SUM of all months in the totals column. To insure that ir payment is applied properly, make sure to enter values for total employee count (A & B) below.

a payaroax a spr	Jul 2006	Aug 2006	Sep 2006	Totals	l
Males	127	127	127	38/	A
'emales	4	V		14.	B

RT 2. Calculation of Quarterly Premium.

Itiply employee count from above by your monthly rates. When calculating r quarterly premium below, if the amount calculated (G) is less than \$25.00 must pay the minimum allowed premium of \$25.00 to avoid cancellation.

- * Corporate officers are considered employees of a corporation and are to be included as such unless form DB-212-3 has been filed.
- * Pay promptly to avoid possible late fees and cancellation.

Questions about your policy or bill? Contact our Customer Service Department 1-800-365-4999

Please return completed form in the envelope provided with your payment to:

First Rehabilitation Life P.O. Box 220727 Great Neck, New York 11021-5202

Policy Includes Statutory Benefit

FAX to claim dept 516-829 1797 Phone 800-365-4999 www. fix What com

EFFECTIVE DATE: January 1, 2002. The Plan operates on a calendar year basis.

ELIGIBILITY: All employees age 21 with 6 months of service. Entry on the January 1", April 1", July 1", or October 1" next following

CONTRIBUTIONS:

EMPLOYEE ELECTIVE "SALARY REDUCTION" DEFERRALS: A participant may contribute on a before income-tax basis from 1% to as much as 75% of compensation, up to the annual dollar maximum set by the IRS

ROLLOVER CONTRIBUTIONS: The Plan permits Rollover Contributions from other tax-qualified plans or IRA Rollover accounts, the latter of which do not contain any "Barned income IRA deduction contributions."

EMPLOYER CONTRIBUTIONS: For each Plan year, the Company may make a discretionary contribution to the plan for participants who are employed on December 31" of the Plan year.

VESTING: Your Employee Elective "Salary Reduction" Deferrals and Rollover Contributions are 100% vested at all times. You become vested in the Employer Discretionary portion of your Plan Account as follows: After 1 year of Vesting Service: 33%, after 2 years of Vesting Service: 67%, after 3 years of Vesting Service: 100%.

<u>INVESTMENTS</u>: Participants elect how their Plan Account is to be invested. A listing of the current Fund choices is attached. If you fail to make an investment election, your funds will be invested in the MFS Money Market Fund.

PAYMENT OF BENEFITS: Benefits will be paid as a lump sum to the participant, or paid to an Individual Retirement Account or to another qualified plan, at the

PARTICIPANT LOANS: Participant loans are available from the plan (up to 50% of your vested account value; minimum \$1,000; maximum \$50,000). Loans

HARDSHIP WITHDRAWALS: The Plan permits an in-service withdrawal for reasons of hardship from your Employee Elective "Salary Reduction" Deferrals. The reasons are strictly limited by IRS regulations. Any withdrawal would be taxable income, plus subject to an IRS excise tax of 10%.

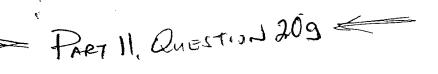
PLAN SPONSOR: Centennial Elevator Industries, Inc.
23-82 B.Q.E. West
L.I.C., NY 11103

Employer Identification No.: 11-2379315

PLAN NUMBER: 002

PLAN TRUSTEES:Richard L'Esperance John Lioi Gerard L'Esperance F <

PART 11, QUESTION 20



ACRESMENT AND VORKING RULES

BETWEEK

ELEVATOR EXCUSIVES ASSOCIATION, INC.

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AGREEMENT

AGREEMENT between Elevator Industries Association, Inc. (hereinafter called the "Association") on behalf of itself and its member Employers, and Local Union No. 3, International Brotherhood of Electrical Workers (hereinafter called the "Union").

ARTICLE I TERM

This Agreement shall be effective as of February 23, 2009, and shall continue in full force and effect without reopening of any kind until 11:59 p.m. on Sunday, February 26, 2012.

ARTICLE II RECOGNITION

The Union having been certified by the National Labor Relations Board in 1999 and the Union having shown or offered to show an evidentiary basis of its majority support, the Association and its member Employers hereby recognize the Union as the exclusive and majority representative of the Employees covered by this Agreement for purposes of collective bargaining concerning their terms and conditions of employment.

ARTICLE III EMPLOYEES

(a) The terms of this Agreement shall apply to and affect those Employees of the Employer, described as follows:

All hourly paid production, maintenance, service and repairman including group leaders, (excluding all salaried and office Employees, watchmen, guards, errand boys, salaried foremen or assistant foremen, executives and supervisory Employees).

(b) "Employed within the industry" as used within this Agreement shall mean an employee employed in a job classification covered by this Agreement and by an Employer in contractual agreement with the EE Division of the Union or in a job classification covered by an Agreement or Agreements with predecessor unions.

ARTICLE IV REGULAR AND OVERTIME WORKING HOURS

(a) Work Day:

- (1) A normal work day shall be defined as eight (8) hours of work within the calendar day. The scheduled working hours and length or timing of lunch periods shall be determined by the Employer.
- (2) The scheduled hours of work shall be any eight (8) consecutive hours of work commencing at 7:00 a.m. and ending at 4:30 p.m. with an unpaid one-half hour for lunch for all employees except for employees in the Maintenance Department. The scheduled hours of work for the employees in the maintenance department shall be any eight (8) consecutive hours of work commencing at 5:00 a.m. and ending at 6:00 p.m. with an unpaid lunch of one-half hour, except for resident mechanics who shall have a one hour unpaid lunch, provided that (i) an employer with 50

employees or less in its maintenance department shall not designate more than 12.5% of its maintenance department employees to such scheduled times and (ii) employers with more than 50 employees in its maintenance department shall not designate more than 12.5% of the first 50 employees and one additional employee for every 10 employees over 50 employees in its maintenance department to such scheduled times. Volunteers shall be assigned wherever possible first. Employers shall advise Employees no later than the Friday before the next scheduled work week of their weekly starting time.

(3) For work performed by an employee within a normal work day, he shall be paid at his regular, straight-time hourly rate. For work performed by an employee in excess of eight (8) hours of work in a calendar day, he shall be paid at one and one-half times his regular, straight-time hourly rate. The Employer reserves the right to pay an employee at the rate of one and one-half times his regular, straight-time hourly rate for work performed on what the Employer, in its discretion, considers an emergency job even though the employee has not worked a full eight (8) hours in his normal work day.

(b) Work Week:

(1) The work week shall commence at 12:01 a.m. Monday and end at 12:00 p.m. the following Sunday. All work performed in excess of forty (40) straight-time hours of work (other than daily overtime hours or overtime premium pay-hours)

during the work week shall be paid for at the rate of time and one-half the regular, straight-time hourly rate

- (2) In any event, work performed on Saturday, on Sunday and on any of the designated Holidays, shall be paid for at one and onehalf times the regular, straight-time hourly rate except that:
 - (A) Repair Jobs (not call-backs) performed on Sunday or on a Holiday outside the shop on elevators shall be paid for at doubletime; and
 - (B) All call back work shall be paid at time and one-half, except the following items which shall be paid at double-time from midnight until 8:00 a.m.:

Fire Damage Water Damage Vandalism Misuse/Abuse Power Irregularities Scheduled Work

All work started between 6:00 a.m. and an employee's regularly scheduled starting time shall be paid for at time and one half only during such hours.

- (c) There shall not be any pyramiding of daily and weekly overtime premium pay.
- (d) Reporting Time Employees reporting for work at their regularly scheduled starting time or at the time ordered by the Employer to report and finding no work available will be paid four (4) hours reporting time at their

regular, straight-time hourly rate unless they shall have been notified on the preceding day that no work would be available. This clause shall not apply in the following cases:

- Where the employee did not receive notice on the preceding day because of his absence from work.
- (2) In any situation in which work is not available because of an emergency which is recognized as such by his Employer and the Union.
- (3) Where the employee refuses the work assigned to him by the Employer.

Where Employees qualify for reporting-time pay under this section (D), they will receive credit for eight (8) hours toward the forty (40) hours required to qualify for overtime pay in accordance with the provisions of Article IV, section (b)(1).

- (e) Waiting Time Elevator Maintenance Mechanics, Inspectors, Repair Mechanics, 'A' Helpers and Apprentices who arrange with their Employer that they may be available for emergency calls, or who are called out on emergency jobs on Saturdays, or Sundays, or on the designated Holidays, will be guaranteed a minimum of six (6) hours, pay at their regular, straight-time hourly rates.
- (f) Elevator Maintenance Mechanics, Inspectors, Repair Mechanics, 'A' Helpers and Apprentices who arrange with an Employer that they may be available for emergency calls at night during the regular work week shall, if they are not called out on any emergency jobs, be entitled to three (3) hours pay at their regular, straight-time hourly rates as standby time.

- (g) When work is scheduled to be performed during regular working hours on any of the designated Holidays, the employee will be paid at one and one-half times his straight-time, regular hourly rate (an employee working on an Elevator Repair Job on the outside will be paid at two (2) times his straight-time hourly rate) for work performed on such Holiday in addition to any payment required by Article V, section (c) below.
- (h) It is not to be construed by any clause in Section IV or in any other section of this Agreement that an Employer guarantees any period of employment.
- Where the building owner requires double shift coverage for a building or complex of buildings, then the Employer may schedule two eight (8) hours shifts at straight-time between the hours of 8:00 a.m. and 12:00 midnight, Monday through Friday. Employees working the second shift shall receive a 10% shift differential. Employees assigned to such in Building Maintenance shall not be allowed to leave the building or building complex to perform any other outside work, during their scheduled hours. This paragraph shall only be applicable to new contracts executed after January 7, 1976 and shall not apply to a building or building complex covered by an existing contract under Local 3 (Elevator Division) jurisdiction prior to January 7, 1976. This provision shall not apply to Repair mechanics. Assignment of Employees under this paragraph shall be on a voluntary basis unless there are no qualified volunteers in which case the Employer may assign the work. A complex of buildings shall be construed to mean any group of buildings owned by a single owner or corporation that can be geographically encircled by a single continuous line.
- (j) No employee shall be required to work more than twenty-four (24) consecutive hours without being afforded the option of a four (4) hour break. The hours of any such unpaid break shall not be counted towards an Employer's gross production payroll. However, for the period starting at the commencement of the Agreement until March 1, 1998, such break hours shall be counted towards the minimum number of hours required to be worked for purposes of earning annuity pay as provided in Article XX. Effective 12:01 a.m., March 2, 1998, the unpaid break shall not be deemed to be hours of actual work and no annuity payments shall be made for such hours.
- (k) The Employer will not offer overtime work to a foreman or superintendent without first having made a reasonable attempt to offer such overtime work to a mechanic who is regularly assigned to perform such tasks, provided that such employee is reasonably available and has the skill and ability to perform the work efficiently. Nothing herein shall affect the Employers' rights to place a foreman or superintendent on the standby or night call list. The Employer will not otherwise assign an employee to perform regularly scheduled overtime maintenance work on elevators, which are regularly maintained by another resident or route mechanic, without having given first option to perform the work, to the regular mechanic for that route or resident job, provided that the regularly assigned mechanic has the skill and ability to satisfactorily execute the work to be performed. Where there is a scheduling conflict for the mechanic, the Employer may assign the work as it sees fit.

- Employees who work on resident jobs that require coverage by two (2) or more mechanics shall be paid at straight time rates for any eight (8) consecutive hours between 6 a.m. and 6 p.m.
- (m) Employees on Repair Teams may volunteer to work on shifts for any eight consecutive hours between 6 a.m. and 4:30 p.m. Such employees shall be paid at straight time rates for any eight (8) consecutive hours between 6 a.m. and 4:30 p.m.

ARTICLE V HOLIDAYS

(a) The following days are designated as Holidays:

New Year's Day President's Day **Decoration Day** Independence Day **Labor Day** Columbus Day

Election Day Martin Luther King's Day Veteran's Day (Nov. 11) Thanksgiving Day Harry Van Arsdale, Jr. Day (Day after Thanksgiving) Christmas Day

(b) If at the request of the Employer an employee agrees to work on Columbus Day, Election Day, Martin Luther King Day or Veteran's Day, he shall be entitled to another day off of his own choosing confirmed in writing, and he shall receive pay including annuity, in lieu of overtime pay for the work on the Holidays designated in this paragraph (b). Subject to the approval of the Employer, the employee may work the compensatory day in which event he shall receive Holiday pay for said day worked. Nothing in this provision shall be construed to require annuity

contributions for the "in lieu" Holiday (the compensatory day off). Employees who voluntarily terminate their employment prior to their compensatory day off shall receive eight (8) hours of pay for said day upon their termination. Employees who are terminated by the Employer prior to their compensatory day off shall receive twelve (12) hours compensation, except that sixteen (16) hours compensation shall be paid for repair lobs covered by Article IV (g).

- (c) Each employee who has been continuously and actively employed in the Industry for a period of thirty (30) days prior to each of the designated Holidays, or any employee who may be temporarily unemployed from the industry but is recalled and reports for work in the Industry on no more than forty-eight (48) hours notice during any said thirty (30) day period, remaining thereafter in continuous and active employment prior to the particular Holiday, will receive eight (8) hours pay at the straight-time hourly rate for each such Holiday, providing the employee works the work day before and the work day succeeding such Holiday, unless excused by the Employer on account of severe illness or similar reason acceptable to the Employer.
- (d) If any designated Holiday falls on a Sunday, Holiday premium-time shall be paid only for work performed on the day commonly celebrated as such Holiday, Monday.
- (e) If a designated Holiday falls on a Saturday, an employee, at the discretion of the Employer, may be given Friday or Monday of that weekend as the designated paid Holiday. Any employee who, at the request of the Employer, elects to work on the Friday

or Monday designated as his Holiday shall be paid at premium-time for the designated day, except that if the Employer and employee agree, the employee shall work the Friday before and Monday after said Holiday at straight-time hourly pay and shall receive an additional eight (8) hours straight-time pay for that Holiday.

- (f) Under no circumstances, is it to be construed that an employee, for work on a designated Holiday, will be paid more than two and one-half times his hourly rate (or triple time on Elevator Repair Jobs), including non-worked Holiday pay.
- (g) Each employee shall be entitled to one (1) personal leave day in each contract year. Such leave day to be agreed upon in advance between the employee and his Employer.

ARTICLE VI

- (a) Each employee covered by this Agreement who has been employed within the industry for less than one (1) year immediately prior to June 1st preceding the yearly vacation period, and who is actually working for his Employer at the date scheduled for his vacation, shall receive vacation at the rate of four (4) hours for each four (4) weeks worked prior to June 1st, but in no event shall such vacation exceed forty (40) hours of vacation pay at the straight-time hourly rate prevailing at the time of his vacation.
- (b) Each employee covered by this Agreement who has been employed within the industry for one (1) year,

but less than two (2) years immediately prior to June 1st preceding the yearly vacation period, and who is actually working for his Employer at the date scheduled for his vacation, shall receive the vacation days earned the previous June 1st plus five (5) days (total not to exceed ten days vacation) and shall be paid for each vacation day of eight (8) hours straight-time at his hourly rate prevailing at the time of the vacation, but not in excess of eighty (80) hours.

However, if any such employee shall have been absent from work in excess of four (4) weeks, excluding prior year's vacation, during the twelve (12) months immediately preceding his scheduled vacation, he shall receive vacation pay for that twelve (12) month period equal to four (4) hours for each four (4) weeks worked during the twelve (12) months immediately preceding his vacation, but not in excess of a total of forty (40) hours for that twelve (12) month period.

(c) Each employee covered by this Agreement who has been employed within the industry for two (2) years or more immediately prior to June 1st preceding the yearly vacation period, and who is actually working for his Employer at the date scheduled for his vacation, shall receive a two (2) week vacation and shall be paid for those two (2) weeks a total of eighty (80) hours straight-time at his hourly rate prevailing at the time of the vacation.

However, if any such employee shall have been absent from work in excess of four (4) weeks, excluding prior year's vacation, during the twelve (12) months immediately preceding his scheduled vacation, he shall receive vacation pay equal to eight (8) hours for each

1

four (4) weeks worked during the twelve (12) months immediately preceding his vacation, but not in excess of a total of eighty (80) hours.

(d) Any employee covered by this Agreement who can establish that he has been employed within the industry and job classifications covered by this Agreement for ten (10) or more years immediately prior to June 1st preceding the yearly vacation period as aforesaid, and who is actually working for his Employer at the time scheduled for his vacation, shall receive three (3) weeks' vacation, no more than two (2) weeks of which shall be consecutive at the discretion of his Employer, and shall be paid for those three (3) weeks a total of one hundred twenty (120) hours straight-time at his hourly rate prevailing at the time of the vacation.

However, if any such employee shall have been absent from work in excess of four (4) weeks, excluding the prior year's vacation, during the twelve (12) months immediately preceding his scheduled vacation, he shall receive vacation pay equal to twelve (12) hours for each four (4) weeks worked during the twelve (12) months immediately preceding his vacation, but not in excess of a total of one hundred twenty (120) hours.

(e) Any employee covered by this Agreement who can establish that he has been employed within the industry and job classifications covered by this Agreement for twenty (20) or more years immediately prior to June 1st preceding the yearly vacation period as aforesaid, and who is actually working for his Employer at the time scheduled for his vacation, shall receive four (4) weeks' vacation, no more than two (2) weeks of which shall be consecutive at the discretion of his Employer,

and shall be paid for those four (4) weeks a total of one hundred sixty (160) hours straight-time at his hourly rate prevailing at the time of the vacation, unless otherwise specified in this Agreement.

However, if any such employee shall have been absent from work in excess of four (4) weeks, excluding the prior year's vacation, during the twelve (12) months immediately preceding his scheduled vacation, he shall receive vacation pay equal to sixteen (16) hours for each four (4) weeks worked during the twelve (12) months immediately preceding his vacation, but not in excess of a total of one hundred sixty (160) hours.

- (f) The vacation period will extend from June 1st to May 31st, and every effort will be made to give each employee his choice of time on the basis of length of service. However, where conflicting choices interfere with adequate service to an Employer's clients, the Employer reserves the right to specify the dates to be assigned.
- (g) Vacations cannot be allowed to accumulate from year to year, but must be completed in each vacation period as defined in Paragraph (f) above.
- (h) If a designated Holiday falls on any work day during an employee's vacation, such employee will receive either (1) another day off with eight (8) hours' straight-time pay; or (2) eight (8) hours' straight-time pay in lieu of such time off. Determination of choice between (1) or (2) to be at the discretion of the employee. However, if the employee selects (1), then the particular day shall be designated at the discretion of the Employer.

- (i) The vacation allowance provided for in (a), (b), (c), (d) and (e) above shall be considered as being earned on a pro-rata basis through work within the industry as an employee or a "helper-in-training" and covered by this Agreement, and shall become a vested interest of the employee and all accrued and unpaid vacation pay shall be payable upon termination of employment. Vacation disputes are to be settled by the Joint Union-Management Committee provided for hereinafter in Section (n) below.
- (j) For the purpose of computing vacation earned for a current vacation period, employment during the period from the previous June 1st to May 31st of the current vacation year will be considered, independent of the actual dates of the vacation received.
- (k) If an Employee is entitled to four weeks of paid vacation, the Employee may take up to three consecutive weeks of vacation during the period between September 15th and May 15th.
- (I) Full payment for vacation will be made immediately prior to the time the vacation is taken.
- (m) For purposes of this article, an employee will be deemed to have been employed without interruption within the industry if he is: (1) available for work; or (2) disabled due to a non-work related injury or illness for a period of up to one (1) year; or (3) disabled due to a work-related injury or illness up to a period of two (2) years (compensation).
- (n) A Joint Union-Management Committee is hereby established. Such Committee shall consist of three representatives of the Union and three members of the

Executive Committee of the Association. All matters in dispute regarding any provision of this Article VI will be reviewed by such Committee which shall arrange to meet promptly within five (5) working days of receipt of written notice by either the Association to the Union or the Union to the Association. If a majority of the members of the committee reach a decision, such decision shall be binding on the Union, Employer and employee involved. Such decision shall have the same effect as an arbitration award under New York State and Federal Arbitration Law. If the Committee should fall to reach an agreement on any case or any matter in dispute, the matter will be subject to the arbitration procedures in this Agreement.

ARTICLE VII WELFARE AND PENSION PLAN

- (a) Each Employer agrees to participate in the existing "Pension, Hospitalization and Benefit Plan of the Electrical Industry" as administered by the Joint Industry Board of the Electrical Industry.
- (b) Each Employer agrees to pay each week to the Joint Industry Board of the Electrical Industry, as the Employer's sole and total contribution toward the financing of said plan the following percentage of its gross production payroll:

Effective February 20, 2009 — 34.42% Effective February 22, 2010 — 36.42%

(c) If an Employer's contributions to the Joint Industry Board of the Electrical Industry are delinquent for a period of 10 or more weeks, and the Joint Employment Office has provided the Employer with written notice by certified mail to said Employer of this delinquency, all the Employees employed by such Employer, shall have the right to apply to the Joint Employment Office for referral to other Employers on a preferential basis to all other individuals in their classification on the Joint Employment Office's "active" unemployment list, while remaining employed by the present Employer.

- (d) If an Employer's contributions to the Joint Industry Board of the Electrical Industry are delinquent for 11 weeks, the JATC will provide 7 days written notice by certified mail to such Employer of this delinquency. If at 12 weeks the employer remains 12 weeks delinquent the JATC will direct on a seniority basis, last in first out, half the number of apprentices employed by such Employer to be returned to the Joint Employment Office for referral to other Employers on a preferential basis to all other individuals in their classification on the Joint Employment Office's "active" unemployment list.
- (e) For purposes of this Article, delinquency shall be defined as the failure of the Employer to provide to the JIB, the week's payroll report and accompanying check.

ARTICLE VIII PROBATIONARY PERIOD

(a) New Employees coming into the elevator industry and becoming subject to the terms of this Agreement shall be considered on trial or probation for a period of four (4) months from the date they are first hired in the elevator industry. During such four (4) month probationary period their original Employer or any subsequent Employer may terminate their employment

and such termination of employment shall be at the sole discretion of the Employer.

- (b) Employees who have been previously employed in the industry shall be considered on trial or probation for a period of four (4) months from the date they are first hired by a new Employer. During such four (4) month probationary period, that Employer may lay off and replace such employee at its sole discretion provided, however, that a Shop Steward, who has been appointed, pursuant to Article XXVII, shall not be subject to the probationary period set forth in this paragraph.
- (c) Upon transfer to a different job classification, a regular employee shall be considered on probation for a period of four (4) months, during which time he may be assigned to still another classification or reassigned back to his former job, all at the sole discretion of his Employer.

(Such transferee will be paid at the regular rate including annuity where required for the probationary job while in the probationary status. If a probationer is down-graded by his Employer within the four (4) month period, he cannot within one (1) year be upgraded again except on a permanent (non-probationary) basis unless mutually agreeable to the employee, the Employer and the Union.

(d) Upon completion of the probationary periods specified above, the employee shall acquire length of service status in the job classification in which he had successfully completed his probationary period. The length of service status shall revert to the date of hire or transfer, whichever may be the case.

(e) The Employer will give preference to present Employees in making promotions to higher rated jobs, but is not restricted from hiring Employees from the outside for any job whatsoever, if it finds that no suitable candidates are available among the present personnel after first applying to the Joint Employment Office for a period of seventy-two (72) hours exclusive of Saturdays, Sundays or Holidays, except that Employees for apprentice jobs must be hired pursuant to Article XVI.

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- (f) The Employer will notify the Union, in writing, of all reclassifications, upward or downward, probationary or non-probationary, within five (5) days of the effective date of such reclassifications.
- (g) An Employer may request that the Union agree to extend an employee's probationary period for a period of up to two months. The Union will not unreasonably deny such a request. If the request is granted, the Employer will send a confirming follow-up letter.

ARTICLE IX LAY-OFFS - REHIRING - LEAVE OF ABSENCE

- (a) When volume of work available necessitates layoffs and/or rehiring within six (6) consecutive months after layoff, ability and efficiency in performing the available work shall be the first governing factor and where ability and efficiency in performance appear to be relatively equal as between two (2) or more Employees, then length of service will govern.
- (b) Whenever there is a decrease in the working force, Employees who have served in a lower skilled

- classification of the job to which they are assigned at the time of the lay-off, shall be credited to the lower skilled classification with their length of service in that classification plus their length of service in the job to which they are assigned at the time of the lay-off.
- (c) The Employer shall notify the Shop Steward immediately and the Union in writing within five (5) days of any hires, rehires, lay-offs or job classification changes.
- (d) Whenever possible a written one week notice of lay-offs shall be given to the employee and his Shop Steward.
- (e) An Employer may, for valid reasons, with the approval of the Union, grant an employee, on written application, a leave of absence without pay not to exceed thirty (30) calendar days. Leaves of absence obtained under false pretenses will be sufficient cause for discharge. Any employee on a leave of absence who accepts employment without permission of the Employer shall be considered to have abandoned his job.

ARTICLE X LENGTH OF SERVICE

- (a) Length of service, where applicable herein, shall be determined on a job classification basis.
- (b) Length of service will be broken if an employee:
 - (1) Quits of his own accord.
 - (2) Is discharged for cause.

- (3) Does not return to work within five (5) days when recalled after a lay-off or immediately following a vacation or approved leave of absence, unless he is unable to do so because of illness or for other similar good and sufficient reason and has notified his Employer in writing within two (2) working days.
- (4) Is laid off for six (6) consecutive months.

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- (c) A person who was employed in a job classification within the bargaining unit covered by this Agreement and is subsequently transferred to a job position outside the bargaining unit shall retain during his continuous employment his length of service credit for the job classification within the unit in which classification he worked prior to transfer plus his length of service credit for the period of his service with the Employer in the position outside the bargaining unit.
- (d) For the purpose of calculating an employee's length of service for this Article, the employee's employment with his current Employer shall apply until the employee completes his third consecutive year of employment. After completing three (3) consecutive years of employment with that Employer, the employee shall be credited with his length of service in the industry. Length of service shall be used for lay-off and vacation scheduling only.

ARTICLE XI GRIEVANCE PROCEDURE

The Association, its members, the Union and covered Employees shall have the right to present grievances in accordance with the procedures outlined in this Article provided that any employee shall notify his Shop Steward of his grievance before commencing the grievance procedure.

Nothing in this section shall preclude the right of any individual employee to take up his grievance directly with his immediate supervisor, his department head, or his President, if he so chooses. When a party has a difference or dispute as to the interpretation or application of any provision of this Agreement, there shall be no suspension of work on account of such difference, but an earnest effort shall be made to settle the question immediately by means of the procedure herein described, and no other method of adjustment shall be resorted to.

(A) GRIEVANCES INITIATED BY THE UNION

1st step: Within five (5) working days after a grievance arises the employee (with or without his Shop Steward as he may choose) shall discuss the matter with his immediate supervisor who shall reach a decision within the next two (2) working days, unless an extension is mutually agreed upon in writing.

2nd step: In the event a satisfactory settlement has not been reached or decision made, within the time specified in the 1st step, the employee (with his Shop Steward or Business Representative) shall take up his grievance within two (2) additional working days with his department head. The department head shall reach a decision within the next three (3) working days, unless an extension is mutually agreed upon in writing.

3rd step: In the event a satisfactory settlement has not been reached or decision made by the department head, within the time specified in the 2nd step, the employee (with Shop Steward or Business Representative) shall within two (2) additional working days present his grievance directly to the President of the Employer who shall review the case with a view of arriving at a mutually satisfactory settlement. If no mutually satisfactory settlement can be arrived at within five (5) working days, the matter may be referred by either party to arbitration as hereinafter provided.

In an emergency, Step #1 may be taken up during regular working hours and time thus lost by the employee and his Shop Steward will be borne by his Employer unless, in its opinion, such lost time becomes unreasonable. The Third Step Meeting shall be on Company time for a period not exceeding one (1) hour and the Shop Steward shall be paid during his attendance at such meeting. Otherwise, all grievances will be considered and acted upon outside of regular working hours and no time thus spent by the employee and/or his Shop Steward will be borne by his Employer.

If a discharged employee claims he has been discharged without just cause, his case will be handled through the grievance procedure described above. In the event that the Union and the Employer agree in writing, the grievance concerning a discharged employee who claims he was discharged without cause will commence at the 3rd Step described herein. Should such an employee be reinstated due to a decision that he was discharged without just cause, he shall be compensated for the time lost not to exceed eight (8) hours per day or forty (40) hours per week at his straight-time hourly rate.

(B) INITIATED BY THE EMPLOYER OR THE ASSOCIATION

Any grievance which the Association or any of its members may have against the Union or any of its covered Employees, shall be presented in writing to the appropriate Union representative by the President of the Association or the President of the Employer or their respective designees, as the case may be.

If no mutually agreeable settlement is reached within five (5) working days from the submission of the grievance to the Union, the matter may be referred by either party to arbitration as hereinafter provided.

(C) TIME LIMITS

The time limits set forth in Articles XI or XII are to be strictly followed. Any grievance which is not presented or processed within the time limits set forth in these Articles, shall be deemed to have been settled to the mutual satisfaction of the involved parties.

ARTICLE XII

Any grievance arising out of a difference or dispute as to the interpretation or application of any provision of the Agreement which has not been satisfactorily settled through the grievance procedure prescribed herein, shall be referred to a Board of Arbitration consisting of three persons, provided however, the parties by written agreement, may refer the grievance to a single arbitrator.

Within two (2) working days after the completion of the grievance procedures in Article XI, the party seeking arbitration shall notify the other party in writing to that effect and at the time, state in writing the facts involved in the grievance and the method of Arbitration desired.

A Board of Arbitration or a single Arbitrator, whichever is appropriate, shall be chosen as follows:

Within five (5) working days after the receipt of the Notice of Arbitration referred to above, one member shall be appointed by the Employer and one member shall be appointed by the Union. Within five (5) working days of their appointment, these two shall meet and choose the third member who shall act as Chairman of the Board of Arbitration. If they fall to agree on the third member, such third member shall be appointed by the American Arbitration Association in accordance with its established procedure in such cases.

A single arbitrator shall be chosen in accordance with the established procedures and rules of the American Arbitration Association.

The Board of Arbitration or a single Arbitrator shall not by any decision or award either add to or subtract from any of the terms or conditions of this Agreement.

Any fees or other expenses of attorneys, representatives or of the arbitrator appointed by the respective parties shall be borne by the party so appointing them. Any fees or expenses of the third arbitrator of the Board of Arbitration or a single Arbitrator shall be borne by the parties equally.

ARTICLE XII-A SCREENING BOARD

A joint labor-management screening board shall be established as soon as possible consisting of five members appointed by the Union and five members appointed by the Elevator Industries Association, Inc. At any meeting for the transaction of any business by the board, the presence in person of at least four (4) members shall be necessary for a quorum of which two must be from the Elevator Industries Association, Inc. and two from the Union. At any meeting of the board, there shall be an equal number present on both sides so that the number of votes cast shall be divided evenly between the Union and management. Additional members from either side may sit in, but shall not vote. For the purpose of conducting a hearing or investigation, the board may designate any number not less than two to conduct same. In any such hearing or investigation, no member of the board shall sit if he is associated as an employee or a member of management in the shop which is a party to an issue brought before the board.

The function of the board shall be to determine issues which may arise concerning job classification or unsatisfactory employee attitude, but it is not intended that the board shall replace the grievance and arbitration procedures hereinabove provided for. The board shall elect its own chairman and make such procedural rules, by majority vote, and maintain such records as it may deem necessary for the proper conduct of its business including the appointment by majority vote, of an umpire to determine any issue upon which the board may be evenly divided. The board or

any member or other person designated by it may conduct hearings and/or personal investigations. Attorneys may be excluded by the board, but each party shall be given a fair opportunity and reasonable time to prepare and present proof, including expert testimony by any person or employee from the shop involved or elsewhere. The management of the shop involved may send any person in the shop or associated with it to represent it in such hearing or investigation.

If an Employee at the "B" repair classification goes before the Screening Board to be upgraded, the decision of the Screening Board will be binding on the Employer, Employee and the Union.

Issues affecting classification and employee attitude are defined as follows:

(a) Job Classification: If any employee shall feel that he is not classified in the proper job classification referred to in Article XIX for which he feels qualified, and if reasonable attempts to resolve the matter between the employee, his Employer and/or the Union have been unsuccessful, then on written request of the employee or the Employer the Board shall inquire into the matter as above provided for and its decision shall be final. (However, the screening board's jurisdiction shall not include other contract provisions referring to job classification.) If the board rates the employee at a higher classification than the one in which he is being employed, then the Employer shall immediately raise the employee to the higher classification or else the employee shall be free to leave the employment without loss of any seniority, vacation or other rights and take a job at the higher pay rate anywhere in the industry.

(b) Unsatisfactory Employee Attitude: If an Employer feels that any employee has manifested an unsatisfactory employee attitude in matters of absenteeism, tardiness, irresponsibility, surliness or other conduct falling short of good job performance for which the Employer does not desire to resort to dismissal, upon written request of the Employer, the board shall inquire into the matter and if it be determined by the board that the charge is valid, the board shall reprimand the employee and shall publish its findings.

ARTICLE XIII UNION ACTIVITY

No employee shall engage in solicitation or other Union activity of any kind (except as may be specifically permitted herein) during working hours or on his Employer's premises, without written consent of his Employer. Any violation of the clause on the part of (1) Union officials shall constitute a breach of this Agreement, or (2) on the part of any employee, whether or not an official of the Union, shall constitute just cause for disciplinary action, which may include discharge.

ARTICLE XIV BULLETIN BOARD

Each Employer shall place a bulletin board in its shop for the exclusive use of the Union for posting notices which are to be restricted to notices of (a) Union recreational and social affairs, (b) Union meetings, (c) Union elections and (d) Union appointments and results of elections.

All such notices shall bear the signature of a Union Officer or Union Shop Steward.

A copy of each such notice shall be delivered to the Secretary of the Employer or his designee a reasonable time before posting.

ARTICLE XV NO STRIKE — NO LOCKOUT

- (a) The Employees recognize that the value and security of their jobs depend to a large degree upon the ability of their Employer to maintain a proper competitive position in the industry and to that end agree to make an honest and conscientious effort to eliminate waste and increase their efficiency in their respective jobs.
- (b) The Union and the Employees agree that there shall be no strike of any kind, including slowdowns, sit-down, stay-in, walk-out, boycott, sympathy actions, picketing or work stoppage during the term of this Agreement.

The Employer agrees that there shall be no lockout during the term of this Agreement.

ARTICLE XVI UNION MEMBERSHIP

(a) All Employees employed by the Employer who are members of the Union on the date of the signing of this Agreement, shall as a condition of employment remain members in the Union during the term of this Agreement. All other Employees shall as a condition

of employment be or become members of the Union the thirty-first (31st) day following the effective date of this Agreement, or the thirty-first (31st) day following the beginning of their employment, whichever is later.

- (b) (i) Each Employer will apply to the Joint Employment Office for additional Employees when same are needed. Within seventy-two (72) hours exclusive of Saturday, Sunday and Holidays, from the time an Employer applies to the JEO for additional Employees, such Employer shall interview all referrals from the JEO up to and including the first nine (9) referrals. If after seventy-two (72) hours, exclusive of Saturday, Sunday and Holidays, or after having interviewed nine (9) referrals from the JEO, whichever event happens first, an Employer may hire from whatever source available if none of the referrals were satisfactory to the Employer. However, an Employer may not hire anyone on the JEO list without having first interviewed all qualified applicants ahead of that person on the list, for the position sought to be filled by the Employer.
 - (ii) The "72 hour rule" shall not apply to apprentices. However, in the event that there are no unemployed third or fourth year apprentices and an Employer wants to hire a third or fourth year apprentice that has special qualifications, the Employer may make the hire while acting consistently with the terms of the JATC Trust and with the approval of the trustees. The Employer shall interview up to six apprentice

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referrals from the JEO. However, notwithstanding anything to the contrary, an Employer will retain the exclusive right, in its absolute discretion, to determine which of the six apprentice referrals the Employer shall hire.

(c) The Employer will instruct Employees so hired to report to the Union within seven (7) calendar days after the date of hire for the purpose of obtaining a temporary card. Although Employees shall be hired, when available, through the Joint Employment office, neither the Union nor the Employer shall in such hiring give any preferential treatment as between Union and non-Union persons seeking employment.

ARTICLE XVII MANAGEMENT'S RIGHT TO MANAGE

Nothing contained in this Agreement is to be construed as a limitation of the right of the Employer to exercise the regular and customary functions of management, including the right to direct the Employees, covered by this Agreement to perform all work involving the maintenance, repair and modernization of elevators and escalators, and also the installation of elevators and escalators (with the exception of a completely new elevator or escalator installation using new equipment or used equipment not part of the existing installation) in existing or modified elevator shafts or escalator well ways.

ARTICLE XVIII-A JOB CLASSIFICATION AND WAGES

- (a) The terms and conditions set forth in this Article shall apply only to elevator job classifications, as provided in sub-paragraph (b) hereof. Job descriptions shall be as defined in EXHIBIT "A", made part of this Agreement subject to such changes or amendments and corrections thereto as may be made by mutual agreement in writing between the parties.
- (b) The minimum hourly rates of pay for the job classifications listed below shall be effective on the dates indicated:

dates indicators			0.0000	02/28/11
Joba	Job Name	02/23/09 <u>3%</u>	02/22/10 3%	3%
1. 2. 3. 4. 5. 6. 7. 8. 9.	"A" Elev. Repair/ Modernization Mechanic Elev. Machinist Mechanic "A" Elev. Winder "B" Elev. Repair/ Modernization Mechanic "A" Elev. Maint. Mechanic "A" Elev. Machinist "B" Elev. Malnt. Mechanic "B" Elev. Machinist "A" Elev. Helper "B" Elev. Benchhand Elev. Driver Helper	\$35.79 \$34.23 \$34.23 \$32.37 \$34.23 \$32.37 \$31.55 \$28.11 \$26.53 \$26.53 \$27.00	\$36.86 \$35.26 \$35.26 \$33.34 \$35.26 \$33.34 \$32.50 \$28.95 \$27.33 \$27.33	\$37.97 \$36.31 \$36.31 \$34.34 \$36.31 \$34.34 \$33.47 \$29.82 \$28.15 \$28.64 \$26.06
11. 12.	Flow Stockroom Clerk	\$24.56 \$36.33	\$25.30 \$37.42	\$38.54
13. 14.	Hydraulic Elev. Mechanic Repair/Modernization Foreman		\$38.99	\$40.16
14. 15.	Repair/Modernization Superintendent	\$39.91	\$41.11	\$42.34

 Job#
 Job Name
 02/23/09
 02/22/10
 02/28/11

 16.
 Maintenance Foreman
 7
 \$36.29 23
 \$37.38
 \$38.50

 17.
 Maintenance Superintendent
 7
 \$38.2525
 \$39.50
 \$40.69

- (1) All other Hydraulic classifications and pay rates shall be the same as numbers 2 through 12, above.
- (2) An employee assigned by his Employer in a supervisory capacity over five (5) or more persons shall be paid two (2) dollars per hour above his job classification rate. Such a person shall be known as foreman. The duties of the foreman shall include the obligation not only to supervise the Employees under him, but also to make diligent, full and prompt report to his Employer concerning the work of the Employees under him and particularly the irregularity or dereliction of duty of any employee under him including, but not limited to, lateness, shirking, sobriety, etc.
- (3) Supervisor A supervisor shall be defined as a management employee who is not a member of the union, not covered by this Agreement and shall not perform bargaining unit work.
- (4) Superintendent
 An employee assigned by his employer in a supervisory capacity above a foreman shall be paid a minimum of \$4.00 per hour above the rate for his job classification. Such person shall be known as a superintendent and shall be classified as such. The duties of the

superintendent shall include supervision of Employees, including foremen under him and he shall be permitted to work with tools.

- (5) <u>Reclassification</u> Nothing herein shall limit the Employers' right to reclassify foremen and/or superintendents to their former classification.
- (c) Any employee employed by an Employer in Job Grade 4 (Grade B Elevator Repair mechanic) or Job Grade 7 (Grade B Elevator Maintenance Mechanic) must be considered for upgrading after eighteen (18) months of service in such classifications, and if deemed qualified by his Employer shall be reclassified to Job Grade 1 (Grade A Elevator Repair Mechanic) in the case of a Job Grade 4 employee, and to Job Grade 5 (Grade A Elevator Maintenance Mechanic) for a Job Grade 7 employee. If his Employer fails to upgrade such employee, the Union will submit the matter to the Screening Board, as provided in Article XII-A. In the event said Screening Board shall be evenly divided, then the matter shall be submitted for final and binding decision by an impartial chairman, to be designated by the parties to this Agreement. Any decision of said Screening Board or impartial chairman upgrading an employee shall become effective within fifteen (15) days from the date of notification to the Employer of the action of said Board or impartial chairman.
- (d) Any employee who is not upgraded after application to the Screening Board may not reapply for at least twelve (12) months from the date of the action by the Screening Board or the impartial chairman.

- (e) Rates of pay for Apprentices shall be determined on the basis of percentage as set forth in Schedule "A" attached.
- (f) The rates of pay as determined under Schedule "A" attached shall be automatically granted each employee on the anniversary dates indicated unless the Employer has been advised specifically that the apprentice has not attended Apprenticeship School diligently and continuously pursuant to standards adopted from time to time by the Joint Apprentice and Training Committee. Thereafter, if the apprentice continues to violate the aforesaid standards, the Employer, upon written notice from the Joint Apprentice and Training Committee shall immediately terminate the employee and such termination shall be deemed just cause for all purposes under this Agreement.
- (g) After completion of the Apprenticeship Training Program, an Apprentice shall be placed by his Employer into Job Grade 4 or 7 or 8 or 10, if there is a vacancy in one of said Job Grades and the Employer decides that the employee is qualified for such a vacancy. In the event that the Employer has no position vacancy in any of the aforesaid Job Grades or decides that the Apprentice is not qualified for any of said job classifications, then the Apprentice will be placed in Job Grade 9.
- (h) The Apprenticeship Training Program shall be supervised by a joint committee consisting of an equal number of representatives to be designated by the Employer and the Union respectively.
- (i) Rates of pay for newly-hired Elevator Stockroom Clerks shall be determined on the basis of percentages

- as set forth in Schedule "B" attached. After thirty (30) months, employment, any such Elevator Stockroom Clerk shall receive the rate set forth in Paragraph (b) above for Elevator Stockroom Clerk (Job Classification 12).
- (j) If an apprentice drives a vehicle, not to exceed 1 day (8 hours) in a forty (40) hour week, the apprentice shall be paid at his regular rate.
- (k) Apprentices and "A" Elevator Helpers (job Classification #9) shall not be permitted to work alone except: (1) under the supervision of a mechanic on the route for the purposes of cleaning, painting and lubricating elevator equipment giving due regard to safe working conditions; or (2) where Elevator Helpers are performing work under the circumstances described in paragraph B of the Job Description for a Elevator Helper contained in Exhibit A here-in and made a part hereof. This shall not limit the work a helper may perform when working with a mechanic. An apprentice shall not carry personal tools other than those of his journeyman.
- (1) Mechanics shall be required to provide tools listed on Schedule "C" at no cost to the Employer.
- (m) The parties recognize that in order to meet the needs of the industry, the parties agree to take all such actions which are necessary to recruit, screen and select 50 apprentices in each year of the Collective Bargaining Agreement for the Apprentice Program each March 1st, June 1st, and October 1st.
- On or after November 1st, 2006, the J.A.T.C. Committee will meet quarterly to determine if there is a sufficient need to close the selection process. In

making such a determination the parties will consider the number of requests for Apprentices, the number of available previously screened applicants and the number of available previously employed apprentices registered at the J.E.O.

If at any time during the term of the Collective Bargaining Agreement there becomes a lapse in available Apprentices ready for hire the J.E.O. will refer a screened applicant who has not yet completed the required physical to be referred out as a "TA1" (Temporary Apprentice) at the apprentice rate of pay. This TA1 may be subjected to an Employer administered drug screening, and may remain temporarily employed as such until said individual completes the mandatory J.A.T.C. physical.

All apprentice requests will be filled from the list of available apprentices who are not in violation of the J.A.T.C. rules and shall not be subject to the interview process.

(n) In order to improve the quality and effectiveness of apprenticeship referrals the parties recommend that the J.A.T.C. remove apprentices from the referral list who have demonstrated that they are not employable or diligent in seeking employment included but not limited to apprentices who: 1) were discharged from two employers for cause, 2) failed to notify the J.A.T.C. at least once every sixty (60) days in writing of the apprentice's interest and availability to seek employment in the elevator industry, or 3) failed to accept an employer referral within 72 hours unless the apprentice had previously delivered a writing to the JEO that the apprentice would not be available during the

period of the referral, An apprentice who is removed from the referral list for any reason may appeal such removal to the J.A.T.C. trustees within twenty (20) days of the date of notification of the removal.

(o) The maintenance mechanic's work on escalators shall include such maintenance, trouble shooting and small parts placement as can be accomplished safely and efficiently by one mechanic. The objective is to attempt to do that which is necessary to return an inoperative unit to service. Troubleshooting problems shall include such things as checking safety circuits, stop switches, coils, relays, fuses, resistors and comb plates. A team shall perform the escalator work beyond that stated above and the mechanic performing such work shall be paid at the repair rate.

ARTICLE XVIII-B CONTRACTS WITH OTHER EMPLOYERS

If the Union enters into a contract during the term of this contract with any Employer, company, firm or corporation which is in any aspect more favorable to such Employer than the terms of this contract, in such case, the Association may elect to adopt the more favorable provision, in which case, such provision shall be embodied in the terms of this contract. Such election may be given in writing within thirty (30) days of notification by the Union to the Association of such more favorable contract.

ARTICLE XIX VIOLATION OF WORKING RULES, ETC.

Local Union No. 3 is part of the International Brotherhood of Electrical Workers and any violation or annulment of working rules or agreement of any other Local Union of the IBEW, or the subletting, assigning, or the transfer of any work covered by this Agreement in connection with electrical work to any person, firm, or corporation not complying with the terms of this Agreement, by the Employer, will be sufficient cause for cancellation of this Agreement, after the facts have been determined by the International Office of the Union.

ARTICLE XX ANNUITY/HRA PLAN

(a) (1) Every payroll week, each Employer shall contribute to the Annuity/HRA Plan of the Electrical Industry the combined sums according to the schedule below as the Employer's sole and total contribution towards the Plans.

Annuity/HRA Plan

Effective 12:01 a.m. February 23, 2009

Classifications 1-5, 7 & 13-17

At the rate of \$6.50 per hour of actual work

Classifications 6, 8, 9, 10, 11 & 12

At the rate of \$3.25 per hour of actual work

Apprentice Classification

At the rate of \$1.00 per hour of actual work

Effective 12:01 a.m. February 22, 2010

Classifications 1-5, 7 & 13-17

At the rate of \$6.75 per hour of actual work

Classifications 6, 8, 9, 10, 11 & 12

At the rate of \$3.25 per hour of actual work

Apprentice Classification

At the rate of \$1.00 per hour of actual work

Effective 12:01 a.m. February 28, 2011

Classifications 1-5, 7 & 13-17

At the rate of \$7.00 per hour of actual work

Classifications 6, 8, 9, 10, 11 & 12

At the rate of \$3.50 per hour of actual work

Apprentice Classification

At the rate of \$1.00 per hour of actual work

- (b) Each Employer shall indicate the combined amount of the Annuity and HRA Plan payments remitted for each employee in the appropriate space provided on the Contractors Weekly Payroll Reports forwarded to the Joint Industry Board of the Electrical Industry.
- (c) The Joint Industry Board of the Electrical Industry shall administer the Annuity Plan of the Electrical Industry and the HRA Plan of the Electrical Industry. It is understood that the Employees covered by this Agreement on whose behalf contributions are made shall be participants of the Plans and enjoy the benefits provided thereunder proportionately to the contributions made on their behalf with respect to contributions made by other Employers on behalf of other participants.
- (d) Effective October 25, 1982 each payroll slip shall set forth the amount of annuity contribution credited by the Employer for that payroll period.

ARTICLE XXI DISCRIMINATION

The Employer and the Union acknowledge and agree to comply with provisions of appropriate Federal, State and Local Legislation dealing with the subject of discrimination, including but not limited to, those statutes prohibiting discrimination on the basis of race, color, sex, age, creed, national origin, disability, sexual orientation, marital status or citizenship status concerning all employment decisions, including but not limited to recruitment, hiring, compensation, demotion, downgrading, transfer, lay-off and termination of employment, and all other terms and conditions of employment.

ARTICLE XXII INJURY/ILLNESS

(a) The benefits provided under this Article for Injury on the Job, subparagraph (b) below, and for Absence from Work Due to Illness, subparagraph (c) below, shall not exceed a total of forty (40) hours of pay at straight-time rates during any contract year for any employee employed within the industry, except that new Employees with less than one (1) year of service within the industry will accrue time for benefits under this Article at the rate of three and one-third (3 1/3) hours for each completed month of employment. After one (1) year of service an employee can utilize his paid sick leave as needed. An employee who terminates employment and has utilized more than his earned sick leave shall have said over-utilization deducted from his final pay check.

- (b) In the event an employee covered by this Agreement sustains loss of time due to a physical injury requiring medical attention as a result of an accident on the job, and such absence is so certified by a doctor, then, if such injury is not covered by Workers' Compensation only because the employee's absence resulting from such injury, is less than the statutory period for compensation under that Statute, the Employer agrees to pay such injured employee for the balance of his regular, straighttime hours lost on the day of the injury plus eight (8) hours paid at straight-time rates for the third (3rd) full day of three (3) consecutive days of loss of pay to and following the injury, provided, however, that all payments for such injuries shall not exceed a total of forty (40) hours of pay at straight-time rates during any contract year for all such separate injuries during that year less any benefits paid under subparagraph (c) below.
- (c) An employee covered by this Agreement shall be entitled to pay for absence from work due to illness not to exceed a total of forty (40) hours of pay at straight-time rates during any contract year, less any benefits paid under subparagraph (b) above, provided, however, that no such employee shall be entitled to such benefit for illness of less than a full work day nor for absence from work due to illness on the day before or the day after any Holiday or vacation. An Employer may require any employee to provide satisfactory medical proof before paying for absence due to illness.
- (d) In the event an employee is terminated by an Employer, such employee will be entitled to be paid at the time of termination the pro-rata portion, if any, of his unused injury/illness benefit for the period employed by that Employer during that contract year.

- (e) Any portion of said forty (40) hours credit for any injury/illness not used by an employee on the actual payroll at the end of a contract year shall be paid to such employee at his regular, straight-time hourly rate applicable on the last day of the contract year.
- (f) It is specifically agreed that such injury/illness payments shall not be considered as compensation or wages for overtime or any other purposes.

ARTICLE XXIII ASSOCIATION MEMBERSHIP

- (a) All members of the Association at the time of the execution of this Agreement (Exhibit "B") and persons, firms or corporations becoming members thereof subsequent to the execution of this Agreement shall be and continue to remain bound by and subject to the terms of this Agreement or any extension or renewal thereof.
- (b) Should a member of the Association resign, be suspended or expelled from the Association or its membership terminated for any reason whatsoever during the term of this Agreement or any extension or renewal thereof, such member shall continue to be bound by provisions of the current Agreement then in effect for the term of such Agreement.

ARTICLE XXIV

This Agreement is made subject to the approval of the President of the International Brotherhood of Electrical Workers.

Any terminology herein to the contrary notwithstanding this contract is between the undersigned Association on behalf of its members and Local Union No. 3 International Brotherhood of Electrical Workers.

ARTICLE XXV CAR ALLOWANCE

Whenever an Employer requires an employee to use his own car in the regular course of performing his assigned duties, then the employee shall be paid a car allowance as hereinafter set forth.

(a) <u>Weekly Rate</u> — Where an employee is required by his Employer to use his car on a regular basis from Monday to Friday (8:00 a.m. to 5:00 p.m. daily), the following weekly rates shall be applicable:

For less than 150 miles per week From 150 to 250 miles per week From 250 to 350 miles per week Over 350 miles per week, for each 100 miles or part thereof \$98.35 per wk. \$112.36 per wk. \$126.43 per wk.

\$12.94 per wk. additionally

All weekly mileage shall be computed from the individual's home or from the city line if he lives outside of New York City and works within the city.

(b) Night Hate — Any employee who receives a weekly car allowance under paragraph (a) above, and who is required to be on duty at night (5:00 p.m. to 8:00 a.m.) from Monday through Friday, shall receive Sixteen and 85/100 (\$16.85) Dollars per night for his car in addition to all other car allowances.

- (c) <u>Daily Rate on Saturday, Sunday or Holidays</u> Any employee who receives a weekly car allowance and who arranges in advance for the use of his car for emergency calls or emergency jobs on a Saturday, Sunday or Holiday, shall be paid the sum of Twenty Seven and 96/100 Dollars for each such day in addition to all other car allowances. Said \$27.96 shall cover a twenty four (24) hour period from 8:00 a.m. on any of said days to 8:00 a.m. the following day.
- (d) <u>Deductions</u> Any employee who is entitled to a weekly car allowance, as set forth in paragraph (a) above, shall have Five and 57/100 (\$5.57) Dollars per day deducted from said allowance for each day he is absent from work for any reason whatsoever. If he is absent from work for an entire work week (Monday through Friday), such employee shall receive no car allowance for that week. Absence shall mean failure to work for any reason whatsoever and will include but not be limited to absence due to Holidays, vacations, sickness/injury leave, leave of absence, etc.
- (e) <u>Daily and Night Rate for Employees Not Entitled</u> to <u>Weekly Allowance</u> If an Employer requires an employee not otherwise entitled to a car allowance to use his car for a particular day or night, said employee shall be entitled to the following allowances:
 - (1) Use of car on a Saturday, Sunday or Holiday
 Forty-Four and 95/100 (\$44.95) Dollars for
 the twenty-four (24) hour period from 8:00 a.m.
 on any of said days to 8:00 a.m. the following
 day.

- (2) Day rate from 8:00 a.m. to 5:00 p.m. on any other day Twenty-Seven and 96/100 (\$27.96) Dollars per day.
- (3) Night rate from 5:00 p.m. to 8:00 a.m. on any other day Twenty-Seven and 96/100 (\$27.96) Dollars per day.
- (4) No employee shall be entitled to receive more than Forty-Four and 95/100 (\$44.95) Dollars for any twenty-four (24) hour period under this provision.
- (f) Nothing provided herein shall constitute a basis for reducing car allowances which may be in excess of the rates provided herein at the time of the signing of this Agreement.
- (g) For those Employees who are not required by the Employer to use their own car in the regular course of performing their duties, said Employees shall receive car allowance when the distance between the employee's home and the job site exceeds the distance between the employee's home and the Employer's shop by 10 or more miles, and the job site is outside the five boroughs and is not readily accessible by public transportation. When both of these conditions are met and the work assignment is less than one week, the employee shall receive the daily rate referred to in (e). When the work assignment described above is one week or more, the weekly rate shall apply. When the mileage difference described above is between 10 and 15 miles, the weekly rate shall be the same as the weekly rate for less than 150 miles per week. For 15-25 miles, the rate shall be the same as for the weekly

rate for from 150 to 250 miles per week. For 25-35 miles, the rate shall be the same as the weekly rate for from 250 to 350 miles per week. For each additional ten miles or part thereof, the rate shall be increased by the same amount as for the over 350 miles per week, for each 100 miles or part thereof. When the mileage difference described above is less than ten miles but greater than no miles, the employee shall be reimbursed for those tolls which are incurred above and beyond those which would be incurred to commute to the employers shop. Employees working together on the same job site will make reasonable efforts to car pool and provided these efforts are made, the car allowance will be paid to the employee whose vehicle is used and such employee shall be paid any additional mileage to pick up the other Employees in the car pool. Where the public transportation is of the commuter bus or rail variety, and the fare from the employee's home to the job exceeds \$6.00 per day (equivalent of a double fare zone), the employee shall be reimbursed for the excess over and above the \$6.00 per day.

Adjustments in Car Allowances:

- (1) Effective the first Monday of May, 2009 the allowances provided for in paragraphs (a) through (f) above shall be adjusted (increased or decreased) by an amount equal to the percentage difference between the August 2008 and February 2009 Private Transportation Index as prepared by the Bureau of Labor Statistics, Consumer price Index New York City Average.
- Further adjustments in car allowance shall be made on the first Monday in November, 2009, the first Monday of May, 2010, the first Monday

of November, 2010, the first Monday of May, 2011, and the first Monday of November, 2011, said adjustments in the allowance provided for in paragraphs (a) through (f) above shall be adjusted (increased or decreased) by an amount equal to the percentage difference between February to August for November adjustments and August to February for May adjustments in the Private Transportation Index as prepared by the Bureau of Labor Statistics, Consumer Price Index New York City Average.

(3) At each six month period, the resulting allowances set forth in paragraphs (a) through (f) as adjusted by paragraph (h) shall be increased by a one time five percent adjustment (which shall not be added to the base or be subject to compounding).

ARTICLE XXVI SHOP STEWARDS

The Employer recognizes that there shall be a Shop Steward at each Employer. The Shop Steward shall be appointed by the Business Manager in accordance with the provisions of Article IX of the Constitution and By-Laws of Local Union No. 3 IBEW (in effect on October 26, 1975) from among the. Employees of the Employer. Such Shop Steward will perform his normal work assignment and will conduct Union business prior to or after working hours unless otherwise agreed to by mutual agreement between the Union and the Employer.

Union business shall be defined as the investigation of grievances, Union security problems and safety issues. When appointing a Shop Steward, the Business Manager will select an "A" mechanic of reasonably high qualifications and seniority at the Employer, or a "B" mechanic if no "A" mechanic is employed by the Employer, so that in the event of a lay-off the seniority of the Steward will not be a hardship to the Employer.

The foregoing qualifications for the appointment of a Shop Steward shall not affect those Shop Stewards appointed as such by the Business Manager prior to October 26, 1975 who shall enjoy the same protection in seniority as those appointed by the Business Manager after October 26, 1975.

ARTICLE XXVII EDUCATIONAL AND CULTURAL TRUST FUND

In accordance with the schedule set forth below, each Employer agrees to pay each week, on behalf of all the Employees covered by the bargaining agreement, to the Joint Industry Board of the Electrical Industry as the Employer's sole and total contribution toward the financing of the Educational and Cultural Trust Fund the sums established below;

- (a) Effective upon commencement of the agreement a sum equal to 0.25% of gross production payroll;
- (b) Effective 12:01 a.m., March 2, 1998 a sum equal to 0.75% of gross production payroll; and
- (c) Effective 12:01 a.m., March 1, 1999 a sum equal to 1.00% of gross production payroll.

ARTICLE XXVIII JOINT LABOR MANAGEMENT EMPLOYMENT OFFICE

- (a) The Association and the Union shall sponsor a Joint Labor Management Employment Office ("JEO") which shall be operated pursuant to the terms and conditions of a Trust Agreement dated October 26, 1988, as amended from time to time (the "JEO Trust"), a copy of which is incorporated herein by reference. The JEO Trust shall be jointly administered by an equal number of Association and Union Trustees.
- (b) Each Employer shall contribute to the JEO Trust such percentage, as shall be determined by the Trustees of the JEO Trust from time to time, of its gross weekly production payroll, but in no event shall any Employer's combined contributions to both the JEO Trust and to the JATP Trust (as defined in Article XXIX), exceed one and five one hundredths of a percent (1.05%) of such Employer's gross production payroll.

(c) Each Employer agrees to be bound by the terms and conditions of the JEO Trust and by all lawful actions taken by the Trustees thereunder, including without limitation complying with such Trustees, requests for payroll records and documents and submitting to such audits as such Trustees may request periodically.

ARTICLE XXIX APPRENTICE TRAINING PROGRAM

(a) The Association and the Union shall sponsor a Joint Apprenticeship Training Program ("JATP"), which shall be operated pursuant to the terms and conditions of a Trust Agreement dated October 26, 1988, as amended from time to time (the "JATP Trust"), a copy of which is incorporated herein by reference. The JATP Trust shall be jointly administered by an equal number of Association and Union Trustees.

- (b) Each Employer shall contribute to the JATP Trust such percentage as shall be determined by the Trustees of the JEO Trust from time to time, of its gross weekly production payroll, but in no event shall any Employer's combined contributions to both the JEO Trust and to the JATP Trust exceed one and five one hundredths of a percent (1.05%) of such Employer's gross production payroll.
- (c) Each Employer agrees to be bound by the terms and conditions of the JATP Trust and by all lawful actions taken by the Trustees thereunder, including without limitation complying with such Trustees, requests for payroll records and documents and submitting to such audits as such Trustees may request periodically.

ARTICLE XXX DENTAL BENEFIT PLAN

(a) Pursuant to the terms of the Trust Indenture between the parties, each Employer agrees to remit to the Joint Industry Board of the Electrical Industry, the following sum equal to percentages of the gross weekly production payroll for all Employees covered by this agreement, who have been actively employed in the industry for more than six (6) months.

Effective February 22, 2010 : 2% Effective February 28, 2011 : 2.5% Said monies shall be used exclusively to provide dental benefits for such Employees as determined by the Trustees.

(b) The Trustees shall determine whether there are sufficient excess monies to permit the Fund to provide Dental Benefits to retirees for the duration of the collective bargaining agreement without requiring any additional contributions from the Employers. If the Trustees decide to provide benefits to the retirees during the life of the collective bargaining agreement and the excess funds are depleted, the Trustees shall agree to cease such retiree benefits.

ARTICLE XXXI SAFETY COMMITTEE

- (a) The parties shall establish a Safety Committee.
- (b) The parties agree to execute a letter of understanding establishing a safety course for escalator repair and maintenance to be operated under the auspices of the Joint Employment Office of the Elevator Industry.
- (c) Each employer agrees to provide mandatory safety training on Company time consistent with applicable laws.

ARTICLE XXXII ELEVATOR DIVISION RETIREMENT BENEFIT PLAN

(a) The Association and the Union shall maintain the Elevator Division Retirement Benefit Plan ("Plan") which shall be funded pursuant to the terms and

conditions of a Trust indenture which is jointly administered by an equal number of Association and Union Trustees.

(b) Every payroll week each Employer shall pay, as its sole and total contribution toward the financing of the Retirement Plan, a sum equal to the following percent of its gross weekly production payroll for all its Employees covered by this Agreement until January 29, 2012 at which time the contribution rate shall return to 3.00% provided that by doing so the EDRBP will not fall within the critical status as defined by the Pension Protection Act of 2006.

- t 00 0000	3.5%
Effective February 23, 2009	3.5%
Effective February 22, 2010	3.75%
Effective February 28, 2011	3.1070

- (c) The Trustees of the Plan shall administer the Plan pursuant to the terms and conditions of a Declaration of Trust which may be amended and which is hereby incorporated by reference.
- (d) Each Employer agrees to be bound to the terms and conditions of the Trust and to all lawful actions taken by the Trustees on behalf of the Plan including providing payroll and related records and documents and submitting to audits as the Trustees may request periodically.

ARTICLE XXXIII SECOND/THIRD SHIFT MODERNIZATION WORK

(a) Employers may staff modernization work with up to three (3) five (5) day eight (8) hour shifts when contractually required.

- (b) The first eight (8) hour shift Employees shall work regular working hours at straight-time pay. The second eight (8) hour shift Employees shall be paid regular straight-time pay plus a fifteen percent (15%) differential regardless of whether there is a first shift. Employment on the second shift shall be voluntary. The Employees working the first eight (8) hour shift shall not work the second eight (8) hour shift.
- (c) The third eight (8) hour shift, Employees shall work regular hours at straight-time pay plus a fifty percent differential, provided there is a staffed second shift.
- (d) Employees on the first, second or third shift shall be paid at the rate of time and one half regular straight time pay for all work in excess of eight (8) hours per
- (e) The hours of the second shift shall be defined as between 3:30 p.m. through 12:00 Midnight with a one-half hour unpaid meal break. The hours of the third shift shall be defined as between 11:30 p.m. through 8:00 a.m. with a one-half hour unpaid meal break.

ARTICLE XXXIV SUBSTANCE ABUSE COMMITTEE

The Employer and Local No. 3 agree that the creation and maintenance of a safe working environment free from drugs, unauthorized controlled substances and alcohol is of mutual concern to the parties, the Employees, the employer's customers and the general elevator and escalator riding public. To fully effectuate this goal, Local No. 3 agrees that each Employer may create reasonable rules and regulations, including

without limitation, drug testing for new Company hires and drug testing based on reasonable cause. Any disciplinary action taken pursuant to such procedure shall be subject to the grievance and arbitration procedures set forth in the collective bargaining agreement.

ARTICLE XXXV DEFERRED SALARY PLAN

The Employer agrees to participate in the Deferred Salary Plan of the Electrical Industry for all the Employees covered by this Agreement, which is administered by the Joint Industry Board of the Electrical Industry, provided however that the Employer shall have no obligation to contribute any monies into such fund.

ARTICLE XXXVI UPGRADING AND ASSIGNMENT OF APPRENTICES

- (a) Whenever the combined number of Employees in classifications one (1) through eight (8) and thirteen (13) reaches 75 Employees in total on the "active" unemployment list of the Joint Employment Office, an Employer:
 - (1) may not upgrade or assign an apprentice to perform mechanics work who has not completed his 3rd year in the apprenticeship training program and passed a test to be administered by the Joint Apprentice Training Committee; or

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(2) may not lay off a mechanic without first having removed all assigned mechanics work from all apprentices who have been upgraded and assigned to perform mechanics work. THE STATE OF THE S

- (b) Apprentices who have been performing mechanics work and receiving mechanic's pay prior to November 1, 1993, shall not be subject to or affected by the provisions contained in paragraph (a).
- (c) For the purpose of training, each Apprentice shall be assigned to work within the maintenance department for an aggregate of not less than 200 hours during the course of his/her apprenticeship.

ARTICLE XXXVII MISCELLANEOUS

- (a) Any reference in this Agreement to a male pronoun shall be construed as including the female pronoun.
- (b) Gross production payroll shall be defined as the compensation for all hours actually worked by Employees covered by this Agreement and shall exclude all payments made to Employees not directly related to hours actually worked including but not limited to payments for vacation, annuity, Holidays, personal time off, sick leave, annual bonuses and premium portion of overtime hours. The straight-time portion of all overtime hours however shall be included.

ARTICLE XXXVIII SUBCONTRACTING

The Employers agree that they will not subcontract bargaining unit work except for the incidental bargaining unit work that the Employers have historically subcontracted. In such circumstances, the Employers agree that they will give contractors with Local Union No. 3 IBEW collective bargaining agreements first consideration in assigning such work. For purposes of this Article, the recent layoffs at the Maintenance Company shall not be deemed bargaining unit work which has been historically subcontracted.

ARTICLE XXXIX SAFETY

The Employer will not require an employee to seek the assistance of building personnel.

ARTICLE XL BEREAVEMENT

An Employee will be entitled to three consecutive days off immediately following the death of a member of the Employee's immediate family, and will be paid at the rate of the Employee's straight time for eight hours for each day off which falls on a weekday. For the purpose of this provision, the immediate family is defined as the Employee's father, mother, spouse, child, siblings and mother-in-law and/or father-in-law.

ARTICLE XLI CREDIT UNION

The Employers agree to permit their Employees to make payroll deductions authorizing payments to the Elektra Federal Credit Union. Employees may elect to authorize such deductions during an open period from April 1 to April 30. In no event, shall Employers be required to permit Employees to change their deductions more than once during the calendar year, provided however, that Employees shall be permitted to discontinue a payment authorization at any time.

ARTICLE XLII MEDICAL DAY LEAVE

As of February 26, 2007, each employee covered by the collective bargaining agreement shall be entitled to one (1) medical leave day in each contract year, to obtain the yearly physical/optical exam at the Joint Industry Board Medical Department. The day must be mutually agreed on and proof of the exam may be required.

IN WITNESS WHEREOF, this Agreement is signed in New York City this 23rd day of March, 2009.

ELEVATOR INDUSTRIES ASSOCIATION, INC.

By: President

LOCAL UNION NO. 3 INTERNATIONAL BROTHERHOOD OF ELECTRICAL WORKERS AFL-CIO

By: Christopher Eirkon

Business Manager

By: Assistant Business Manager

By: Robert T. Olenick

Business Representative

APPROVED INTERNATIONAL OFFICE-LALE.W.

MAY 1 4 2010

Estein D. Hill, President This approval does not make the international a party to this agreement

SCHEDULE A

Rates of pay for Apprentices as percentage of prevailing rate for Job Grade #9 ("A" Elevator Helper):

	60%
First year	70%
Second year	80%
Third year	90%
Fourth year	00.1-

SCHEDULE B

Rates of pay for Stockroom Clerks as percentage of prevailing rate for Job Grade #12 (Elevator Stockroom Clerk):

1st	2nd	3rd	4th	5th
<u>6 mo.</u>				
50%	60%	70%	80%	90%

EXHIBIT "B"

The following Employers are members of the Elevator Industries Association, Inc. for whom we are signing this Master Agreement:

American Elevator Corp. 36-26 31st Street, LIC, NY 11106 Elevator Co. 1400 Parker Street, Bronx, NY 10462 Centennial Elevator 23-82 BQE West, LIC, NY 11103

Century Elevator Maintenance Corp. 25-25 49th Street, LIC, NY 11103

4401 S. Clinton Avenue, South Plainfield, NJ 07080

Eltech Industries, Inc. 14 Van Cortland Avenue, Bronx, NY 10468

McGlynn Hays & Co. 605 West 47th Street, New York, NY 10036

Morgan Elevator Co. 39-23 29th Street, LIC, NY 11101

Nouveau Elevator Ind.
74 Calyer Street, Brooklyn, NY 11222
Nouveau Industries, Inc.
74 Calyer Street, Brooklyn, NY 11222
P.S. Marcato Elevator Co., Inc.
44-11 11th Street, LIC, NY 11101
Pride & Service
118 East 28th Street, New York, NY 10

118 East 28th Street, New York, NY 10016

Slade Elevator 1101 Bristol Road, Mountainside, NJ 07092

The Elevator Man, Inc. 178 East 124th Street, New York, NY 10035

Tri-State Elevator Co. . 511 Fifth Avenue, Pelham, NY 10803

Unitec Elevator Co.

13-02 44th Avenue, LIC, NY 11101

SCHEDULE C TOOL LIST

For Repair Mechani	

4 screwdrivers 12 lb. ball pein hammer 1 set nut drivers

1 gas pliers

2 channel locks (to 12") 1 needlenose pliers

1 diagonals

1 linemens pliers 1 vise grip

1 adjustable (to 12") 1 set open & box wrenches

(to 1") 1 ruler

1 flashlight 1 knife

2 chisels 1 feeler gauge

1 12" level 1 set Allen wrenches 1 center punch

1 drift pin

1 tin shears

3 files

1 pinch bar 15"

1 extension cord with double socket

1 Stillson wrench 12" 1 hacksaw frame

For Maintenance Mechanics

4 screwdrivers

1 16 oz. ball pein hammer

1 set nut drivers

1 gas pliers

2 channel locks (to 12")

1 needlenose pliers

1 diagonals

1 linemens pliers

1 vise grip

3 adjustable (to 10") 1 set open & box wrenches (to 3/4")

1 ruler 1 flashlight 1 knife

1 chisel 2 files

1 set Allen wrenches 4 sets of jumper cables

1 hacksaw frame 1 Multi-Meter

EXHIBIT "A" JOB CLASSIFICATION DESCRIPTION

GRADE "A" ELEVATOR

REPAIR MODERNIZATION MECHANIC

Repair, modernize and install elevators, where skilled mechanical work (even to close tolerances) and intricate control circuits are involved. Plan and execute difficult mechanical and electrical repairs and installations such as the renewal of worms and gears, the wiring, connecting and testing of controllers and other auxiliary electrical equipment, machine babbitting, thrust renewals, motor and controller removal and replacement, and modernization. Considerable judgment to analyze correctly the source of failure and proceed with accuracy and dispatch to completion of repairs, especially in emergency shutdowns. Work in field, usually without immediate supervision. Exercise tact and diplomacy in meeting customers' representatives.

GRADE "B" ELEVATOR

REPAIR MODERNIZATION MECHANIC

Repair elevators where the work is not to such close tolerances or as skillful as required by Class "A". Make general repairs, replacements, and adjustments to all types of elevator equipment of varied construction and design. Some standard operations such as renewal of cables, relining brakes, rebabbitting of light parts such as overhead sheaves. Perform car safety tests. Tolerances moderately close. Some knowledge of flindamental electricity. Work from written or verbal instructions of foreman in the case of repairs of a more advanced nature. Work in field usually without immediate supervision.

Exercise tact and diplomacy in meeting customers' representatives.

GRADE "A" ELEVATOR MAINTENANCE MECHANIC Inspect elevators of all types and makes for both mechanical and electrical conditions. Determine cause of faulty operation and indicate nature and general method of overhaul and repair. Make repairs, adjustments and lubricate as necessary to keep equipment in good operating condition, and shoot trouble. Sketch mechanical details and wiring diagrams as required. Read controller diagrams and circuits, shoot trouble on difficult and complicated jobs referred by lesser skilled mechanics. Check and direct work of lesser skilled mechanics and assist them where necessary. Make further inspection on special investigation on very complicated equipment, recurring troublesome situations on unusual cases as referred by lesser skilled mechanics, or as directed by a technical supervisor. Considerable initiative and high degree of ingenuity required to diagnose defective operation of complex equipment, indicate nature or method of overhaul or repair, make detailed report or recommendations for major changes or requirements. Exercise tact and diplomacy in meeting customers' representatives.

GRADE "B" ELEVATOR MAINTENANCE MECHANIC Inspect, lubricate, service and shoot trouble on elevator equipment of various types. Determine causes of faulty operation, make repairs and adjustments as needed to keep the equipment in good operating condition. Report nature and requirements for major repairs. Read controller diagrams and circuits, shoot trouble,

sometimes referring more difficult jobs to higher skilled mechanics.

Make further inspection or special investigation on recurring troublesome situations or unusual cases as directed. Considerable judgment and skill required to determine causes of faulty operations, indicate nature and method of overhaul or repair. Exercise tact and diplomacy in meeting customers' representatives.

GRADE "A" ELEVATOR HELPER

- (a) Assist, and work under the instruction of Grade "A" and Grade "B" Elevator mechanics. Anticipate to a great degree the sequence of operations and detailed steps to be taken, such as: having the proper tools and equipment at hand when needed; processing with own part of the work without requiring detailed instructions, etc.; clean machines, collect tools for job, obtain material, assist in mechanical operations, such as dismantling machines and reassembly, prepare babbit metal, replace cables, machine parts, etc. Some judgment to perform work efficiently, work in coordination with mechanic where errors may cause serious damage or injuries. On some types of work, proceed independently of the mechanic on another part of the same equipment (motor room, shaftway, pit, overhead).
- (b) "A" Helpers may work alone and may be assigned daily only by a route mechanic to one or more locations. When working alone, the helper shall be assigned on a day to day basis to one or more job locations. When working alone, the helper may perform only that work which he can perform safely and only such tasks that are within the helper's capabilities. Such tasks shall

include cleaning, oiling, greasing, painting, changing brushes, fixture maintenance, observing the operations of equipment, relamping, replacing combplate teeth, replacing carbons, contacts and shunts (not to include soldered contacts and shunts), and replacing door gib inserts. At no time may the number of an Employer's non resident "A" Helpers doing the expanded work in paragraph B exceed 50% of the number of its non resident "A" Maintenance Mechanics.

STOCK ROOM CLERK

Handle parts for elevators, motors, electrical equipment, cables, raw metal stocks, tools, rigging, equipment. Receive and store incoming material, tools and equipment. Check or verify with delivery slips. Select and deliver material, tools and equipment on signed requisitions for shop, service, repair or installation work. Cut off raw material to specified lengths. Check equipment returned for repairs. Report stock and material shortages. Keep records and perform any necessary clerical work in connection with handling stock room equipment. Take spot and regular inventories as required. Keep work areas clean and in good order.

[Date]

In connection with the negotiations concluded this date between the Elevator Industries Association, Inc. and Local Union No. 3, IBEW, AFL-CIO, it is agreed that so much of Article IV, subparagraph (i) limiting the applicable dates thereof, shall not apply to Co-Op City in the Borough of the Bronx, City and State of New York.

LOCAL UNION NO. 3,

LOCAL UNION NO. 3,

ELEVATOR INDUSTRIES IBEW, AFL-CIO ASSOCIATION, INC. LETTER OF UNDERSTANDING [Date] The Employers agree to terminate all "replacement workers" upon ratification of the agreement. The parties shall mutually agree to not seek

retribution or retaliate against members of either party. Any pending charges or charges filed before the

ratification date shall be heard and acted upon accordingly.

IBEW, AFL-CIO ASSOCIATION, INC. By:

ELEVATOR INDUSTRIES

68

LETTER OF UNDERSTANDING

[Date]

Local Union No. 3, IBEW and the Elevator Industries Association agree that during working hours, the Shop Steward of each Employer covered by the terms of this collective bargaining agreement, may ask the Employees of his Employer to produce proof that the employee is complying with Article XVI of the collective bargaining agreement provided however, that the inquiry shall be conducted in a reasonable and nonconfrontational manner which does not disrupt the Employer's operations.

ELEVATOR INDUSTRIES	LOCAL UNION NO. 3,	
ASSOCIATION, INC.	IBEW, AFL-CIO	
Bv:	Ву:	

[Date]

The parties recognize there may be layoffs after the strike and in an effort to fairly address the concerns that members would be laid-off because of strike activity rather than ability and efficiency, we enter into this Letter of Understanding.

The parties agree that they shall create a joint committee to review any disputes or controversies concerning or arising from the alleged failure to recall a striking employee or an employee subsequently laid-off,

because of union activity.

The joint committee shall consist of three Local 3 representatives and three EIA representatives. All disputes arising hereunder will be reviewed by the joint committee within ten (10) working days of receipt of written notice by Local 3 to the Elevator Industries Association, care of Robert D. Martin, 19 Shagbark Road, Norwalk, CT 06854. If a majority of the members of the joint committee

reach a decision, such decision shall be binding on Local 3, the Employer and the Employee (s) involved. Such decision shall have the same effect as an arbitration award under New York State and federal arbitration law. If the joint committee should fail to reach an agreement on any case or any matter in dispute, the matter will be subject to arbitration as set forth in Article XII of the Collective Bargaining Agreement.

This Agreement does not waive any rights of any employee and shall not be the only remedy in these

disputes.

ASSOCIATION, INC.	IBEW, AFL-CIO
Bur.	By:

LETTER OF UNDERSTANDING

Mr. Christopher Erikson **Business Representative** Local Union No. 3, IBEW November 14, 1993

Dear Mr. Erikson:

This letter is to set forth the Agreement and understanding of the parties regarding exceptions to the terms and conditions of the Agreement. In order to create and preserve work opportunities for elevator mechanics and helpers, the parties agree that the Union, in its sole discretion, may grant exceptions to the terms of this Agreement under the conditions as set forth herein.

When a Project Agreement requires, or where a private sector contract establishes different terms and conditions than are contained in this Agreement, the Union may, upon request of the Employer involved, grant a concession to meet the required term. In order to obtain a particular job of any kind, which might otherwise be performed by persons not represented by the Union, the Union may grant such concessions as are necessary to enable the Employer to obtain the job.

All Employers shall have the right to request the Union to grant a concession which will permit such Employers to make a competitive adjustment to get the job. Such concession(s) if made, will be granted equally to all Employers who bid on a particular job. The Union may require an Employer to establish proof of the need for such concession and shall have the unilateral right to revoke this privilege if it believes it is being abused.

> Very truly yours, ELÉVATOR INDUSTRIES ASSOCIATION, INC.

The parties agree to establish a minimum curriculum as per the Elevator Industry Field Employees Safety Handbook, including, but not limited to the following:

- Personal Protective Equipment
- Guardrail & Barricade Requirements 2.
- Hazard Communication Equipment 3.
- Vehicle Safety (As Required)
- Respiratory Protection
- Welding & Cutting Requirements (As Required)
- Recognition & Abatement of Unsafe Conditions
- Lock Out/Tag Out
- Hoisting & Rigging Requirements (As Required)
- 10. How to Prevent Common Causes of Accidents
- 11. Safe Use of Scaffolds & Ladders
- 12. Working Around Asbestos
- 13. Proper Materials Handling & Storage
- 14. Fall Protection
- 15. Electrical Safe Work Practices

Each Employer agrees to provide such training for current Employees as soon as practicable, and on a continuing basis for new Employees.

LOCAL UNION NO. 3,

ELEVATOR INDUSTRIES ASSOCIATION, INC.	LOCAL UNION NO. 3, IBEW, AFL-CIO
By:	Ву:

LETTER OF UNDERSTANDING

Effective retroactively to 1998, the Trustees of the Elevator Division Retirement Benefit Plan will approve modifications to this plan as follows:

Normal retirement age shall be reduced from the existing 65 years, to become 62. New reduced pension amounts for early retirement, down to age 57 shall be established.

A Disability Pension that consists of 75% of the Normal Pension amount, with 10 year eligibility shall be established.

ELEVATOR INDUSTRIES ASSOCIATION, INC.	LOCAL UNION NO. 3, IBEW, AFL-CIO
Ву:	Ву:

LETTER OF UNDERSTANDING

By not later than April 15, 2000 and sooner if practicable, the J.A.T.C. Trustees shall procure a Group Accidental Death and Dismemberment Insurance Policy for the benefit of the Employees covered by this Agreement. The death benefit for an individual will be in the amount of one hundred thousand dollars (\$100,000.00).

ELEVATOR INDUSTRIES ASSOCIATION, INC.	LOCAL UNION NO. 3, IBEW, AFL-CIO
Ву:	By:

The Parties recognize the importance of Employees continuing to improve their skill and ability. Therefore, both parties will encourage mechanics to attend appropriate courses provided by the J.A.T.C.

ELEVATOR INDUSTRIES LOCAL UNION NO. 3, ASSOCIATION, INC. By: ______ By: _____

LETTER OF UNDERSTANDING

The Union and the Association shall instruct their respective trustees to take all necessary steps to establish and conduct a training course for mechanics to prepare them for the private inspector test administered by the New York City Department of Buildings. Such courses shall be held at least each semester provided there are at least six registrees.

ELEVATOR INDUSTRIES LOCAL UNION NO. 3, IBEW, AFL-CIO

LETTER OF UNDERSTANDING

The Parties agree that if an employer and employee mutually agree to sponsor an employee to become a private city elevator inspector, the employer shall pay for the license testing fees. If such employee receives notification from the Building Department of the City of New York that the employee is eligible to receive a license on or before June 1st in any year of the collective bargaining agreement, the employer shall pay for the license fee for that calendar year and the following calendar year. Should the employee receive notification that the employee is eligible for a license after June 1st during any calendar year of the collective bargaining agreement, the employer shall pay for the license fees for such employee for the two following calendar years after such notification.

The Parties agree that an employer shall pay for the 2007 renewal licenses for employees who as of February 26, 2006 have existing city elevator inspector licenses.

ELEVATOR INDUSTRIES ASSOCIATION, INC.

LOCAL UNION NO. 3, IBEW, AFL-CIO

Ву:_____

By: _____

The parties agree that Local 3 may withdraw its proposal 17 without prejudice to either party's position at an arbitration concerning the use of GPS.

ELEVATOR INDUSTRIES ASSOCIATION, INC.

LOCAL UNION NO. 3, IBEW, AFL-CIO

By:_____

By: _____

LETTER OF UNDERSTANDING

When the employment of an employee who possess an inspector's license is terminated for any reason including resignation, the parties agree that an employer will provide such an employee with a letter addressed to the NYC Department of Buildings on Company letterhead stating that the employee has been released from the company's inspection agency.

ELEVATOR INDUSTRIES ASSOCIATION, INC.

LOCAL UNION NO. 3, IBEW, AFL-CIO

By:_____

Bv:

LETTER OF UNDERSTANDING

The parties agree to establish a committee consisting of three representatives from each party which shall meet at least four times during the sixty day period from the effective date of the collective bargaining agreement for the sole purpose of developing and implementing training and continuing education programs for Mechanics and A-Helpers.

ELEVATOR INDUSTRIES ASSOCIATION, INC.

LOCAL UNION NO. 3, IBEW, AFL-CIO

By:_____

By: _____

77

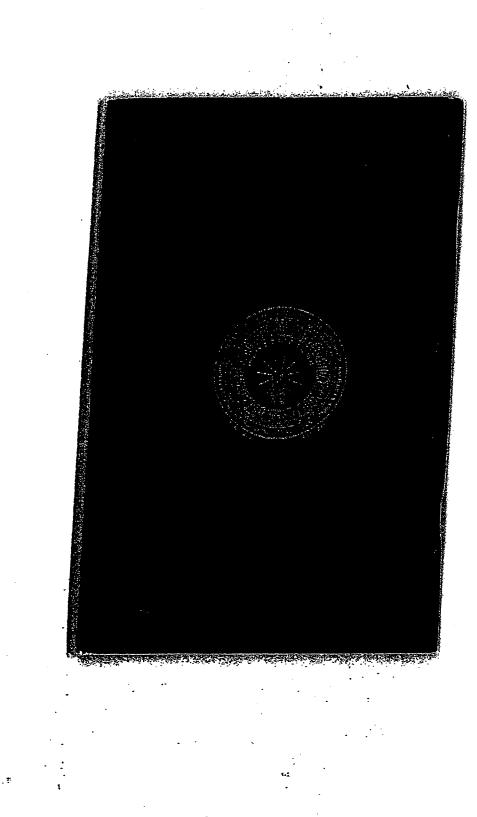
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80



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FRET 11, QUESTION 20h

CENTENNIAL ELEVATOR INDUSTRIES, INC. APPLICATION FOR EMPLOYMENT

Position Applied For			•
Referral Source:	Union Agency	Ad Walk-In	Friend Other

Name			
			Fown
State2	ip Code	Telephone	
Social Security Nu	mber		
*****	****	****	*****
If employed and you Yes No Have you filed an a Have you been emplo If yes, give date(s Are you employed not May we contact your Are you prevented fr because of Visa or I	application here before): w? Yes present employ com lawfully be	re before? re?Yes toNo yer?Ye	Yes No No No No es No yed in this country
On what date are you			
Are you available to			
Are you currently on	lay-off and s	ubject to rec	all?
Can you travel if red	quired?	YesNo	
Have you been convict If yes, please explai	ed of a felony n	y with the las	st 7 years?
			_

EMPLOYMENT	EXPERIENCE	Include military serv
	in a fact ich	Include military serv

Start with your present or last job. Include military service assignments and volunteer activities. Exclude organization names which indicate race, creed, color, national origin, sex, age, disability, marital status, result original orig sexual orientation, or citizenship status

(1)	Name of Employer		
	Address	Dates	to
	Job Title	Dacco	(Rinal)
	(start)		`
	Supervisor	buoue	
. (2)	c m Tcox	•	
	Address	D-tas	to
			
٠	(Ctart)		
	Supervisor	PHORE	
(3)	Name of Employer		
			· · · · · · · · · · · · · · _ · · _ · · _ · · _ · · _ · · _ ·
		Dates	
	, an G-laws (Chart)		 ·
	Supervisor	phone	•
Speci Summa other	ial Skills and Oualifications: arize special and qualifications experience	acquired	from employment or
State Consi	any additional information you	feel may l	be helpful to us in
<u> </u>			

Please indic English):	cate any language	s you speak/rea	ad/write (other than
Give name, a related to yo	ddress and teleph ou and <u>are not</u> pre	none number of t evious employers	three references not :
<u>Name</u>	Name Address		<u>Telephone</u>
*****	lish): e name, address and telephone number of three references not ated to you and are not previous employers:		
Government con Era Veterans Re affirmative ac disabled vetera of the Rehabil government controls.	Individuals with tractors are subjected act of the total and the tractors of the tractors to take	physical or ment ect to 38 USC 2 1974 which requi d advance in em f the Vietnam Er 1973, as amende affirmative act	cal handicaps: 012 of the Vietnam ires that they take ployment qualified a, and Section 503 d, which requires ion to employ and
handicap, you purpose is to p appropriate accepts of your abit will be treated information will	are invited to vorovide information ommodation to enalative in a proper and as confidentials not jeopardi	olunteer this in regarding proble you to perfound safe manner. al. Failure	information. The per placement and prometical transfer information to provide this
If you wish to b	e identified, sig	n below:	
Handicap Indi	vidualDisabl	ed VeteranV	Vietnam Veteran
Signed		·	-

EDUCATION

Elementary School Years Completed:	4 5 6 7 8
High School:	9 10 11 12
College/Universit Years Completed:	y:1 2 3 4
*****	**********
	Applicant's Statement and Release
I certify that the ans knowledge.	wers given herein are true and complete to the best of my
1 ant as most	tion of all statements contained in this application for be necessary in arriving at an employment decision. I application is not a contract of employment.
I authorize Centennia Vehicle Report (MV)	al Elevator Industries, Inc. to request and obtain a Motor R) on my driving record.
7	yment, I understand that false or misleading information given interview(s) may result in discharge. I understand, also, that I by all rules and regulations of the Company.
	Date

Arrange Interview?	YesNo
Employed:Yes	- C Burn l organit
	~ 1 (n-ka Calary)
Job Title:	Hourly/Rate Salary
Job Title: Interviewer	Hourly/Rate Salary

The City of New York Department of Small Business Services Division of Labor Services Contract Compliance Unit 110 William Street, New York, New York 10038 Phone: (212) 513 – 6323

Fax: (212) 618-8879

CONSTRUCTION EMPLOYMENT REPORT

GENERAL INFORMATION

1.	Your contractual relationship in this contract is:	Prime contractor	_ Subcontractor
1a.	Are M/WBE goals attached to this project? Yes	No	
2.	Please check one of the following if your firm would City of New York as a:	d like information on h	now to certify with the
	Minority Owned Business EnterpriseWomen Owned Business EnterpriseDisadvantaged Business Enterprise		d Business Enterprise usiness Enterprise
2a.	If you are certified as an MBE, WBE, LBE, EBE of certified with?	r DBE , what city/state Are you DBE certifi	e agency are you led? Yes No
3.	Please indicate if you would like assistance from S contracting opportunities: Yes No	BS in identifying certi	fied M/WBEs for
4.	Is this project subject to a project labor agreement	? Yes No _	
5.	Are you a Union contractor? Yes No with		ich local(s) you affiliated
6.	Are you a Veteran owned company? Yes N	o	
PART	I: CONTRACTOR/SUBCONTRACTOR INFORMA	ATION	
7.	Employer Identification Number or Federal Tax I.D		Email Address
0	Employer Identification Number of Federal Tax 1.5		Email Address
8.	Company Name		
9.	Company Address and Zip Code		
10.			
10.	Chief Operating Officer	Telephone N	lumber
11.	Designated Equal Opportunity Compliance Officer (If same as Item #10, write "same")	Telephone N	lumber
12.	Name of Prime Contractor and Contact Person (If same as Item #8, write "same")		

13.	Number of employees in your company:	
14.	Contract information: (a) (b) Contracting Agency (City Agency) Contract Amount (c) (d)	
	(c) (d) Contract Registration Number (CT (e) (f) (f) Projected Commencement Date	
15.	Has your firm been reviewed by the Division of Labor Services (DLS) within the past 36 mc and issued a Certificate of Approval? Yes No	onths
16.	If yes, attach a copy of certificate. Has DLS within the past month reviewed an Employment Report submission for your compand issued a Conditional Certificate of Approval? Yes No If yes, attach a copy of certificate.	any
WI	OTE: DLS WILL NOT ISSUE A CONTINUED CERTIFICATE OF APPROVAL IN CONNECT TH THIS CONTRACT UNLESS THE REQUIRED CORRECTIVE ACTIONS IN PRIOR NDITIONAL CERTIFICATES OF APPROVAL HAVE BEEN TAKEN.	ION
17.	Has an Employment Report already been submitted for a different contract (not covered by Employment Report) for which you have not yet received compliance certificate? Yes No If yes, Date submitted: Agency to which submitted: Name of Agency Person: Contract No: Telephone:	
18.	Has your company in the past 36 months been audited by the United States Department of Labor, Office of Federal Contract Compliance Programs (OFCCP)? Yes No If yes,	

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	(a) Nam	e and address of OFCCP office.
		a Certificate of Equal Employment Compliance issued within the past 36 months? No
	If yes	s, attach a copy of such certificate.
	(c) Were	e any corrective actions required or agreed to? Yes No
	If ye	s, attach a copy of such requirements or agreements.
	(d) Were	e any deficiencies found? Yes No
	If ye	s, attach a copy of such findings.
19.	is respo	company or its affiliates a member or members of an employers' trade association which insible for negotiating collective bargaining agreements (CBA) which affect construction ig? Yes No
	If yes, a	ttach a list of such associations and all applicable CBA's.
PART	II: DOCI	JMENTS REQUIRED
20.	brochure	following policies or practices, attach the relevant documents (e.g., printed booklets, es, manuals, memoranda, etc.). If the policy(ies) are unwritten, attach a full explanation ractices. See instructions.
	(a)	Health benefit coverage/description(s) for all management, nonunion and union employees (whether company or union administered)
	(b)	Disability, life, other insurance coverage/description
	(c)	Employee Policy/Handbook
	(d)	Personnel Policy/Manual
	(e)	Supervisor's Policy/Manual
	(f)	Pension plan or 401k coverage/description for all management, nonunion and union employees, whether company or union administered
	(g)	Collective bargaining agreement(s).
	(h)	Employment Application(s)
	(i)	Employee evaluation policy/form(s).
	(j)	Does your firm have medical and/or non-medical (i.e. education, military, personal, pregnancy, child care) leave policy?

21.	To comply with the Immigration Reform and Control Act of 1986 when <u>and of whom</u> does your firm require the completion of an I-9 Form?
	(a) Prior to job offer (b) After a conditional job offer (c) After a job offer (d) Within the first three days on the job Yes No Yes No Yes No
	(e) To some applicants Yes No
	(f) To all applicants Yes No (g) To some employees Yes No
	(h) To all employees Yes No
22.	Explain where and how completed I-9 Forms, with their supportive documentation, are maintained and made accessible.
23.	Does your firm or any of its collective bargaining agreements require job applicants to take a medical examination? Yes No
	If yes, is the medical examination given:
	(a) Prior to a job offer Yes No (b) After a conditional job offer Yes No (c) After a job offer Yes No (d) To all applicants
	(d) To all applicants Yes No (e) Only to some applicants Yes No
	If yes, list for which applicants below and attach copies of all medical examination or questionnaire forms and instructions utilized for these examinations.
24.	Do you have a written equal employment opportunity (EEO) policy? Yes No
	If yes, list the document(s) and page number(s) where these written policies are located.
25.	Does the company have a current affirmative action plan(s) (AAP) Minorities and Women Individuals with handicaps Other. Please specify
26.	Does your firm or collective bargaining agreement(s) have an internal grievance procedure with respect to EEO complaints? Yes No
	If yes, please attach a copy of this policy.
	If no, attach a report detailing your firm's unwritten procedure for handling EEO complaints.

27.	Has any employee, within the past three years, filed a complaint pursuant to an internal grievance procedure or with any official of your firm with respect to equal employment opportunity? Yes No
	If yes, attach an internal complaint log. See instructions.
28.	Has your firm, within the past three years, been named as a defendant (or respondent) in any administrative or judicial action where the complainant (plaintiff) alleged violation of any anti-discrimination or affirmative action laws? Yes No
	If yes, attach a log. See instructions.
29.	Are there any jobs for which there are physical qualifications? Yes No
	If yes, list the job(s), submit a job description and state the reason(s) for the qualification(s).
30.	Are there any jobs for which there are age, race, color, national origin, sex, creed, disability, marital status, sexual orientation, or citizenship qualifications? Yes No
	If yes, list the job(s), submit a job description and state the reason(s) for the qualification(s).

SIGNATURE PAGE

I, (print name of authorized official signing) hereby certify that the information submitted herewith is true and complete to the best of my knowledge and belief and submitted with the understanding that compliance with New York City's equal employment requirements, as contained in Chapter 56 of the City Charter, Executive Order No. 50 (1980), as amended, and the implementing Rules and Regulations, is a contractual obligation. I also agree on behalf of the company to submit a certified copy of payroll records to the Division of Labor Services on a monthly basis.					
Contractor's Name					
Name of person who prepared this	Employment Report	Title			
Name of official authorized to sign of	on behalf of the contractor	Title			
Telephone Number					
Signature of authorized official		Date			
If contractors are found to be undere 56 Section 3H, the Division of Labor data and to implement an employment	Services reserves the right to re	n any given trade based on Chapter equest the contractor's workforce			
Contractors who fail to comply with noncompliance may be subject to the	the above mentioned requiremer e withholding of final payment.	nts or are found to be in			
Willful or fraudulent falsifications of a termination of the contract between contracts for a period of up to five yeariminal prosecution.	the City and the bidder or contra	ctor and in disapproval of future			
To the extent permitted by law and on Charter Chapter 56 of the City Chart and Regulations, all information provided the contraction provided the contraction provided the contraction of the contraction o	ter and Executive Order No. 50 (1980) and the implementing Rules			
Or	lly original signatures accepte	d.			
Sworn to before me this	_ day of 20				
Notary Public	Authorized Signature	Date			

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

Do you plan to subcontractor work on this contract? Yes____

If yes, complete the chart below. ۲i

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

PROJECTED DOLLAR VALUE OF SUBCONTRACT			
TRADE PROJECTED FOR USE BY SUBCONTRACTOR			
WORK TO BE PERFORMED BY SUBCONTRACTOR			
OWNERSHIP (ENTER APPROPRIATE CODE LETTERS BELOW)			
SUBCONTRACTOR'S NAME*			

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

OWNERSHIP CODES

W: White

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

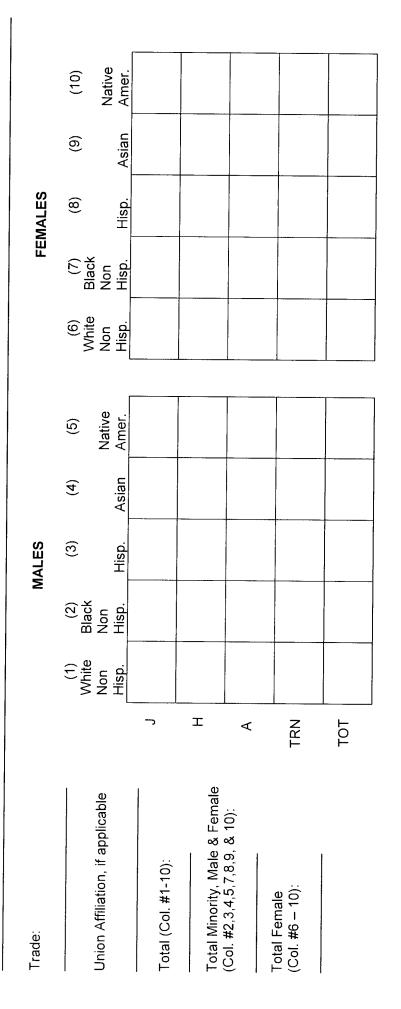
FORM B: PROJECTED WORKFORCE

TRADE CLASSIFICATION CODES

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

(A) Apprentice (TRN) Trainee

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



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

USE ONLY: File No. Revised 8/1 Page 9

FOR OFFI

FORM B: PROJECTED WORKFORCE

Trade:			Σ	MALES				H H	FEMALES		
Union Affiliation, if applicable		(1) White Non Hisp	(2) Black Non Hish	(3) High	(4) Asian	(5) Native	(6) White Non Hisp	(7) (8) Black Non Hish	(8) (8)	(9)	(10) Native
Total (Col. #1-10):	7										
Total Minority, Male & Female	I										
(Col. #2,3,4,5,7,8,9, & 10):	∢										
Total Female (Col. #6 – 10):	N N										
	TOT										

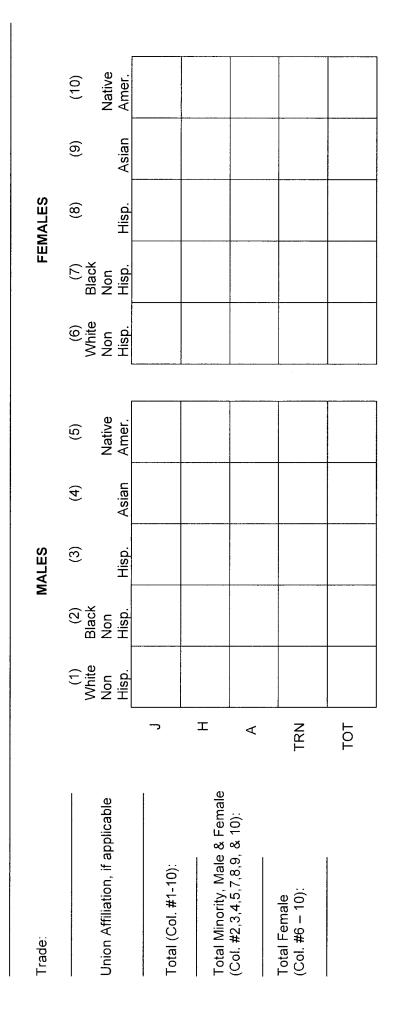
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(i.e., unions, government employment office, job tap center, community outreach)?		
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What are the recruitment sources for you projected hires		
recru		
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FORM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

TRADE CLASSIFICATION CODES

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

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



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

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FORM C: CURRENT WORKFORCE

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

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

September 11, 2015

ADDENDUM No. #1

FOR FURNISHING ALL LABOR AND MATERIAL NECESSARY AND REQUIRED FOR:

CO300ELV2

Queens Supreme Courthouse Elevator Modernization Re-Bid

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

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

- 1. Bidders Questions and Responses to Questions: See Attachment A.
- 2. Revisions to Drawings: See Attachment B.

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

If additional information is required, please contact the Department of Design and Construction, Contract Section at (718) 391-3170, (718) 391-1016, or by fax at (718) 391-2615.

Assistant Commissione

Corrections/Courts/DEP/DJJ/Health

Name of Bidder

071

FMS ID:

CO300ELV2

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

30-30 THOMSON AVENUE

LONG ISLAND CITY, NEW YORK 11101-3045

TELEPHONE (718) 391-1000

WEBSITE www.nyc.gov/buildnyc

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

CONTRACT NO. 1

GENERAL CONSTRUCTION

Queens Supreme Court Elevator Modernization Re-Bid

LOCATION:

88-11 Sutphin Boulevard

BOROUGH:

Queens 11435

CITY OF NEW YORK	
Contractor	
Dated	, 20
Entered in the Comptroller's Office	
First Assistant Bookkeeper	
Dated	20







PROJECT ID:

CO300ELV2

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

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

VOLUME 2 OF 3

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

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

Queens Supreme Court Elevator Modernization Re-Bid

LOCATION: BOROUGH: 88-11 Sutphin Boulevard

CITY OF NEW YORK

Queens 11435

CONTRACT NO. 1

GENERAL CONSTRUCTION

FOR:

DGS

BY:

AECOM

Date:

September 9, 2015

9 6-018





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

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

VOLUME 2 OF 3

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

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



NOTICE TO BIDDERS

Please be advised that the City of New York has issued a new Standard Construction Contract. The new Contract, which is incorporated in this bid, is significantly different from the 2008 version previously used by the City. A listing of some of the significant changes is provided below. This notice is only a partial listing. Please refer to the Contract itself for a full understanding of the changes and the actual text of the changes that were made. The text of the revised Standard Construction Contract is the controlling document should there be any discrepancies between this notice and the Standard Construction Contract.

Significant changes include the following:

ARTICLE 11 DAMAGES CAUSED BY DELAYS

In 2008, the City embarked on a pilot project to test the use of new construction contract language altering the allocation of the risk of project delays, as between the City and the contractor. The City has determined to make the pilot project language the standard language for all City construction contracts. Accordingly, there is now one Standard City Construction Contract that it to be used by all agencies for all bids released after the release of the new contract. The damages for delay language is Article 11. Please note that changes have been made to the damages for delay provisions from the pilot to the adopted version.

ARTICLE 22 INSURANCE

Changes have been made to the insurance provisions, including incorporating requirements that the insurance provided comply with recent NYC Department of Buildings regulations specifying required dollar limits for CGL insurance for certain projects and requiring proof of builder's risk insurance prior to Work commencing rather than within 10 days of award.

ARTICLE 26 EXTRA WORK

The percentage paid for overhead for Extra Work pursuant to Section 26.1.11 is increased from 10% to 12% and the calculation of Worker's Compensation insurance costs reimbursed for Extra Work has been clarified.

ARTICLE 37 LABOR LAW REQUIREMENTS PAYROLL REPORTS

The provisions governing Labor Law provisions have been tightened, including requirements the employee identification cards include a photo (unless the requirement is waived), a prohibition on cash payments to employees and subcontractors, and clear enforcement authority requirements.

ARTICLE 70 ELECTRONIC FILING

A provision is added to make mandatory the electronic filing of certain alteration permits with the Department of Buildings.

Other significant changes include the following:

ARTICLE 7 INDEMNIFICATION

Changes have been made to the indemnification provisions.

ARTICLE14 FINAL ACCEPTANCE OF WORK
ARTICLE 44 SUBSTANTIAL COMPLETION PAYMENT

The Commissioner is no longer required to issue a substantial completion determination in addition to the already existing requirement that the Engineer issue a substantial completion determination and reach an agreement on a punch list of remaining work. Now, the Engineer, when issuing the punch list to the Contractor, must also include a proposed schedule for the completion of the punch list. The Contractor may propose an alternative schedule that is subject to the approval of the Engineer. If the Contractor fails to respond to the Engineer's proposed schedule, the Engineer's schedule is deemed accepted.

ARTICLE 15 LIQUIDATED DAMAGES

The contract is revised to match Schedule A to provide that liquidated damages are available only until substantial completion.

ARTICLE 17 SUBCONTRACTS

The requirements for prior approval of subcontractors, and for contractors to be responsible for the actions of their subcontractors, have been tightened. The requirement that the Contractor list subcontractors in the City's Payee Information Portal has been added; the provision was previously attached as a rider.

ARTICLE 19 SECURITY DEPOSIT

The provisions governing the return of bid deposits are clarified.

ARTICLE 20 PAYMENT GUARANTEE

The Payment Guaranty provisions, which apply when the City does not require the Contractor to obtain payment bonds, has been significantly revised to track the requirements of State Finance law 137.

ARTICLE 28 RECORDKEEPING FOR EXTRA OR DISPUTED WORK

The recordkeeping requirement that currently apply to payments for Time & Materials for extra work are expressly made applicable to regular work that is paid for on a T & M basis.

ARTICLE 35 EMPLOYEES

The whistleblower provisions of local law are added to the construction contract. They previously have been attached as a rider.

ARTICLE 38 PAYROLL REPORTS ARTICLE 77 RECORDS RETENTION

Requirements that records be maintained for six years and directions on how such records must be made available.

ARTICLE 42 PARTIAL PAYMENTS

Increased flexibility has been provided for when contractors may submit invoices.

ARTICLE 62 TAX EXEMPTION

The provisions identifying the State tax exemption for municipalities are revised to more clearly describe State law.

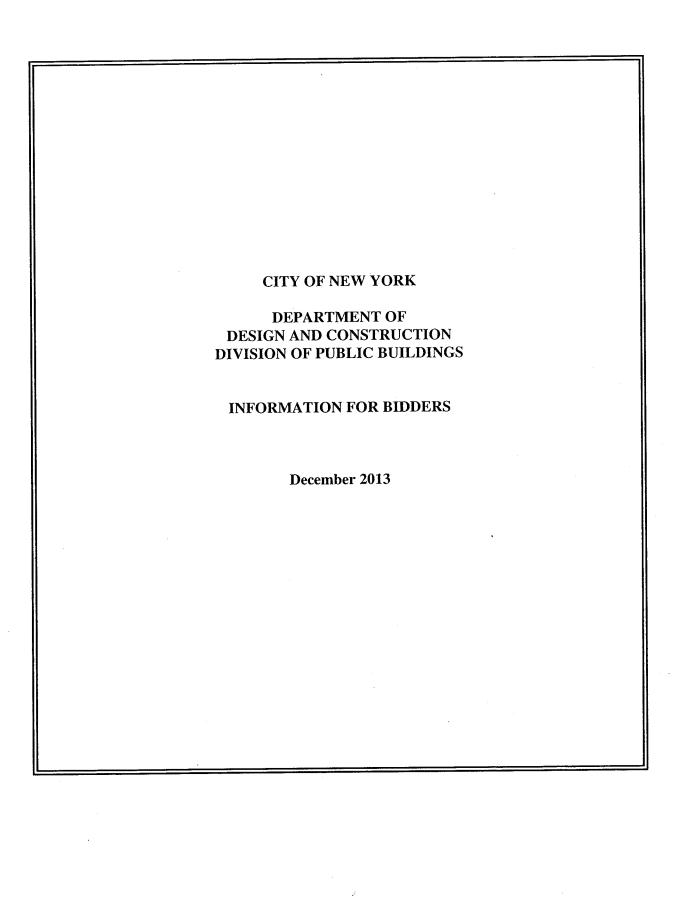
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NEW YORK CITY STANDARD CONSTRUCTION CONTRACT (DEC. 2013) INSURANCE RIDER

The following provisions supersede the corresponding provisions in the December 2013 version of the New York City Standard Construction Contract:

- 1. Section 22.1.1(c) provides as follows:
 - 22.1.1(c) If the **Work** requires a permit from the Department of Buildings pursuant to 1 RCNY Section 101-08, the **Contractor** shall provide Commercial General Liability Insurance with limits of at least those required by 1 RCNY section 101-08 or greater limits provided by the Agency in Schedule A. If the Work does not require such a permit, the minimum limits shall be those provided for in Schedule A.
- 2. Section 22.3.3 provides as follows:
 - For policies provided pursuant to all of Article 22.1 other than Article 22.1.2, 22.3.3 the Contractor shall submit one or more Certificates of Insurance on forms acceptable to the Commissioner. All such Certificates of Insurance shall certify (a) the issuance and effectiveness of such policies of insurance, each with the specified minimum limits (b) for insurance secured pursuant to Article 22.1.1 that the City and any other entity specified in Schedule A is an Additional Insured thereunder; (c) in the event insurance is required pursuant to Article 22.1.6 and/or Article 22.1.7, that the City is an Additional Insured thereunder; and (d) the company code issued to the insurance company by the National Association of Insurance Commissioners (the NAIC number). All such Certificates of Insurance shall be accompanied by the required additional insured endorsements and either a duly executed "Certification by Insurance Broker or Agent" in the form contained in Part III of Schedule A or copies of all policies referenced in such Certificate of Insurance as certified by an authorized representative of the issuing insurance carrier. If any policy is not available at the time of submission, certified binders may be submitted until such time as the policy is available, at which time a certified copy of the policy shall be submitted.

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INFORMATION FOR BIDDERS

Description and Location of Work 1.

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

2. Time and Place for Receipt of Bids

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

3. **Definitions**

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

Invitation For Bids and Contract Documents 4.

- Except for titles, sub-titles, headings, running headlines, tables of contents and indices (all of which are printed herein merely for convenience) the following, except for such portions thereof as may be specifically excluded, shall be deemed to be part of the Contract and the Invitation for Bids.
 - All provisions required by law to be inserted in this Contract, whether actually inserted or not
 - (2)The Contract Drawings and Specifications
 - (3) The General Conditions, the General Requirements and the Special Conditions, if any
 - The Contract (4)
 - (5) The Information for Bidders; Request for Proposals; Notice of Solicitation and Proposal For Bids; Bid or Proposal, and, if used, the Bid Booklet
 - The Budget Director's Certificate; all Addenda issued prior to the receipt of the bids; the Notice of (6) Award; Performance and Payment Bonds, if required; and the Notice to Proceed with the Work.
- For particulars as to this procurement, including quantity and quality of the purchase, extent of the work or labor to be performed, delivery and performance schedule, and any other special instructions, prospective bidders are referred to the Invitation For Bids Documents. A copy of such documents can be obtained at the location set forth in Attachment 1.
- Deposit for Copy of Invitation For Bids Documents: Prospective bidders may obtain a copy of the (C) Invitation For Bids Documents by complying with the conditions set forth in the Notice of Solicitation. The deposit must be in the form of a check or money order made payable to the City of New York, and drawn upon a state or national bank or trust company, or a check of such bank or trust company signed by a duly authorized officer thereof.
- Return of Invitation For Bids Documents: All Invitation For Bids Documents must be returned to the Department upon request. If the bidder elects not to submit a bid thereunder, the Invitation For Bids Documents shall be returned to the Department, along with a statement that no bid will be submitted.
- Return of Deposit: Such deposit will be returned within 30 days after the award of the contract or (E) the rejection of all bids as set forth in the advertisement, provided the Invitation For Bids Documents are returned to the location specified in Attachment 1, in physical condition satisfactory to the Commissioner.
- Additional Copies: Additional copies of the Invitation For Bids Documents may be obtained, subject to the conditions set forth in the advertisement for bids.

5. Pre-Bid Conference

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

6. Agency Contact

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

7. Bidder's Oath

- (A) The bid shall be properly signed by an authorized representative of the bidder and the bid shall be verified by the written oath of the authorized representative who signed the bid, that the several matters stated and information furnished therein are in all aspects true.
- (B) A materially false statement willfully or fraudulently made in connection with the bid or any of the forms completed and submitted with the bid may result in the termination of any Contract between the City and the Bidder. As a result, the Bidder may be barred from participating in future City contracts as well as be subject to possible criminal prosecution.

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

- (A) Pre-Bidding (Investigation) Viewing of Site Bidders must carefully view and examine the site of the proposed work, as well as its adjacent area, and seek other usual sources of information, for they will be conclusively presumed to have full knowledge of any and all conditions on, about or above the site relating to or affecting in any way the performance of the work to be done under the Contract which were or should have been indicated to a reasonably prudent bidder. To arrange a date for visiting the work site, bidders are to contact the Agency Contact person specified in Attachment 1.
- (B) Should the contractor encounter during the progress of the work subsurface conditions at the site materially differing from any shown on the Contract Drawings or indicated in the Specifications or such subsurface conditions as could not reasonably have been anticipated by the contractor and were not anticipated by the City, which conditions will materially affect the cost of the work to be done under the Contract, the attention of the Commissioner must be called immediately to such conditions before they are disturbed. The Commissioner shall thereupon promptly investigate the conditions. If he finds that they do so materially differ, or that they could not reasonably have been anticipated by the contractor and were not anticipated by the City, the Contract may be modified with his written approval.

9. <u>Examination of Proposed Contract</u>

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

- (B) Only Commissioner's Interpretation or Correction Binding: Only the written interpretation or correction so given by the Commissioner shall be binding, and prospective bidders are warned that no other officer, agent or employee of the City is authorized to give information concerning, or to explain or interpret, the Contract.
- (C) Documents given to a subcontractor for the purpose of soliciting the subcontractor's bid shall include either a copy of the bid cover sheet or a separate information sheet setting forth the project name, the Contract number (if available), the contracting agency and the Project's location.

10. Form of Bid

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

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

11. Irrevocability of Bid

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

12. Acknowledgment of Amendments

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

13. Bid Samples and Descriptive Literature

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

14. Proprietary Information/Trade Secrets

- (A) The bidder shall identify those portions of the bid which it deems to be confidential, proprietary information or trade secrets, and provide justification why such materials shall not be disclosed by the City. All such materials shall be clearly indicated by stamping the pages on which such information appears, at the top and bottom thereof with the word "Confidential". Such materials stamped "Confidential" must be easily separable from the non-confidential sections of the bid.
- (B) All such materials so indicated shall be reviewed by the Agency and any decision not to honor a request for confidentiality shall be communicated in writing to the bidder. For those bids which are unsuccessful, all such confidential materials shall be returned to the bidder. Prices, makes and model or catalog numbers of the items offered, deliveries, and terms of payment shall be publicly available after bid opening, regardless of any designation of confidentiality made by the bidder.

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

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

Bid Evaluation and Award

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

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

17. <u>Late Bids, Late Withdrawals and Late Modifications</u>

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

18. Withdrawal of Bids.

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

19. Mistake in Bids

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

(B) <u>Mistakes Discovered Before Award</u>

- (1) In accordance with General Municipal Law (Section 103, subdivision 11), where a unilateral error or mistake is discovered in a bid, such bid may be withdrawn upon written approval of the Agency Chief Contracting Officer if the following conditions are met:
 - (a) The mistake is known or made known to the agency prior to the awarding of the Contract or within 3 days after the opening of the bid, whichever period is shorter; and
 - (b) The price bid was based upon an error of such magnitude that enforcement would be unconscionable; and

- (c) The bid was submitted in good faith and the bidder submits credible evidence that the mistake was a clerical error as opposed to a judgment error; and
- (d) The error in the bid is actually due to an unintentional and substantial arithmetic error or an unintentional omission of a substantial quantity of work, labor, material or services made directly in the compilation of the bid, which unintentional arithmetic error pr unintentional omission can be clearly shown by objective evidence drawn from inspection of the original work paper, documents, or materials used in the preparation of the bid sought to be withdrawn; and
- (e) It is possible to place the agency in the same position as existed prior to the bid.
- Unless otherwise required by law, the sole remedy for a bid mistake in accordance with this Article shall be withdrawal of the bid, and the return of the bid bond or other security, if any, to the bidder. Thereafter, the agency may, in its discretion, award the Contract to the next lowest bidder or rebid the Contract. Any amendment to or reformation of a bid or a Contract to rectify such an error or mistake therein is strictly prohibited.
- (3) If the mistake and the intended correct bid are clearly evident on the face of the bid document, the bid shall be corrected to the intended correct bid and may not be withdrawn. Examples of mistakes that may be corrected are typographical errors, errors in extending unit prices, transposition errors and arithmetical errors.

20. Low Tie Bids

- (A) When two or more low responsive bids from responsible bidders are identical in price, meeting all the requirements and criteria set forth in the Invitation For Bids, the Agency Chief Contracting Officer will break the tie in the following manner and order of priority:
 - (1) Award to a certified New York City small, minority or woman-owned business entity bidder;
 - (2) Award to a New York City bidder;
 - (3) Award to a certified New York State small, minority or woman-owned business bidder;
 - (4) Award to a New York State bidder.
- (B) If two or more bidders still remain equally eligible after application of paragraph (A) above, award shall be made by a drawing by lot limited to those bidders. The bidders involved shall be invited to attend the drawing. A witness shall be present to verify the drawing and shall certify the results on the bid tabulation sheet.

21. Rejection of Bids

- (A) Rejection of Individual Bids: The Agency may reject a bid if:
- (1) The bidder fails to furnish any of the information required pursuant to Section 24 or 28 hereof; or if
- (2) The bidder is determined to be not responsible pursuant to the Procurement Policy Board Rules; or if
- (3) The bid is determined to be non-responsive pursuant to the Procurement Policy Board Rules; or if
- (4) The bid, in the opinion of the Agency Chief Contracting Officer, contains unbalanced bid prices and is thus non-responsive, unless the bidder can show that the prices are not unbalanced for the probable required quantity of items, or if the imbalance is corrected pursuant to Section 15.
- (B) Rejection of All Bids: The Agency, upon written approval by the Agency Chief Contracting Officer, may reject all bids and may elect to resolicit bids if in its sole opinion it shall deem it in the best interest of the City so to do.
- (C) <u>Rejection of All Bids and Negotiation With All Responsible Bidders</u>: The Agency Head may determine that it is appropriate to cancel the Invitation For Bids after bid opening and before award and to complete the acquisition by negotiation. This determination shall be based on one of the following reasons:

- (1) All otherwise acceptable bids received are at unreasonable prices, or only one bid is received and the Agency Chief Contracting Officer cannot determine the reasonableness of the bid price, or no responsive bid has been received from a responsible bidder; or
- (2) In the judgment of the Agency Chief Contracting Officer, the bids were not independently arrived at in open competition, were collusive, or were submitted in bad faith.
- (D) When the Agency has determined that the Invitation for Bids is to be canceled and that use of negotiation is appropriate to complete the acquisition, the contracting officer may negotiate and award the Contract without issuing a new solicitation, subject to the following conditions:
 - (1) prior notice of the intention to negotiate and a reasonable opportunity to negotiate have been given by the contracting officer to each responsible bidder that submitted a bid in response to the Invitation for Bids;
 - (2) the negotiated price is the lowest negotiated price offered by a responsible bidder; and
 - (3) the negotiated price is lower than the lowest rejected bid price of a responsible bidder that submitted a bid in response to the Invitation for Bids.

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

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

23. Affirmative Action and Equal Employment Opportunity

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

24. <u>VENDEX Questionnaires</u>

- (A) Requirement: Pursuant to Administrative Code Section 6-116.2 and the PPB Rules, bidders may be obligated to complete and submit VENDEX Questionnaires. Generally, if this bid is \$100,000 or more, or if this bid when added to the sum total of all contracts, concessions and franchises the bidder has received from the City and any subcontracts received from City contractors over the past twelve months, equals or exceeds \$100,000, Vendex Questionnaires must be completed. If required, Vendex Questionnaires must be completed and submitted before any award of contract may be made or before approval is given for a proposed subcontractor. Non-compliance with these submission requirements may result in the disqualification of the bid, disapproval of a subcontractor, subsequent withdrawal of approval for the use of an approved subcontractor, or the cancellation of the contract after its award.
- (B) <u>Submission</u>: Vendex Questionnaires must be submitted directly to the Mayor's Office of Contract Services, ATTN: Vendex, 253 Broadway, 9th Floor, New York, New York 10007. In addition, the bidder must submit a Confirmation of Vendex Compliance to the agency. A form for this confirmation is set forth in the Bid Booklet.
- (C) Obtaining Forms: Vendex Questionnaires, as well as detailed instructions, may be obtained at www.nyc.gov/vendex. The bidder may also obtain Vendex forms and instructions by contacting the Agency Chief Contracting Officer or the contact person for this contract.

Complaints About the Bid Process 25.

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

Bid, Performance and Payment Security 26.

- Bid Security: Each bid must be accompanied by bid security in an amount and type specified in Attachment 1. The bid security shall assure the City of New York of the adherence of the bidder to its proposal, the execution of the Contract, and the furnishing of Performance and Payment Bonds by the bidder, if required in Attachment 1. Bid security shall be returned to the bidder as follows:
 - Within ten (10) days after the bid opening, the Comptroller will be notified to return the deposits (1) of all but the three (3) lowest bidders. Within five (5) days after the award, the Comptroller will be notified to return the deposits of the remaining two unsuccessful bidders.
 - Within five (5) days after the execution of the Contract and acceptance of the Contractor's bonds, (2) the Comptroller will be notified to return the bid security of the successful bidder or, if performance and payment bonds are not required, only after the sum retained under Article 21 of the Contract equals the amount of the bid security.
 - Where all bids are rejected, the Comptroller will be notified to return the deposit of the three (3) (3) lowest bidders at the time of rejection.
- Performance and Payment Security: Performance and Payment Security must be provided in an (B) amount and type specified in Attachment 1. The performance and payment security shall be delivered by the contractor prior to or at the time of execution of the Contract. If a contractor fails to deliver the required performance and payment security, its bid security shall be enforced, and an award of Contract may be made to the next lowest responsible and responsive bidder, or the contract may be rebid.
- Acceptable Types of Security: Acceptable types of security for bids, performance, and payment shall be limited to the following:
 - a one-time bond in a form satisfactory to the City; (1)
 - a bank certified check or money order; (2)
 - obligations of the City of New York; or (3)
 - other financial instruments as determined by the Office of Construction in consultation with the (4) Comptroller.

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

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

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

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

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

27. Failure to Execute Contract

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

28. <u>Bidder Responsibilities and Qualifications</u>

- (A) Bidders must include with their bids all information necessary for a determination of bidder responsibility, as set forth in the Specifications.
- (B) The Agency may require any bidder or prospective bidder to furnish all books of account, records, vouchers, statements or other information concerning the bidder's financial status for examination as may be required by the Agency to ascertain the bidder's responsibility and capability to perform the Contract. If required, a bidder must also submit a sworn statement setting forth such information as the Agency may require concerning present and proposed plant and equipment, the personnel and qualifications of his working organizations, prior experience and performance record.
- (C) Oral Examination on Qualifications: In addition thereto, and when directed by the Agency, the bidder, or a responsible officer, agent or employee of the bidder, must submit to an oral examination to be conducted by the Agency in relation to his proposed tentative plan and schedule of operations, and such other matters as the Agency may deem necessary in order to determine the bidder's ability and responsibility to perform the work in accordance with the Contract. Each person so examined must sign and verify a stenographic transcript of such examination noting thereon such corrections as such person may desire to make.
- (D) If the bidder fails or refuses to supply any of the documents or information set forth in paragraph (B) hereof or fails to comply with any of the requirements thereof, the Agency may reject the bid.

29. Employment Report

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

30. <u>Labor Law Requirements</u>

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

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

31. Insurance

- (A) Bidders are advised that the insurance requirements contained herein are regarded as material terms of the Contract. As required by Article 22 of the Contract, the contractor must effect and maintain with companies licensed and authorized to do business in the State of New York, the types of insurance set forth therein, when required by and in the amounts set forth in Schedule A of the General Conditions. Such required insurance must be provided from the date the contractor is ordered to commence work and up to the date of final acceptance of all required work.
- (B) The contractor must, within ten days of receipt of the notice of award, submit the following insurance documentation: (a) original certificate of insurance for general liability in the amount required by Schedule A of the General Conditions, and (b) original certificates of insurance or other proof of coverage for workers' compensation and disability benefits, as required by Section 57 of the New York State Workers' Compensation Law and Section 220 of the Disability Benefits Law.

32. Lump Sum Contracts

- (A) <u>Comparison of Bids</u>: Bids on Lump Sum Contracts will be compared on the basis of the lump sum price bid, adjusted for alternate prices bid, if any.
- (B) Lump Sum Bids for "General Construction Work" which include excavation shall include all necessary excavation work defined in the Specifications as being included in the lump sum bid. The bidder shall also bid a unit price for the additional cost of excavating material which is defined in the Specifications as excavation for which additional payment will be made. The total estimated additional cost of removing such material will be taken as the quantity set forth in the Engineer's Estimate multiplied by the unit price bid. This total estimated cost of additional excavation shall be added to the lump sum bid for the General Construction Work for the purpose of comparing bids to determine the low bidder.
- (C) <u>Variations from Engineer's Estimate</u>: The Engineer's Estimate of the quantity of excavation for which additional payment will be made is approximate only and is given solely to be used as a uniform basis for the comparison of bids and such estimate is not to be considered as part of this contract. The quantities actually required to complete the contract work may be more or less than the quantities in the Engineer's Estimate and, if so, no action for damages or for loss of profits shall accrue to the contractor by reason thereof.

33. Unit Price Contracts

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

- (B) <u>Variations from Engineer's Estimate</u>: Bidders are warned that the Engineer's Estimate of Quantities on the various items of work and materials is approximate only, given solely to be used as a uniform basis for the comparison of bids, and is not be considered part of this contract. The quantities actually required to complete the contract work may be less or more than so estimated, and if so, no action for damages or for loss of profits shall accrue to the contractor by reason thereof.
- (C) <u>Overruns</u>: The terms and conditions applicable to overruns of unit price items are set forth in Article 26 of the Contract.

34. Excise Tax

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

35. <u>Licenses and Permits</u>

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

36. Multiple Prime Contractors

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

37. Locally Based Enterprise Requirements (LBE)

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

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

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

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

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

39. Comptroller's Certificate

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

40. <u>Procurement Policy Board Rules</u>

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

41. <u>DDC Safety Requirements</u>

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

CITY OF NEW YORK

DEPARTMENT OF DESIGN AND CONSTRUCTION

SAFETY REQUIREMENTS

June 2015

THE DDC SAFETY REQUIREMENTS INCLUDE THE FOLLOWING SECTIONS:

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

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I. POLICY ON SITE SAFETY

The City of New York Department of Design and Construction (DDC) is committed to a policy of injury and illness prevention and risk management for construction work that will ensure the safety and health of the workers engaged in the projects and the protection of the general public. Therefore, it is DDC's policy that work carried out by Contractors on DDC jobsites must, at a minimum, comply with applicable federal, state and city laws, rules and regulations, including without limitation:

U. S. Department of Labor 29 Code of Federal Regulations (CFR) Part 1926 and applicable Sub-parts of Part
1910 - U.S. Occupational Safety and Health Administration (OSHA); New York State Department of Labor
Industrial Code Rule 23 – Protection in Construction, Demolition and Excavation;
New York City Construction Codes, Title 28
NYC Department of Transportation Title 34 Chapter 2 – Highway Rules
New York State Department of Labor Industrial Code Rule 16 NYCRR Part 753
Title 15 of the Rules of the City of New York, Chapter 13 Citywide Construction Dust Mitigation
Manual on Uniform Traffic Control Devices (MUTCD)
Title 15 of the Rules of the City of New York, Chapter 28 Citywide Construction Noise Mitigation

I. PURPOSE

The purpose of this policy is to ensure that Contractors perform their work and supervise their employees in accordance with all applicable federal, state and city rules and regulations. Further, Contractors will be expected to minimize or eliminate jobsite and public hazard, through a planning, inspection, auditing and corrective action process. The goal is to control risks so that injuries, illnesses and accidents to contractors' employees, DDC employees and the general public, as well as damage to city-owned and private property, are reduced to the lowest level feasible.

III. DEFINITIONS

Agency Chief Contracting Officer (ACCO): The ACCO shall mean the person delegated authority by the Commissioner to organize and supervise the procurement activity of subordinate Agency staff in conjunction with the CCPO.

Competent Person: As defined by OSHA, an individual who is capable of identifying existing and predictable hazards in the surroundings or working conditions that are unsanitary, hazardous, or dangerous to employees or the general public, and who has authorization to take prompt corrective measures to eliminate them.

Construction Safety Auditor: A representative of the QA&CS Construction Safety Unit who provides inspection and assessment services to enhance health and safety on all DDC construction projects. The activities of the Construction Safety Auditor include performing site surveys, reviewing health and safety plans, reviewing construction permits, and rendering technical advice and assistance to DDC Resident Engineers and Project Managers.

Construction Safety Unit: A part of QA&CS within the Division of Program Management/ Safety & Site Support that assesses contractor safety on DDC jobsites and advises responsible parties of needed corrective actions.

Construction Superintendent: A representative of the contractor responsible for overseeing performance of the required construction work. This individual must engage in sound construction practices, and is responsible to maintain a safe work site. In the case of a project involving the demolition, alteration or new construction of buildings, the Construction Superintendent must be licensed by the NYC Department of Buildings.

Contractor: For purposes of these Safety Requirements, the term "Contractor" shall mean any person or entity that enters into a contract for the performance of construction work on a DDC project. The term "Contractor" shall include any person or entity which enters into any of the following types of contracts: (1) a prime construction contract for a specific project, (2) a prime construction contract using the Job Order Contracting System ("JOCS Contract"), and (3) a subcontract with a CM/Builder ("First Tier Subcontract").

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

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

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

Qualified Person: As defined by OSHA, an individual who, by possession of a recognized degree, certificate, license or professional standing, or who by extensive knowledge, training, and experience, has successfully demonstrated his or her ability to solve problems relating to the subject matter, the work, or the project. Qualified Persons are required under regulation to address issues pertaining, but without limit, to fall protection, scaffold design and trenching and shoring, among others.

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

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

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

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

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

Resident Engineer (RE) / Construction Project Manager (CPM): Representative of the Commissioner duly designated by the Commissioner to be his/her representative at the site of the work. (The RE/CPM may be a third-party consultant, including a Construction Management firm, retained by DDC)

Safety Program: Established by the Contractor that covers all operations of that Contractor and establishes the Contractor's overall safety policy, regulatory compliance plan and minimum safety standards. The Safety Program must be submitted prior to the commencement of work at the site and is subject to review and acceptance by the Construction Safety Unit.

Safety Questionnaire: Used by DDC to evaluate Contractor's current and past safety performance. It is required to be completed by all Contractors initially when submitting bids for Construction work, or when being pre-qualified and updated annually or as requested by the DDC.

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

Site Safety Plan: A site-specific safety plan developed by the Contractor for a specific project. The Site Safety Plan must identify hazards associated with the project, and include specific safety procedures and training appropriate and

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necessary to complete the work. The Site Safety Plan must be submitted prior to the commencement of work at the site and is subject to review and acceptance by the Construction Safety Unit.

Unsafe or Unhealthy Condition: A condition that could be potentially hazardous to the health and safety of personnel or the public, and/or damaging to equipment, machinery, property or the environment.

Weekly Safety Meetings: Weekly documented jobsite safety meetings, given to all jobsite personnel by contractor, with the purpose of discussing general safety topics and job specific requirements encountered at the DDC work site.

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

IV. RESPONSIBILITIES

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

A. DDC or CM Resident Engineer / Construction Project Manager

- Monitors the issuance of safety- related permits, approvals and drawings and maintains copies on site.
- Monitors construction-related work activities to confirm that they are conducted in accordance with DDC
 policies and all applicable regulations that pertain to construction safety.
- Maintains documentation and periodically attends weekly safety meetings and daily safety job briefings.
- Notifies the Construction Safety Unit and the ACCO's Insurance and Risk Management Unit of project-related accidents and emergencies, as per DDC's Construction Safety Emergency and Accident Notification and Response Protocol.
- Gathers facts related to all accidents and prepares DDC Construction Accident Report.
- Notifies the Construction Safety Unit within two (2) hours of the start of an inspection by any outside regulatory agency personnel, including OSHA, NYC DOB or others and forwards a copy of the inspection report within three days of its receipt.
- Monitors the conditions at the site for conformance with the contractor's Site Safety Plan and DDC construction documents.
- Notifies the contractor and DDC in the event that any condition or activity exists that is not in compliance with
 the contractor's Site Safety Plan, applicable federal, state or local codes or any condition that presents a
 potential risk of injury to the public or workers or possible damage to property.
- Notifies DDC of any unsafe or unhealthy condition and directs the contractor to provide such labor, materials, equipment and supervision to abate such conditions.
- Escort and assist QA&CS Construction Safety Auditors during the field and record inspections.
- Reports emergency conditions to the Construction Safety Unit immediately.

B. Contractors

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

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

V. SAFETY QUESTIONNAIRE

DDC requires that all Contractors provide information regarding their current and past safety performance and programs. This will be accomplished by the use of the DDC Safety Questionnaire. As a part of the bid submittal package, the contractor must submit a completed DDC Safety Questionnaire listing company workers' compensation experience modification rating and OSHA Incident Rates for the three (3) years prior to the date of the bid opening. DDC may request a Contractor to update its Questionnaire at any time or to provide more detailed information. The Contractor must provide the requested information within 15 days.

The following criteria will be used by DDC in reviewing the Contractor's responsibility, which will be based on the information provided on the questionnaire:

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- OSHA Injury and Illness Rates (I&IR) are no greater than the average for the industry (based on the Criteria 1: most current Bureau of Labor Statistics data for the Contractors SIC code); and
- Insurance workers compensation Experience Modification Rate (EMR) equal to or less than 1.0; and Criteria 2:
- Any willful violations issued by OSHA or NYC DOB within the last three (3) years; and Criteria 3:
- A fatality (worker or member of public) and injuries, requiring OSHA notification, experienced on or Criteria 4: near Contractor's worksite within the last three (3) years; and
- Past safety performance on DDC projects (accidents; status of safety program and site safety plan Criteria 5: submittals; etc.)
- OSHA violation history for the last three (3) years; Criteria 6:
- Contractor shall provide OSHA Injury and Illness Records (currently OSHA 300 and 300A Logs) for Criteria 7: the last three (3) years.

If the Contractor fails to meet the basic criteria listed above, the Construction Safety Unit may request, through the ACCO, more details concerning the Contractor's safety experience. DDC may request the Contractor to provide copies of, among other things, accident investigation reports, OSHA records, OSHA and NYC DOB citations, EPA citations and written corrective action plan.

SAFETY PROGRAM AND SITE SAFETY PLAN VI.

Within thirty (30) days from the Award Date, or as otherwise directed, the Contractor shall submit the following: (1) Safety Program, and (2) Site Safety Plan. The Safety Program shall set forth the Contractor's overall safety policy, regulatory compliance plan and minimum safety standards. The Site Safety Plan shall identify project work scope, safety hazards associated with the project tasks, and include specific safety procedures and training appropriate and necessary to complete the work. The Safety Program and the Site Safety Plan are subject to review and acceptance by the Construction Safety Unit prior to the commencement of work at the site. Failure by the Contractor to submit an acceptable Site Safety Plan and Safety Program shall be grounds for default.

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

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

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

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

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

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- Protection of Underground Facilities and Utilities, including responsible staff.

- Ionizing/Nonionizing Radiation - Competent person, license and qualification requirements, type of radiation, employees exposure and protection, etc.

Material Handling, Storage, Use and Disposal – Project specific information regarding material storage and disposal.

Signs, Signals, and Barricades – Use of danger/warning signs, sidewalk closure, safety instruction signs, pedestrian fencing and barricades, etc.

Scaffold – Project specific scaffold types, training, scaffold drawings, competent person, criteria for project specific scaffold, falling object protection.

 Welding and Cutting – project specific procedure for welding and cutting, including all necessary safety requirements such as fire prevention, personal protective equipment, hot work permits, FDNY certificate requirements.

Fall Protection - Project specific information regarding selected fall protection systems, fall protection plan.

 Cranes, Derrick, Hoists, Elevators, Conveyors – project specific equipment information including type, rated load capacity, manufacture specification requirements, competent person, exposure to falling load, inspection, recordkeeping, clearance requirements, communication procedure, ground lines, permits.

Excavation Safety - Competent person, project specific protective system.

- Maintenance and Protection of Traffic Plan - Project specific MPT plan, flagmen training.

- Steel Erection - Site specific erection plan, requirements for applicable written notifications, competent person.

Demolition – Engineering survey, including written evidence, disconnection of all effected utilities, identification of all hazardous chemicals, materials, gases, etc., floor openings, chutes, inspection and maintenance of all stairs/passageways, removal of materials/debris/structural elements, lock out/tag out, competent person.

- Blasting and the Use of Explosives - Project specific safety procedures, warning signs, training/qualification, transportation, storage and use of explosives, inspection.

- Toxic and Hazardous Substances - Safety procedures for substances to be used on project.

- Noise Mitigation Plan - Completed project specific Noise Mitigation Plan.

- Confined Space Program - Project specific Confined Space Program, responsible staff, training records, equipment information, rescue procedure, list of project specific confined spaces, forms.

- Construction Vehicles/Heavy Equipment - Type of construction vehicles/heavy equipment to be used on site

- Dust Mitigation Plan - Completed project specific Dust Mitigation Plan.

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

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

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

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

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

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- A. Reviewing the safety issues detailed in the contract.
- B. Reviewing the Site Safety Plan.
- C. Reviewing any new issues or information that was not previously addressed.
- D. Discussing planned inspections and audits of the site by QA&CS personnel.

VIII. EVALUATION DURING WORK IN PROGRESS

The Contractor's adherence to these Safety Requirements will be monitored throughout the project. This will be accomplished by the following:

- A. Use of a safety checklist by a representative of the Construction Safety Unit or other designated DDC representative or Consultant during regular, unannounced inspections of the job site. Field Exit Conferences will be held with the RE/CPM, Contractor Project Safety Representatives.
- B. The RE/CPM will continually monitor the safety and environmental performance of the contractor's employees and work methods. Deficiencies shall be brought to the attention of the contractor's representative on site for immediate correction. The DDC representative will maintain a written record of these deficiencies and have these records available upon request. Any critical deficiencies shall be immediately reported to QA&CS phone# (718) 391-1624 or (718) 391-1911.
- C. If the Contractor's safety performance during the project is not up to DDC standards (safety performance measure, accident/incident rate, etc.) the Director QA&CS, or his/her designee will meet with the Contractor's Project Safety Representative and or Project Safety Manager, the DDC Project Manager, the RE/CPM, and the DDC Environmental Specialist (if environmental issues are involved). The purpose of this meeting is to 1) determine the level of non-compliance; 2) explain and clarify the safety/environmental provisions; 3) agree on a future course of action to correct the deficiencies.
- D. If the deficiencies continue to occur with inadequate attention by the contractor, this shall, among other remedies available, be grounds for default.
- E. The contractor shall within 1 hour inform the RE/CPM/CM of all accidents/incidents including all fatalities, any injuries to employees or members of the general public, and property damage (e.g., structural damage, equipment rollovers, utility damage, loads dropped from crane). The RE/CPM shall notify the Construction Safety Unit as per DDC's Construction Safety Emergency and Accident Notification and Response Protocol and shall maintain a record of all contractor accidents/incidents for the project.
- F. The Construction Safety Unit shall be notified within two (2) hours of the start of any NYS-DOL/ NYC-COSH/ OSHA/ EPA inspections.

IX. SAFETY PERFORMANCE EVALUATION

The contractor's safety record, including accident/incident history and DDC safety inspection results, will be considered as part of the Contractor's performance evaluation at the conclusion of the project. Poor safety performance during the course of the project shall be a reason to rate a Contractor unsatisfactory which may be reflected in the City's Vendex system and will be considered for future procurement actions as set forth in the City's Procurement Policy Board Rules.

December 2013

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WITNESSETH:

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

CHAPTER I THE CONTRACT AND DEFINITIONS

ARTICLE 1. THE CONTRACT

- 1.1 Except for titles, subtitles, headings, running headlines, tables of contents and indices (all of which are printed herein merely for convenience), the following, except for such portions thereof as may be specifically excluded, shall be deemed to be part of this Contract:
 - 1.1.1 All provisions required by law to be inserted in this Contract, whether actually inserted or not;
 - 1.1.2 The Contract Drawings and Specifications;
 - 1.1.3 The General Conditions and Special Conditions, if any;
 - 1.1.4 The Contract;
 - 1.1.5 The Information for Bidders; Request for Proposals; Notice of Solicitation and Proposal For Bids; Bid or Proposal, and, if used, the Bid Booklet;
 - 1.1.6 All Addenda issued prior to the receipt of the bids; the Notice of Award; Performance and Payment Bonds, if required; and the Notice to Proceed or the Order to Work.
- 1.2 Should any conflict occur in or between the Drawings and Specifications, the Contractor shall be deemed to have estimated the most expensive way of doing the Work, unless the Contractor shall have asked for and obtained a decision in writing from the Commissioner of the Agency that is entering into this Contract, before the submission of its bid, as to what shall govern.

ARTICLE 2. DEFINITIONS

- 2.1 The following words and expressions, or pronouns used in their stead, shall, wherever they appear in this Contract, be construed as follows, unless a different meaning is clear from the context:
 - 2.1.1 "Addendum" or "Addenda" shall mean the additional Contract provisions and/or technical clarifications issued in writing by the Commissioner prior to the receipt of bids.
 - 2.1.2 "Agency" shall mean a city, county, borough or other office, position, department, division, bureau, board or commission, or a corporation, institution or agency of government, the expenses of which are paid in whole or in part from the City treasury.
 - 2.1.3 "Agency Chief Contracting Officer" (ACCO) shall mean a person delegated authority by the Commissioner to organize and supervise the procurement activity of subordinate Agency staff in conjunction with the CCPO, or his/her duly authorized representative.

- 2.1.4 "Allowance" shall mean a sum of money which the Agency may include in the total amount of the Contract for such specific contingencies as the Agency believes may be necessary to complete the Work, e.g., lead or asbestos remediation, and for which the Contractor will be paid on the basis of stipulated unit prices or a formula set forth in the Contract or negotiated between the parties provided, however, that if the Contractor is not directed to use the Allowance, the Contractor shall have no right to such money and it shall be deducted from the total amount of the Contract.
- 2.1.5 "City" shall mean the City of New York.
- 2.1.6 "City Chief Procurement Officer" (CCPO) shall mean a person delegated authority by the Mayor to coordinate and oversee the procurement activity of Mayoral agency staff, including the ACCO and any offices which have oversight responsibility for the procurement of construction, or his/her duly authorized representative.
- 2.1.7 "Commissioner" shall mean the head of the Agency that has entered into this Contract, or his/her duly authorized representative.
- 2.1.8 "Comptroller" shall mean the Comptroller of the City of New York.
- 2.1.9 "Contract" or "Contract Documents" shall mean each of the various parts of the contract referred to in Article 1 hereof, both as a whole and severally.
- 2.1.10 "Contract Drawings" shall mean only those drawings specifically entitled as such and listed in the Specifications or in any Addendum, or any drawings furnished by the Commissioner, pertaining or supplemental thereto.
- 2.1.11 "Contract Work" shall mean everything required to be furnished and done by the Contractor by any one or more of the parts of the Contract referred to in Article 1, except Extra Work as hereinafter defined.
- 2.1.12 "Contractor" shall mean the entity which executed this Contract, whether a corporation, firm, partnership, joint venture, individual, or any combination thereof, and its, their, his/her successors, personal representatives, executors, administrators, and assigns, and any person, firm, partnership, joint venture, individual, or corporation which shall at any time be substituted in the place of the Contractor under this Contract.
- 2.1.13 "Days" shall mean calendar days, except where otherwise specified.
- 2.1.14 "Engineer" or "Architect" or "Project Manager" shall mean the person so designated in writing by the Commissioner in the Notice to Proceed or the Order to Work to act as such in relation to this Contract, including a private Architect or Engineer or Project Manager, as the case may be. Subject to written approval by the Commissioner, the Engineer, Architect or Project Manager may designate an authorized representative.
- 2.1.15 "Engineering Audit Officer" (EAO) shall mean the person so designated by the Commissioner to perform responsible auditing functions hereunder.
- 2.1.16 "Extra Work" shall mean Work other than that required by the Contract at the time of award which is authorized by the Commissioner pursuant to Chapter VI of this Contract.
- 2.1.17 **"Federal-Aid Contract"** shall mean a contract in which the United States (federal) Government provides financial funding as so designated in the Information for Bidders.

- 2.1.18 "Final Acceptance" shall mean final written acceptance of all the Work by the Commissioner, a copy of which shall be sent to the Contractor.
- 2.1.19 "Final Approved Punch List" shall mean a list, approved pursuant to Article 14.2.2, specifying those items of Work to be completed by the Contractor after Substantial Completion and dates for the completion of each item of Work.
- 2.1.20 "Law" or "Laws" shall mean the Constitution of the State of New York, the New York City Charter, the New York City Administrative Code, a statute of the United States or of the State of New York, a local law of the City of New York, any ordinance, rule or regulation having the force of law, or common law.
- 2.1.21 "Materialman" shall mean any corporation, firm, partnership, joint venture, or individual, other than employees of the Contractor, who or which contracts with the Contractor or any Subcontractor, to fabricate or deliver, or who actually fabricates or delivers, plant, materials or equipment to be incorporated in the Work.
- 2.1.22 "Means and Methods of Construction" shall mean the labor, materials, temporary structures, tools, plant, and construction equipment, and the manner and time of their use, necessary to accomplish the result intended by this Contract.
- 2.1.23"Notice to Proceed" or "Order to Work" shall mean the written notice issued by the Commissioner specifying the time for commencement of the Work and the Engineer, Architect or Project Manager.
- 2.1.24 "Other Contractor(s)" shall mean any contractor (other than the entity which executed this Contract or its Subcontractors) who or which has a contract with the City for work on or adjacent to the building or Site of the Work.
- 2.1.25 "Payroll Taxes" shall mean State Unemployment Insurance (SUI), Federal Unemployment Insurance (FUI), and payments pursuant to the Federal Insurance Contributions Act (FICA).
- 2.1.26 "Project" shall mean the public improvement to which this Contract relates.
- 2.1.27 "Procurement Policy Board" (PPB) shall mean the Agency of the City of New York whose function is to establish comprehensive and consistent procurement policies and rules which shall have broad application throughout the City.
- 2.1.28 "Required Quantity" in a unit price Contract shall mean the actual quantity of any item of Work or materials which is required to be performed or furnished in order to comply with the Contract.
- 2.1.29 "Resident Engineer" shall mean the representative of the Commissioner duly designated by the Commissioner to be his/her representative at the site of the Work.
- 2.1.30 "Site" shall mean the area upon or in which the Contractor's operations are carried on, and such other areas adjacent thereto as may be designated as such by the Engineer.
- 2.1.31 "Small Tools" shall mean items that are ordinarily required for a worker's job function, including but not limited to, equipment that ordinarily has no licensing, insurance

or substantive storage costs associated with it; such as circular and chain saws, impact drills, threaders, benders, wrenches, socket tools, etc.

- 2.1.32 "Specifications" shall mean all of the directions, requirements, and standards of performance applying to the Work as hereinafter detailed and designated under the Specifications.
- 2.1.33 "Subcontractor" shall mean any person, firm or corporation, other than employees of the Contractor, who or which contracts with the Contractor or with its subcontractors to furnish, or actually furnishes labor, or labor and materials, or labor and equipment, or superintendence, supervision and/or management at the Site. Wherever the word Subcontractor appears, it shall also mean sub-Subcontractor.
- 2.1.34 "Substantial Completion" shall mean the written determination by the Engineer that the Work required under this Contract is substantially, but not entirely, complete and the approval of the Final Approved Punch List.
- 2.1.35 "Work" shall mean all services required to complete the Project in accordance with the Contract Documents, including without limitation, labor, material, superintendence, management, administration, equipment, and incidentals, and obtaining any and all permits, certifications and licenses as may be necessary and required to complete the Work, and shall include both Contract Work and Extra Work.

CHAPTER II THE WORK AND ITS PERFORMANCE

ARTICLE 3. CHARACTER OF THE WORK

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

ARTICLE 4. MEANS AND METHODS OF CONSTRUCTION

- 4.1 Unless otherwise expressly provided in the Contract Drawings, Specifications, and Addenda, the Means and Methods of Construction shall be such as the Contractor may choose; subject, however, to the Engineer's right to reject the Means and Methods of Construction proposed by the Contractor which in the opinion of the Engineer:
 - 4.1.1 Will constitute or create a hazard to the Work, or to persons or property; or
 - 4.1.2 Will not produce finished Work in accordance with the terms of the Contract; or
 - 4.1.3 Will be detrimental to the overall progress of the **Project**.
- 4.2 The Engineer's approval of the Contractor's Means and Methods of Construction, or his/her failure to exercise his/her right to reject such means or methods, shall not relieve the Contractor of its obligation to complete the Work as provided in this Contract; nor shall the exercise of such right to reject create a cause of action for damages.

ARTICLE 5. COMPLIANCE WITH LAWS

- 5.1 The Contractor shall comply with all Laws applicable to this Contract and to the Work to be done hereunder.
- 5.2 Procurement Policy Board Rules: This **Contract** is subject to the Rules of the **PPB** ("**PPB** Rules") in effect at the time of the bid opening for this **Contract**. In the event of a conflict between the **PPB** Rules and a provision of this **Contract**, the **PPB** Rules shall take precedence.
 - 5.3 Noise Control Code provisions.
 - 5.3.1 In accordance with the provisions of Section 24-216(b) of the Administrative Code of the City ("Administrative Code"), Noise Abatement Contract Compliance, devices and activities which will be operated, conducted, constructed or manufactured pursuant to this Contract and which are subject to the provisions of the City Noise Control Code shall be operated, conducted, constructed, or manufactured without causing a violation of the Administrative Code. Such devices and activities shall incorporate advances in the art of noise control development for the kind and level of noise emitted or produced by such devices and activities, in accordance with regulations issued by the Commissioner of the City Department of Environmental Protection.
 - 5.3.2 The Contractor agrees to comply with Section 24-219 of the Administrative Code and implementing rules codified at 15 Rules of the City of New York ("RCNY") Section 28-100 et seq. In accordance with such provisions, the Contractor, if the Contractor is the responsible party under such regulations, shall prepare and post a Construction Noise Mitigation Plan at each Site, in which the Contractor shall certify that all construction tools and equipment have been maintained so that they operate at normal manufacturers operating specifications. If the Contractor cannot make this certification, it must have in place an Alternative Noise Mitigation Plan approved by the City Department of Environmental Protection. In addition, the Contractor's certified Construction Noise Mitigation Plan is subject inspection by the City Department of Environmental Protection in accordance with Section 28-101 of Title 15 of RCNY. No Contract Work may take place at a Site unless there is a Construction Noise Mitigation Plan or approved Alternative Noise Mitigation Plan in place. In addition, the Contractor shall create and implement a noise mitigation training program. Failure to comply with these requirements may result in fines and other penalties pursuant to the applicable provisions of the Administrative Code and RCNY.
- 5.4 Ultra Low Sulfur Diesel Fuel: In accordance with the provisions of Section 24-163.3 of the Administrative Code, the **Contractor** specifically agrees as follows:
 - 5.4.1 Definitions. For purposes of this Article 5.4, the following definitions apply:
 - 5.4.1(a) "Contractor" means any person or entity that enters into a Public Works Contract with a **City Agency**, or any person or entity that enters into an agreement with such person or entity, to perform work or provide labor or services related to such Public Works Contract.
 - 5.4.1(b) "Motor Vehicle" means any self-propelled vehicle designed for transporting persons or property on a street or highway.
 - 5.4.1(c) "Nonroad Engine" means an internal combustion engine (including the fuel system) that is not used in a Motor Vehicle or a vehicle used solely for competition, or that is not subject to standards promulgated under Section 7411 or Section 7521 of

Title 42 of the United States Code, except that this term shall apply to internal combustion engines used to power generators, compressors or similar equipment used in any construction program or project.

- 5.4.1(d) "Nonroad Vehicle" means a vehicle that is powered by a Nonroad Engine, fifty (50) horsepower and greater, and that is not a Motor Vehicle or a vehicle used solely for competition, which shall include, but not be limited to, excavators, backhoes, cranes, compressors, generators, bulldozers, and similar equipment, except that this term shall not apply to horticultural maintenance vehicles used for landscaping purposes that are powered by a Nonroad Engine of sixty-five (65) horsepower or less and that are not used in any construction program or project.
- 5.4.1(e) "Public Works Contract" means a contract with a City Agency for a construction program or project involving the construction, demolition, restoration, rehabilitation, repair, renovation, or abatement of any building, structure, tunnel, excavation, roadway, park or bridge; a contract with a City Agency for the preparation for any construction program or project involving the construction, demolition, restoration, rehabilitation, repair, renovation, or abatement of any building, structure, tunnel, excavation, roadway, park or bridge; or a contract with a City Agency for any final work involved in the completion of any construction program or project involving the construction, demolition, restoration, rehabilitation, repair, renovation, or abatement of any building, structure, tunnel, excavation, roadway, park or bridge.
- 5.4.1(f) "Ultra Low Sulfur Diesel Fuel" means diesel fuel that has a sulfur content of no more than fifteen parts per million (15 ppm).

5.4.2 Ultra Low Sulfur Diesel Fuel

- 5.4.2(a) All Contractors shall use Ultra Low Sulfur Diesel Fuel in diesel-powered Nonroad Vehicles in the performance of this Contract.
- 5.4.2(b) Notwithstanding the requirements of Article 5.4.2(a), Contractors may use diesel fuel that has a sulfur content of no more than thirty parts per million (30 ppm) to fulfill the requirements of this Article 5.4.2, where the Commissioner of the City Department of Environmental Protection ("DEP Commissioner") has issued a determination that a sufficient quantity of Ultra Low Sulfur Diesel Fuel is not available to meet the needs of Agencies and Contractors. Any such determination shall expire after six (6) months unless renewed.
- 5.4.2(c) Contractors shall not be required to comply with this Article 5.4.2 where the City Agency letting this Contract makes a written finding, which is approved, in writing, by the DEP Commissioner, that a sufficient quantity of Ultra Low Sulfur Diesel Fuel, or diesel fuel that has a sulfur content of no more than thirty parts per million (30 ppm) is not available to meet the requirements of Section 24-163.3 of the Administrative Code, provided that such Contractor in its fulfillment of the requirements of this Contract, to the extent practicable, shall use whatever quantity of Ultra Low Sulfur Diesel Fuel or diesel fuel that has a sulfur content of no more than thirty parts per million (30 ppm) is available. Any finding made pursuant to this Article 5.4.2(c) shall expire after sixty (60) Days, at which time the requirements of this Article 5.4.2 shall be in full force and effect unless the City Agency renews the finding in writing and such renewal is approved by the DEP Commissioner.

- 5.4.2(d) Contractors may check on determinations and approvals issued by the DEP Commissioner pursuant to Section 24-163.3 of the Administrative Code, if any, at www.dep.nyc.gov or by contacting the City Agency letting this Contract.
- 5.4.2(e) The requirements of this Article 5.4.2 do not apply where they are precluded by federal or State funding requirements or where the **Contract** is an emergency procurement.

5.4.3 Best Available Technology

- 5.4.3(a) All **Contractors** shall utilize the best available technology for reducing the emission of pollutants for diesel-powered Nonroad Vehicles in the performance of this **Contract**. For determinations of best available technology for each type of diesel-powered Nonroad Vehicle, **Contractors** shall comply with the regulations of the **City** Department of Environmental Protection, as and when adopted, Chapter 14 of Title 15 of the Rules of the City of New York (RCNY). The **Contractor** shall fully document all steps in the best available technology selection process and shall furnish such documentation to the **City Agency** or the DEP Commissioner upon request. The **Contractor** shall retain all documentation generated in the best available technology selection process for as long as the selected best available technology is in use.
- 5.4.3(b) No **Contractor** shall be required to replace best available technology for reducing the emission of pollutants or other authorized technology utilized for a diesel-powered Nonroad Vehicle in accordance with the provisions of this Article 5.4.3 within three (3) years of having first utilized such technology for such vehicle.
- 5.4.3(c) This Article 5.4.3 shall not apply to any vehicle used to satisfy the requirements of a specific Public Works Contract for fewer than twenty (20) **Days**.
- 5.4.3(d) The **Contractor** shall not be required to comply with this Article 5.4.3 with respect to a diesel-powered Nonroad Vehicle under the following circumstances:
 - 5.4.3(d)(i) Where the **City Agency** makes a written finding, which is approved, in writing, by the DEP Commissioner, that the best available technology for reducing the emission of pollutants as required by this Article 5.4.3 is unavailable for such vehicle, the **Contractor** shall use whatever technology for reducing the emission of pollutants, if any, is available and appropriate for such vehicle.
 - 5.4.3(d)(ii) Where the DEP Commissioner has issued a written waiver based upon the **Contractor** having demonstrated to the DEP Commissioner that the use of the best available technology for reducing the emission of pollutants might endanger the operator of such vehicle or those working near such vehicle, due to engine malfunction, the **Contractor** shall use whatever technology for reducing the emission of pollutants, if any, is available and appropriate for such vehicle, which would not endanger the operator of such vehicle or those working near such vehicle.
 - 5.4.3(d)(iii) In determining which technology to use for the purposes of Articles 5.4.3(d)(i) and 5.4.3(d)(ii) above, the **Contractor** shall primarily consider the reduction in emissions of particulate matter and secondarily consider the reduction in emissions of nitrogen oxides associated with the use of such

technology, which shall in no event result in an increase in the emissions of either such pollutant.

- 5.4.3(d)(iv) The **Contractor** shall submit requests for a finding or a waiver pursuant to this Article 5.4.3(d) in writing to the DEP Commissioner, with a copy to the **ACCO** of the **City Agency** letting this **Contract**. Any finding or waiver made or issued pursuant to Articles 5.4.3(d)(i) and 5.4.3(d)(ii) above shall expire after one hundred eighty (180) **Days**, at which time the requirements of Article 5.4.3(a) shall be in full force and effect unless the **City Agency** renews the finding, in writing, and the DEP Commissioner approves such finding, in writing, or the DEP Commissioner renews the waiver, in writing.
- 5.4.3(e) The requirements of this Article 5.4.3 do not apply where they are precluded by federal or State funding requirements or where the **Contract** is an emergency procurement.
- 5.4.4 Section 24-163 of the Administrative Code. The **Contractor** shall comply with Section 24-163 of the Administrative Code related to the idling of the engines of motor vehicles while parking.

5.4.5 Compliance

- 5.4.5(a) The **Contractor's** compliance with Article 5.4 may be independently monitored. If it is determined that the **Contractor** has failed to comply with any provision of Article 5.4, any costs associated with any independent monitoring incurred by the **City** shall be reimbursed by the **Contractor**.
- 5.4.5(b) Any **Contractor** who violates any provision of Article 5.4, except as provided in Article 5.4.5(c) below, shall be liable for a civil penalty between the amounts of one thousand (\$1,000) and ten thousand (\$10,000) dollars, in addition to twice the amount of money saved by such **Contractor** for failure to comply with Article 5.4.
- 5.4.5(c) No Contractor shall make a false claim with respect to the provisions of Article 5.4 to a City Agency. Where a Contractor has been found to have done so, such Contractor shall be liable for a civil penalty of twenty thousand (\$20,000) dollars, in addition to twice the amount of money saved by such Contractor in association with having made such false claim.

5.4.6 Reporting

- 5.4.6(a) For all Public Works Contracts covered by this Article 5.4, the Contractor shall report to the City Agency the following information:
 - 5.4.6(a)(i) The total number of diesel-powered Nonroad Vehicles used to fulfill the requirements of this Public Works Contract;
 - 5.4.6(a)(ii) The number of such Nonroad Vehicles that were powered by Ultra Low Sulfur Diesel Fuel;
 - 5.4.6(a)(iii) The number of such Nonroad Vehicles that utilized the best available technology for reducing the emission of pollutants, including a breakdown by vehicle model and the type of technology;

- 5.4.6(a)(iv) The number of such Nonroad Vehicles that utilized such other authorized technology in accordance with Article 5.4.3, including a breakdown by vehicle model and the type of technology used for each such vehicle:
 - 5.4.6(a)(v) The locations where such Nonroad Vehicles were used; and
- 5.4.6(a)(vi) Where a determination is in effect pursuant to Article 5.4.2(b) or 5.4.2(c), detailed information concerning the **Contractor's** efforts to obtain Ultra Low Sulfur Diesel Fuel or diesel fuel that has a sulfur content of no more than thirty parts per million (30 ppm).
- 5.4.6(b) The **Contractor** shall submit the information required by Article 5.4.6(a) at the completion of **Work** under the Public Works Contract and on a yearly basis no later than August 1 throughout the term of the Public Works Contract. The yearly report shall cover **Work** performed during the preceding fiscal year (July 1 June 30).
- 5.5 Ultra Low Sulfur Diesel Fuel. In accordance with the Coordinated Construction Act for Lower Manhattan, as amended:
 - 5.5.1 Definitions. For purposes of this Article 5.5, the following definitions apply:
 - 5.5.1(a) "Lower Manhattan" means the area to the south of and within the following lines: a line beginning at a point where the United States pierhead line in the Hudson River as it exists now or may be extended would intersect with the southerly line of West Houston Street in the Borough of Manhattan extended, thence easterly along the southerly side of West Houston Street to the southerly side of Houston Street, thence easterly along the southerly side of Houston Street to the southerly side of East Houston Street, thence northeasterly along the southerly side of East Houston Street to the point where it would intersect with the United States pierhead line in the East River as it exists now or may be extended, including tax lots within or immediately adjacent thereto.
 - 5.5.1(b) "Lower Manhattan Redevelopment Project" means any project in Lower Manhattan that is funded in whole or in part with federal or State funding, or any project intended to improve transportation between Lower Manhattan and the two air terminals in the City known as LaGuardia Airport and John F. Kennedy International Airport, or between Lower Manhattan and the air terminal in Newark known as Newark Liberty International Airport, and that is funded in whole or in part with federal funding.
 - 5.5.1(c) "Nonroad Engine" means an internal combustion engine (including the fuel system) that is not used in a Motor Vehicle or a vehicle used solely for competition, or that is not subject to standards promulgated under Section 7411 or Section 7521 of Title 42 of the United States Code, except that this term shall apply to internal combustion engines used to power generators, compressors or similar equipment used in any construction program or project.
 - 5.5.1(d) "Nonroad Vehicle" means a vehicle that is powered by a Nonroad Engine, fifty (50) horsepower (HP) and greater, and that is not a Motor Vehicle or a vehicle used solely for competition, which shall include, but not be limited to, excavators, backhoes, cranes, compressors, generators, bulldozers, and similar equipment, except

that this terms shall not apply to horticultural maintenance vehicles used for landscaping purposes that are powered by a Nonroad Engine of sixty-five (65) HP or less and that are not used in any construction program or project.

- 5.5.1(e) "Ultra Low Sulfur Diesel Fuel" means diesel fuel that has a sulfur content of no more than fifteen parts per million (15 ppm).
- 5.5.2 Requirements. Contractors and Subcontractors are required to use only Ultra Low Sulfur Diesel Fuel to power the diesel-powered Nonroad Vehicles with engine HP rating of fifty (50) HP and above used on a Lower Manhattan Redevelopment Project and, where practicable, to reduce the emission of pollutants by retrofitting such Nonroad Vehicles with oxidation catalysts, particulate filters, or technology that achieves lowest particulate matter emissions.
- 5.6 Pesticides. In accordance with Section 17-1209 of the Administrative Code, to the extent that the **Contractor** or any **Subcontractor** applies pesticides to any property owned or leased by the **City**, the **Contractor**, and any **Subcontractor** shall comply with Chapter 12 of the Administrative Code.
- 5.7 Waste Treatment, Storage, and Disposal Facilities and Transporters. In connection with the Work, the Contractor and any Subcontractor shall use only those waste treatment, storage, and disposal facilities and waste transporters that possess the requisite license, permit or other governmental approval necessary to treat, store, dispose, or transport the waste, materials or hazardous substances.
- 5.8 Environmentally Preferable Purchasing. The **Contractor** shall ensure that products purchased or leased by the **Contractor** or any **Subcontractor** for the **Work** that are not specified by the **City** or are submitted as equivalents to a product specified by the **City** comply with the requirements of the New York City Environmentally Preferable Purchasing Program contained in Chapter 11 of Title 43 of the RCNY, pursuant to Chapter 3 of Title 6 of the Administrative Code.

ARTICLE 6. INSPECTION

- 6.1 During the progress of the Work and up to the date of Final Acceptance, the Contractor shall at all times afford the representatives of the City every reasonable, safe, and proper facility for inspecting all Work done or being done at the Site and also for inspecting the manufacture or preparation of materials and equipment at the place of such manufacture or preparation.
- 6.2 The Contractor's obligation hereunder shall include the uncovering or taking down of finished Work and its restoration thereafter; provided, however, that the order to uncover, take down and restore shall be in writing, and further provided that if Work thus exposed proves satisfactory, and if the Contractor has complied with Article 6.1, such uncovering or taking down and restoration shall be considered an item of Extra Work to be paid for in accordance with the provisions of Article 26. If the Work thus exposed proves unsatisfactory, the City has no obligation to compensate the Contractor for the uncovering, taking down or restoration.
- 6.3 Inspection and approval by the Commissioner, the Engineer, Project Manager, or Resident Engineer, of finished Work or of Work being performed, or of materials and equipment at the place of manufacture or preparation, shall not relieve the Contractor of its obligation to perform the Work in strict accordance with the Contract. Finished or unfinished Work not found to be in strict accordance with the Contract shall be replaced as directed by the Engineer, even though such Work may have been previously approved and paid for. Such corrective Work is Contract Work and shall not be deemed Extra Work.

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

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

- 7.1 During the performance of the Work and up to the date of Final Acceptance, the Contractor shall be under an absolute obligation to protect the finished and unfinished Work against any damage, loss, injury, theft and/or vandalism and in the event of such damage, loss, injury, theft and/or vandalism, it shall promptly replace and/or repair such Work at the Contractor's sole cost and expense, as directed by the Resident Engineer. The obligation to deliver finished Work in strict accordance with the Contract prior to Final Acceptance shall be absolute and shall not be affected by the Resident Engineer's approval of, or failure to prohibit, the Means and Methods of Construction used by the Contractor.
- 7.2 During the performance of the **Work** and up to the date of **Final Acceptance**, the **Contractor** shall take all reasonable precautions to protect all persons and the property of the **City** and of others from damage, loss or injury resulting from the **Contractor's**, and/or its **Subcontractors'** operations under this **Contract.** The **Contractor's** obligation to protect shall include the duty to provide, place or replace, and adequately maintain at or about the **Site** suitable and sufficient protection such as lights, barricades, and enclosures.
- 7.3 The Contractor shall comply with the notification requirements set forth below in the event of any loss, damage or injury to Work, persons or property, or any accidents arising out of the operations of the Contractor and/or its Subcontractors under this Contract.
 - 7.3.1 The Contractor shall make a full and complete report in writing to the Resident Engineer within three (3) Days after the occurrence.
 - 7.3.2 The Contractor shall also send written notice of any such event to all insurance carriers that issued potentially responsive policies (including commercial general liability insurance carriers for events relating to the Contractor's own employees) no later than twenty (20) days after such event and again no later than twenty (20) days after the initiation of any claim and/or action resulting therefrom. Such notice shall contain the following information: the number of the insurance policy, the name of the Named Insured, the date and location of the incident, and the identity of the persons injured or property damaged. For any policy on which the City and/or the Engineer, Architect, or Project Manager are Additional Insureds, such notice shall expressly specify that "this notice is being given on behalf of the City of New York as Additional Insured, such other Additional Insureds, as well as the Named Insured."
 - 7.3.2(a) Whenever such notice is sent under a policy on which the City is an Additional Insured, the Contractor shall provide copies of the notice to the Comptroller, the Commissioner and the City Corporation Counsel. The copy to the Comptroller shall be sent to the Insurance Unit, NYC Comptroller's Office, 1 Centre Street Room 1222, New York, New York, 10007. The copy to the Commissioner shall be sent to the address set forth in Schedule A of the General Conditions. The copy to the City Corporation Counsel shall be sent to Insurance Claims Specialist, Affirmative Litigation Division, New York City Law Department, 100 Church Street, New York, New York 10007.

- 7.3.2(b) If the Contractor fails to provide any of the foregoing notices to any appropriate insurance carrier(s) in a timely and complete manner, the Contractor shall indemnify the City for all losses, judgments, settlements, and expenses, including reasonable attorneys' fees, arising from an insurer's disclaimer of coverage citing late notice by or on behalf of the City.
- 7.4 To the fullest extent permitted by law, the Contractor shall defend, indemnify, and hold the City, its employees, and officials (the "Indemnitees") harmless against any and all claims (including but not limited to claims asserted by any employee of the Contractor and/or its Subcontractors) and costs and expenses of whatever kind (including but not limited to payment or reimbursement of attorneys' fees and disbursements) allegedly arising out of or in any way related to the operations of the Contractor and/or its Subcontractors in the performance of this Contract or from the Contractor's and/or its Subcontractors' failure to comply with any of the provisions of this Contract or of the Law. Such costs and expenses shall include all those incurred in defending the underlying claim and those incurred in connection with the enforcement of this Article 7.4 by way of cross-claim, third-party claim, declaratory action or otherwise. The parties expressly agree that the indemnification obligation hereunder contemplates (1) full indemnity in the event of liability imposed against the Indemnitees without negligence and solely by reason of statute, operation of Law or otherwise; and (2) partial indemnity in the event of any actual negligence on the part of the Indemnitees either causing or contributing to the underlying claim (in which case, indemnification will be limited to any liability imposed over and above that percentage attributable to actual fault whether by statute, by operation of Law, or otherwise). Where partial indemnity is provided hereunder, all costs and expenses shall be indemnified on a pro rata basis.
 - 7.4.1 Indemnification under Article 7.4 or any other provision of the **Contract** shall operate whether or not **Contractor** or its **Subcontractors** have placed and maintained the insurance specified under Article 22.
- 7.5 The provisions of this Article 7 shall not be deemed to create any new right of action in favor of third parties against the **Contractor** or the **City**.

CHAPTER III TIME PROVISIONS

ARTICLE 8. COMMENCEMENT AND PROSECUTION OF THE WORK

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

ARTICLE 9. PROGRESS SCHEDULES

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

- 9.1.1 The anticipated time of commencement and completion of each of the various operations to be performed under this **Contract**; and
- 9.1.2 The sequence and interrelation of each of these operations with the others and with those of other related contracts; and
- 9.1.3 The estimated time required for fabrication or delivery, or both, of all materials and equipment required for the **Work**, including the anticipated time for obtaining required approvals pursuant to Article 10; and
- 9.1.4 The estimated amount in dollars the Contractor will claim on a monthly basis.
- 9.2 The proposed schedule shall be revised as directed by the **Engineer**, until finally approved by the **Engineer**, and after such approval, subject to the provisions of Article 11, shall be strictly adhered to by the **Contractor**.
- 9.3 If the Contractor shall fail to adhere to the approved progress schedule, or to the schedule as revised pursuant to Article 11, it shall promptly adopt such other or additional Means and Methods of Construction, at its sole cost and expense, as will make up for the time lost and will assure completion in accordance with the approved progress schedule. The approval by the City of a progress schedule which is shorter than the time allotted under the Contract shall not create any liability for the City if the approved progress schedule is not met.
- 9.4 The Contractor will not receive any payments until the proposed progress schedule is submitted.

ARTICLE 10. REQUESTS FOR INFORMATION OR APPROVAL

- 10.1 From time to time as the **Work** progresses and in the sequence indicated by the approved progress schedule, the **Contractor** shall submit to the **Engineer** a specific request in writing for each item of information or approval required by the **Contractor**. These requests shall state the latest date upon which the information or approval is actually required by the **Contractor**, and shall be submitted in a reasonable time in advance thereof to provide the **Engineer** a sufficient time to act upon such submissions, or any necessary re-submissions thereof.
- 10.2 The Contractor shall not have any right to an extension of time on account of delays due to the Contractor's failure to submit requests for the required information or the required approval in accordance with the above requirements.

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

- 11.1 After the commencement of any condition which is causing or may cause a delay in completion of the **Work**, including conditions for which the **Contractor** may be entitled to an extension of time, the following notifications and submittals are required:
 - 11.1.1 Within seven (7) **Days** after the commencement of such condition, the **Contractor** must notify the **Engineer** in writing of the existence, nature and effect of such condition upon the approved progress schedule and the **Work**, and must state why and in what respects, if any, the condition is causing or may cause a delay.

- 11.1.2 If the Contractor shall claim to be sustaining damages for delay as provided for in this Article 11, within forty-five (45) Days from the time such damages are first incurred, and every thirty (30) Days thereafter for as long as such damages are being incurred, the Contractor shall submit to the Commissioner verified written statements of the details and the amounts of such damages, together with documentary evidence of such damages, ("statement of delay damages") as further detailed in Article 11.6. The Contractor may submit any of the above statements within such additional time as may be granted by the Commissioner in writing upon written request therefor. On failure of the Contractor to strictly comply with all of the foregoing provisions, such claims shall be deemed waived and no right to recover on such claims shall exist. Damages that the Contractor may claim in any action arising under or by reason of this Contract shall not be different from or in excess of the statements made and documentation provided pursuant to this Article 11.
- 11.1.3 Within 60 days of submission of the final verified statement of claims pursuant to Article 44, the Commissioner shall make a determination as to whether a compensable delay has occurred and, if so, the amount of compensation due the Contractor. Notwithstanding the above, the Commissioner may make a determination as to whether a compensable delay has occurred at any time after the Contractor's first submission of a statement of delay damages provided, however, that the amount of compensation due to the Contractor will not be determined until the Commissioner determines that the Work is delayed after the date set for substantial completion.
- 11.2 Failure of the Contractor to strictly comply with the requirements of Article 11.1.1 may, in the discretion of the Commissioner, be deemed sufficient cause to deny any extension of time on account of delay arising out of such condition. Failure of the Contractor to strictly comply with the requirements of Articles 11.1.1 and 11.1.2 shall be deemed a conclusive waiver by the Contractor of any and all claims for damages for delay arising from such condition and no right to recover on such claims shall exist.
- 11.3 When appropriate and directed by the **Engineer**, the progress schedule shall be revised by the **Contractor** until finally approved by the **Engineer**. The revised progress schedule must be strictly adhered to by the **Contractor**.

11.4 Compensable Delays

- 11.4.1 The Contractor agrees to make claim only for additional costs attributable to delay in the performance of this Contract necessarily extending the time for completion of the Work or resulting from acceleration directed by the Commissioner and required to maintain the Project schedule, occasioned solely by any act or omission to act of the City listed below. The Contractor also agrees that delay from any other cause shall be compensated, if at all, solely by an extension of time to complete the performance of the Work.
 - 11.4.1.1 The failure of the City to take reasonable measures to coordinate and progress the Work, except that the City shall not be responsible for the Contractor's obligation to coordinate and progress the Work of its Subcontractors.
 - 11.4.1.2 Extended delays attributable to the **City** in the review or issuance of change orders, in shop drawing reviews and approvals or as a result of the cumulative impact of multiple change orders, which have a verifiable impact on **Project** costs.
 - 11.4.1.3 The unavailability of the Site for an extended period of time that significantly affects the scheduled completion of the Contract.

- 11.4.1.4 The issuance by the **Engineer** of a stop work order relative to a substantial portion of the **Work** for a period exceeding thirty (30) **Days**, that was not brought about through any action or omission of the **Contractor**.
- 11.4.1.5 Differing site conditions that were neither known nor reasonably ascertainable on a pre-bid inspection of the **Site** or review of the bid documents or other publicly available sources, and that are not ordinarily encountered in the **Project's** geographical area or neighborhood or in the type of **Work** to be performed.
- 11.4.1.6 Delays caused by the City's bad faith or its willful, malicious, or grossly negligent conduct;
- 11.4.1.7 Delays not contemplated by the parties;
- 11.4.1.8 Delays so unreasonable that they constitute an intentional abandonment of the **Contract** by the **City**; and
- 11.4.1.9 Delays resulting from the City's breach of a fundamental obligation of the Contract.
- 11.4.2 No claim may be made for any alleged delay in Substantial Completion of the Work by a date earlier than the date of Substantial Completion provided for in Schedule A unless there is a provision in the Contract providing for additional compensation for early completion. No claim may be made for any alleged delay in Substantial Completion of the Work if the work is substantially completed by the date of Substantial Completion provided for in Schedule A unless acceleration has been directed by the Commissioner to meet the date of Substantial Completion set forth in Schedule A.
- 11.4.3 The provisions of this Article 11 apply only to claims for additional costs attributable to delay and do not preclude determinations by the Commissioner allowing reimbursements for additional costs for Extra Work pursuant to Articles 25 and 26 of this Contract. To the extent that any cost attributable to delay is reimbursed as part of a change order, no additional claim for compensation under this Article 11 shall be allowed.
- 11.5 Non-Compensable Delays. The **Contractor** agrees to make no claim for, and is deemed to have included in its bid prices for the various items of the **Contract**, the extra/additional costs attributable to any delays caused by or attributable to the items set forth below. For such items, the **Contractor** shall be compensated, if at all, solely by an extension of time to complete the performance of the **Work**, in accordance with the provisions of Article 13. Such extensions of time will be granted, if at all, pursuant to the grounds set forth in Article 13.3.
 - 11.5.1 The acts or omissions of any third parties, including but not limited to Other Contractors, public/ governmental bodies (other than City Agencies), utilities or private enterprises, who are disclosed in the Contract Documents or are ordinarily encountered or generally recognized as related to the Work;
 - 11.5.2 Any situation which was within the contemplation of the parties at the time of entering into the Contract, including any delay indicated or disclosed in the Contract Documents or generally recognized as related to the nature of the Work, and/or the existence of any facility or appurtenance owned, operated or maintained by any third party, as indicated or disclosed in the Contract Documents or ordinarily encountered or generally recognized as related to the nature of the Work;
 - 11.5.3 Restraining orders, injunctions or judgments issued by a court which were caused by a Contractor's submission, action or inaction or by a Contractor's Means and Methods of

Construction, or by third parties, unless such order, injunction or judgment was the result of an action or omission by the City;

- 11.5.4 Any labor boycott, strike, picketing, lockout or similar situation;
- 11.5.5 Any shortages of supplies or materials, or unavailability of equipment, required by the **Contract Work**;
- 11.5.6 Climatic conditions, storms, floods, droughts, tidal waves, fires, hurricanes, earthquakes, landslides or other catastrophes or acts of God, or acts of war or of the public enemy or terrorist acts, including the City's reasonable responses thereto; and
- 11.5.7 **Extra Work** which does not significantly affect the overall completion of the **Contract**, reasonable delays in the review or issuance of change orders or field orders and/or in shop drawing reviews or approvals.
- 11.6 Required Content of Submission of Statement of Delay Damages
 - 11.6.1 In the verified written statement of delay damages required by Article 11.1.2, the following information shall be provided by the **Contractor**:
 - 11.6.1.1 For each delay, the start and end dates of the claimed periods of delay and, in addition, a description of the operations that were delayed, an explanation of how they were delayed, and the reasons for the delay, including identifying the applicable act or omission of the City listed in Article 11.4.
 - 11.6.1.2 A detailed factual statement of the claim providing all necessary dates, locations and items of **Work** affected by the claim.
 - 11.6.1.3 The amount of additional compensation sought and a breakdown of that amount into categories as described in Article 26.2, subject to the limitations set forth in Article 11.7.
 - 11.6.1.4 Any additional information requested by the Commissioner.

11.7 Recoverable Costs

- 11.7.1 Delay damages may be recoverable for the following costs actually and necessarily incurred in the performance of the **Work**:
 - 11.7.1.1 Direct labor, including payroll taxes (subject to statutory wage caps) and supplemental benefits, based on time and materials records;
 - 11.7.1.2 Necessary materials (including transportation to the **Site**), based on time and material records;
 - 11.7.1.3 Reasonable rental value of necessary plant and equipment other than small tools, plus fuel/energy costs according to the applicable formula set forth in Articles 26.2.4 and/or 26.2.8, based on time and material records;
 - 11.7.1.4 Insurance and bond costs;
 - 11.7.1.5 Extended field office costs;
 - 11.7.1.6 Extended Site overhead; and
 - 11.7.1.7 Extended home office overhead.
- 11.7.2 Recoverable Subcontractor Costs. When the Work is performed by a Subcontractor, the Contractor may be paid the actual and necessary costs of such subcontracted Work as outlined above in Articles 11.7.1.1 through 11.7.1.6, and an

additional overhead of five (5%) percent of the costs outlined in Articles 11.7.1.1 through 11.7.1.3.

- 11.7.3 Non-Recoverable Costs. The parties agree that the City will have no liability for the following items and the Contractor agrees it shall make no claim for the following items:
 - 11.7.3.1Profit, or loss of anticipated or unanticipated profit;
 - 11.7.3.2Consequential damages, including but not limited to interest on monies in dispute, including interest which is paid on such monies, loss of bonding capacity, bidding opportunities, or interest in investment, or any resulting insolvency:
 - 11.7.3.3 Indirect costs or expenses of any nature;
 - 11.7.3.4 Direct or indirect costs attributable to performance of Work where the Contractor, because of situations or conditions within its control, has not progressed the Work in a satisfactory manner; and
 - 11.7.3.5 Attorneys' fees and dispute and claims preparation expenses.
- 11.8 Determinations under this Article 11 are not subject to the jurisdiction of the Contract Dispute Resolution Board pursuant to the dispute resolution process set forth in Article 27.
- 11.9 If the parties agree, pursuant to Article 11.1.3 above, that a compensable delay has occurred and agree on the amount of compensation, payment may be made pursuant to a written change order. Payment pursuant to such change order is subject to pre-audit by the Engineering Audit Officer, and may be post-audited by the Comptroller and/or the Agency.

ARTICLE 12. COORDINATION WITH OTHER CONTRACTORS

- 12.1 During the progress of the Work, Other Contractors may be engaged in performing other work or may be awarded other contracts for additional work on this Project. In that event, the Contractor shall coordinate the Work to be done hereunder with the work of such Other Contractors and the Contractor shall fully cooperate with such Other Contractors and carefully fit its own Work to that provided under other contracts as may be directed by the Engineer. The Contractor shall not commit or permit any act which will interfere with the performance of work by any Other Contractors.
- 12.2 If the Engineer determines that the Contractor is failing to coordinate its Work with the work of Other Contractors as the Engineer has directed, then the Commissioner shall have the right to withhold any payments otherwise due hereunder until the Contractor completely complies with the Engineer's directions.
- 12.3 The Contractor shall notify the Engineer in writing if any Other Contractor on this Project is failing to coordinate its work with the Work of this Contract. If the Engineer finds such charges to be true, the Engineer shall promptly issue such directions to the Other Contractor with respect thereto as the situation may require. The City shall not, however, be liable for any damages suffered by any Other Contractor's failure to coordinate its work with the Work of this Contract or by reason of the Other Contractor's failure to promptly comply with the directions so issued by the Engineer, or by reason of any Other Contractor's default in performance, it being understood that the City does not guarantee the responsibility or continued efficiency of any contractor. The Contractor agrees to make no claim against CITY OF NEW YORK STANDARD CONSTRUCTION CONTRACT 17

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the **City** for any damages relating to or arising out of any directions issued by the **Engineer** pursuant to this Article 12 (including but not limited to the failure of any **Other Contractor** to comply or promptly comply with such directions), or the failure of the **Engineer** to issue any directions, or the failure of any **Other Contractor** to coordinate its work, or the default in performance of any **Other Contractor**.

- 12.4 The Contractor shall indemnify and hold the City harmless from any and all claims or judgments for damages and from costs and expenses to which the City may be subjected or which it may suffer or incur by reason of the Contractor's failure to comply with the Engineer's directions promptly; and the Comptroller shall have the right to exercise the powers reserved in Article 23 with respect to any claims which may be made for damages due to the Contractor's failure to comply with the Engineer's directions promptly. Insofar as the facts and Law relating to any claim would preclude the City from being completely indemnified by the Contractor, the City shall be partially indemnified by the Contractor to the fullest extent provided by Law.
- 12.5 Should the Contractor sustain any damage through any act or omission of any Other Contractor having a contract with the City for the performance of work upon the Site or of work which may be necessary to be performed for the proper prosecution of the Work to be performed hereunder, or through any act or omission of a subcontractor of such Other Contractor, the Contractor shall have no claim against the City for such damage, but shall have a right to recover such damage from the Other Contractor under the provision similar to the following provisions which apply to this Contract and have been or will be inserted in the contracts with such Other Contractors:
 - 12.5.1 Should any Other Contractor having or who shall hereafter have a contract with the City for the performance of work upon the Site sustain any damage through any act or omission of the Contractor hereunder or through any act or omission of any Subcontractor of the Contractor, the Contractor agrees to reimburse such Other Contractor for all such damages and to defend at its own expense any action based upon such claim and if any judgment or claim (even if the allegations of the action are without merit) against the City shall be allowed the Contractor shall pay or satisfy such judgment or claim and pay all costs and expenses in connection therewith and agrees to indemnify and hold the City harmless from all such claims. Insofar as the facts and Law relating to any claim would preclude the City from being completely indemnified by the Contractor, the City shall be partially indemnified by the Contractor to the fullest extent provided by Law.
- 12.6 The City's right to indemnification hereunder shall in no way be diminished, waived or discharged by its recourse to assessment of liquidated damages as provided in Article 15, or by the exercise of any other remedy provided for by Contract or by Law.

ARTICLE 13. EXTENSION OF TIME FOR PERFORMANCE

- 13.1 If performance by the **Contractor** is delayed for a reason set forth in Article 13.3, the **Contractor** may be allowed a reasonable extension of time in conformance with this Article 13 and the **PPB** Rules.
- 13.2 Any extension of time may be granted only by the **ACCO** or by the Board for the Extension of Time (hereafter "Board") (as set forth below) upon written application by the **Contractor**.
- 13.3 Grounds for Extension: If such application is made, the **Contractor** shall be entitled to an extension of time for delay in completion of the **Work** caused solely:
 - 13.3.1 By the acts or omissions of the City, its officials, agents or employees; or

- 13.3.2 By the act or omissions of Other Contractors on this Project; or
- 13.3.3 By supervening conditions entirely beyond the control of either party hereto (such as, but not limited to, acts of God or the public enemy, excessive inclement weather, war or other national emergency making performance temporarily impossible or illegal, or strikes or labor disputes not brought about by any act or omission of the **Contractor**).
- 13.3.4 The **Contractor** shall, however, be entitled to an extension of time for such causes only for the number of **Days** of delay which the **ACCO** or the Board may determine to be due solely to such causes, and then only if the **Contractor** shall have strictly complied with all of the requirements of Articles 9 and 10.
- 13.4 The Contractor shall not be entitled to receive a separate extension of time for each of several causes of delay operating concurrently, but, if at all, only for the actual period of delay in completion of the Work as determined by the ACCO or the Board, irrespective of the number of causes contributing to produce such delay. If one of several causes of delay operating concurrently results from any act, fault or omission of the Contractor or of its Subcontractors or Materialmen, and would of itself (irrespective of the concurrent causes) have delayed the Work, no extension of time will be allowed for the period of delay resulting from such act, fault or omission.
- 13.5 The determination made by the **ACCO** or the Board on an application for an extension of time shall be binding and conclusive on the **Contractor**.
- 13.6 The **ACCO** or the Board acting entirely within their discretion may grant an application for an extension of time for causes of delay other than those herein referred.
- 13.7 Permitting the **Contractor** to continue with the **Work** after the time fixed for its completion has expired, or after the time to which such completion may have been extended has expired, or the making of any payment to the **Contractor** after such time, shall in no way operate as a waiver on the part of the **City** of any of its rights under this **Contract**.
 - 13.8 Application for Extension of Time:
 - 13.8.1 Before the **Contractor's** time extension request will be considered, the **Contractor** shall notify the **ACCO** of the condition which allegedly has caused or is causing the delay, and shall submit a written application to the **ACCO** identifying:
 - 13.8.1(a) The Contractor; the registration number; and Project description;
 - 13.8.1(b) Liquidated damage assessment rate, as specified in the Contract;
 - 13.8.1(c) Original total bid price;
 - 13.8.1(d) The original Contract start date and completion date;
 - 13.8.1(e) Any previous time extensions granted (number and duration); and
 - 13.8.1(f) The extension of time requested.
 - 13.8.2 In addition, the application for extension of time shall set forth in detail:

- 13.8.2(b) The date upon which each such cause of delay began and ended and the number of **Days** attributable to each such cause;
- 13.8.2(c) A statement that the **Contractor** waives all claims except for those delineated in the application, and the particulars of any claims which the **Contractor** does not agree to waive. For time extensions for **Substantial Completion** and final completion payments, the application shall include a detailed statement of the dollar amounts of each element of claim item reserved; and
- 13.8.2(d) A statement indicating the **Contractor's** understanding that the time extension is granted only for purposes of permitting continuation of **Contract** performance and payment for **Work** performed and that the **City** retains its right to conduct an investigation and assess liquidated damages as appropriate in the future.

13.9 Analysis and Approval of Time Extensions:

- 13.9.1 For time extensions for partial payments, a written determination shall be made by the ACCO who may, for good and sufficient cause, extend the time for the performance of the **Contract** as follows:
 - 13.9.1(a) If the **Work** is to be completed within six (6) months, the time for performance may be extended for sixty (60) **Days**;
 - 13.9.1(b) If the **Work** is to be completed within less than one (1) year but more than six (6) months, an extension of ninety (90) **Days** may be granted;
 - 13.9.1(c) If the **Contract** period exceeds one (1) year, besides the extension granted in Article 13.9.1(b), an additional thirty (30) **Days** may be granted for each multiple of six (6) months involved beyond the one (1) year period; or
 - 13.9.1(d) If exceptional circumstances exist, the ACCO may extend the time for performance beyond the extensions in Articles 13.9.1(a), 13.9.1(b), and 13.9.1(c). In that event, the ACCO shall file with the Mayor's Office of Contract Services a written explanation of the exceptional circumstances.
- 13.9.2 For extensions of time for **Substantial Completion** and final completion payments, the **Engineer**, in consultation with the **ACCO**, shall prepare a written analysis of the delay (including a preliminary determination of the causes of delay, the beginning and end dates for each such cause of delay, and whether the delays are excusable under the terms of this **Contract**). The report shall be subject to review by and approval of the Board, which shall have authority to question its analysis and determinations and request additional facts or documentation. The report as reviewed and made final by the Board shall be made a part of the **Agency** contract file. Neither the report itself nor anything contained therein shall operate as a waiver or release of any claim the **City** may have against the **Contractor** for either actual or liquidated damages.
- 13.9.3 Approval Mechanism for Time Extensions for **Substantial Completion** or Final Completion Payments: An extension shall be granted only with the approval of the Board which is comprised of the **ACCO** of the **Agency**, the **City** Corporation Counsel, and the **Comptroller**, or their authorized representatives.

- 13.9.4 Neither the granting of any application for an extension of time to the **Contractor** or any **Other Contractor** on this **Project** nor the papers, records or reports related to any application for or grant of an extension of time or determination related thereto shall be referred to or offered in evidence by the **Contractor** or its attorneys in any action or proceeding.
- 13.10 No Damage for Delay: The **Contractor** agrees to make no claim for damages for delay in the performance of this **Contract** occasioned by any act or omission to act of the **City** or any of its representatives, except as provided for in Article 11.

ARTICLE 14. COMPLETION AND FINAL ACCEPTANCE OF THE WORK

- 14.1 Date for Substantial Completion: The Contractor shall substantially complete the Work within the time fixed in Schedule A of the General Conditions, or within the time to which such Substantial Completion may be extended.
- 14.2 Determining the Date of **Substantial Completion**: The **Work** will be deemed to be substantially complete when the two conditions set forth below have been met.
 - 14.2.1 Inspection: The **Engineer** has inspected the **Work** and has made a written determination that it is substantially complete.
 - 14.2.2 Approval of Final Approved Punch List and Date for Final Acceptance: Following inspection of the Work, the Engineer shall furnish the Contractor with a final punch list, specifying all items of Work to be completed and proposing dates for the completion of each specified item of Work. The Contractor shall then submit in writing to the Engineer within ten (10) Days of the Engineer furnishing the final punch list either acceptance of the dates or proposed alternative dates for the completion of each specified item of Work. If the Contractor proposes alternative dates, then, within a reasonable time after receipt, the Engineer, in a written notification to the Contractor, shall approve the Contractor's completion dates or, if they are unable to agree, the Engineer shall establish dates for the completion of each item of Work. If the Contractor neither accepts the dates nor proposes alternative dates within ten (10) Days, the schedule proposed by the Engineer shall be deemed accepted. The latest completion date specified shall be the date for Final Acceptance of the Work.
- 14.3 Date of Substantial Completion. The date of approval of the Final Approved Punch List, shall be the date of Substantial Completion. The date of approval of the Final Approved Punch List shall be either (a) if the Contractor approves the final punch list and proposed dates for completion furnished by the Engineer, the date of the Contractor's approval; or (b) if the Contractor neither accepts the dates nor proposes alternative dates, ten (10) Days after the Engineer furnishes the Contractor with a final punch list and proposed dates for completion; or (c) if the Contractor proposes alternative dates, the date that the Engineer sends written notification to the Contractor either approving the Contractor's proposed alternative dates or establishing dates for the completion for each item of Work.
- 14.4 Determining the Date of Final Acceptance: The Work will be accepted as final and complete as of the date of the Engineer's inspection if, upon such inspection, the Engineer finds that all items on the Final Approved Punch List are complete and no further Work remains to be done. The Commissioner will then issue a written determination of Final Acceptance.

- 14.5 Request for Inspection: Inspection of the Work by the Engineer for the purpose of Substantial Completion or Final Acceptance shall be made within ten (10) Days after receipt of the Contractor's written request therefor.
- 14.6 Request for Re-inspection: If upon inspection for the purpose of Substantial Completion or Final Acceptance, the Engineer determines that there are items of Work still to be performed, the Contractor shall promptly perform them and then request a re-inspection. If upon re-inspection, the Engineer determines that the Work is substantially complete or finally accepted, the date of such re-inspection shall be the date of Substantial Completion or Final Acceptance. Re-inspection by the Engineer shall be made within ten (10) Days after receipt of the Contractor's written request therefor.
- 14.7 Initiation of Inspection by the Engineer: If the Contractor does not request inspection or reinspection of the Work for the purpose of Substantial Completion or Final Acceptance, the Engineer may initiate such inspection or re-inspection.

ARTICLE 15. LIQUIDATED DAMAGES

- 15.1 In the event the Contractor fails to substantially complete the Work within the time fixed for such Substantial Completion in Schedule A of the General Conditions, plus authorized time extensions, or if the Contractor, in the sole determination of the Commissioner, has abandoned the Work, the Contractor shall pay to the City the sum fixed in Schedule A of the General Conditions, for each and every Day that the time consumed in substantially completing the Work exceeds the time allowed therefor; which said sum, in view of the difficulty of accurately ascertaining the loss which the City will suffer by reason of delay in the Substantial Completion of the Work hereunder, is hereby fixed and agreed as the liquidated damages that the City will suffer by reason of such delay, and not as a penalty. This Article 15 shall also apply to the Contractor whether or not the Contractor is defaulted pursuant to Chapter X of this Contract. Neither the failure to assess liquidated damages nor the granting of any time extension shall operate as a waiver or release of any claim the City may have against the Contractor for either actual or liquidated damages.
- 15.2 Liquidated damages received hereunder are not intended to be nor shall they be treated as either a partial or full waiver or discharge of the City's right to indemnification, or the Contractor's obligation to indemnify the City, or to any other remedy provided for in this Contract or by Law.
- 15.3 The **Commissioner** may deduct and retain out of the monies which may become due hereunder, the amount of any such liquidated damages; and in case the amount which may become due hereunder shall be less than the amount of liquidated damages suffered by the **City**, the **Contractor** shall be liable to pay the difference.

ARTICLE 16. OCCUPATION OR USE PRIOR TO COMPLETION

- 16.1 Unless otherwise provided for in the Specifications, the Commissioner may take over, use, occupy or operate any part of the Work at any time prior to Final Acceptance, upon written notification to the Contractor. The Engineer shall inspect the part of the Work to be taken over, used, occupied, or operated, and will furnish the Contractor with a written statement of the Work, if any, which remains to be performed on such part. The Contractor shall not object to, nor interfere with, the Commissioner's decision to exercise the rights granted by Article 16. In the event the Commissioner takes over, uses, occupies, or operates any part of the Work:
 - 16.1.1 the **Engineer** shall issue a written determination of **Substantial Completion** with respect to such part of the **Work**;

- 16.1.2 the **Contractor** shall be relieved of its absolute obligation to protect such part of the unfinished **Work** in accordance with Article 7;
- 16.1.3 the Contractor's guarantee on such part of the Work shall begin on the date of such use by the City; and;
- 16.1.4 the **Contractor** shall be entitled to a return of so much of the amount retained in accordance with Article 21 as it relates to such part of the **Work**, except so much thereof as may be retained under Articles 24 and 44.

CHAPTER IV SUBCONTRACTS AND ASSIGNMENTS

ARTICLE 17. SUBCONTRACTS

- 17.1 The Contractor shall not make subcontracts totaling an amount more than the percentage of the total Contract price fixed in Schedule A of the General Conditions, without prior written permission from the Commissioner. All subcontracts made by the Contractor shall be in writing. No Work may be performed by a Subcontractor prior to the Contractor entering into a written subcontract with the Subcontractor and complying with the provisions of this Article 17.
- 17.2 Before making any subcontracts, the **Contractor** shall submit a written statement to the **Commissioner** giving the name and address of the proposed **Subcontractor**; the portion of the **Work** and materials which it is to perform and furnish; the cost of the subcontract; the VENDEX questionnaire if required; the proposed subcontract if requested by the **Commissioner**; and any other information tending to prove that the proposed **Subcontractor** has the necessary facilities, skill, integrity, past experience, and financial resources to perform the **Work** in accordance with the terms and conditions of this **Contract**.
- 17.3 In addition to the requirements in Article 17.2, Contractor is required to list the Subcontractor in the web based Subcontractor Reporting System through the City's Payee Information Portal (PIP), available at www.nyc.gov/pip. For each Subcontractor listed, Contractor is required to provide the following information: maximum contract value, description of Subcontractor's Work, start and end date of the subcontract and identification of the Subcontractor's industry. Thereafter, Contractor will be required to report in the system the payments made to each Subcontractor within 30 days of making the payment. If any of the required information changes throughout the Term of the Contract, Contractor will be required to revise the information in the system.

Failure of the Contractor to list a Subcontractor and/or to report Subcontractor payments in a timely fashion may result in the Commissioner declaring the Contractor in default of the Contract and will subject Contractor to liquidated damages in the amount of \$100 per day for each day that the Contractor fails to identify a Subcontractor along with the required information about the Subcontractor and/or fails to report payments to a Subcontractor, beyond the time frames set forth herein or in the notice from the City. Article 15 shall govern the issue of liquidated damages.

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

- 17.4 If an approved **Subcontractor** elects to subcontract any portion of its subcontract, the proposed sub-subcontract shall be submitted in the same manner as directed above.
- 17.5 The Commissioner will notify the Contractor in writing whether the proposed Subcontractor is approved. If the proposed Subcontractor is not approved, the Contractor may submit another proposed Subcontractor unless the Contractor decides to do the Work. No Subcontractor shall be permitted to enter or perform any work on the Site unless approved.
- 17.6 Before entering into any subcontract hereunder, the Contractor shall provide the proposed Subcontractor with a complete copy of this document and inform the proposed Subcontractor fully and completely of all provisions and requirements of this Contract relating either directly or indirectly to the Work to be performed and the materials to be furnished under such subcontract, and every such Subcontractor shall expressly stipulate that all labor performed and materials furnished by the Subcontractor shall strictly comply with the requirements of this Contract.
- 17.7 Documents given to a prospective **Subcontractor** for the purpose of soliciting the **Subcontractor's** bid shall include either a copy of the bid cover or a separate information sheet setting forth the **Project** name, the **Contract** number (if available), the **Agency** (as noted in Article 2.1.6), and the **Project's** location.
- 17.8 The Commissioner's approval of a Subcontractor shall not relieve the Contractor of any of its responsibilities, duties, and liabilities hereunder. The Contractor shall be solely responsible to the City for the acts or defaults of its Subcontractor and of such Subcontractor's officers, agents, and employees, each of whom shall, for this purpose, be deemed to be the agent or employee of the Contractor to the extent of its subcontract.
- 17.9 If the **Subcontractor** fails to maintain the necessary facilities, skill, integrity, past experience, and financial resources (other than due to the **Contractor**'s failure to make payments where required) to perform the **Work** in accordance with the terms and conditions of this **Contract**, the **Contractor** shall promptly notify the **Commissioner** and replace such **Subcontractor** with a newly approved **Subcontractor** in accordance with this Article 17.
- 17.10 The Contractor shall be responsible for ensuring that all Subcontractors performing Work at the Site maintain all insurance required by Law.
- 17.11 The **Contractor** shall promptly, upon request, file with the **Engineer** a conformed copy of the subcontract and its cost. The subcontract shall provide the following:
 - 17.11.1 Payment to Subcontractors: The agreement between the Contractor and its Subcontractor shall contain the same terms and conditions as to method of payment for Work, labor, and materials, and as to retained percentages, as are contained in this Contract.
 - 17.11.2 Prevailing Rate of Wages: The agreement between the **Contractor** and its **Subcontractor** shall include the prevailing wage rates and supplemental benefits to be paid in accordance with Labor Law Section 220.
 - 17.11.3 Section 6-123 of the Administrative Code: Pursuant to the requirements of Section 6-123 of the Administrative Code, every agreement between the **Contractor** and a **Subcontractor** in excess of fifty thousand (\$50,000) dollars shall include a provision that the **Subcontractor** shall not engage in any unlawful discriminatory practice as defined in Title VIII of the Administrative Code (Section 8-101 *et seq.*).

- 17.11.4 All requirements required pursuant to federal and/or state grant agreement(s), if applicable to the Work.
- 17.12 The Commissioner may deduct from the amounts certified under this Contract to be due to the Contractor, the sum or sums due and owing from the Contractor to the Subcontractors according to the terms of the said subcontracts, and in case of dispute between the Contractor and its Subcontractor, or Subcontractors, as to the amount due and owing, the Commissioner may deduct and withhold from the amounts certified under this Contract to be due to the Contractor such sum or sums as may be claimed by such Subcontractor, or Subcontractors, in a sworn affidavit, to be due and owing until such time as such claim or claims shall have been finally resolved.
- 17.13 On contracts where performance bonds and payment bonds are executed, the Contractor shall include on each requisition for payment the following data: Subcontractor's name, value of the subcontract, total amount previously paid to Subcontractor for Work previously requisitioned, and the amount, including retainage, to be paid to the Subcontractor for Work included in the requisition.
- 17.14 On Contracts where performance bonds and payment bonds are not executed, the Contractor shall include with each requisition for payment submitted hereunder, a signed statement from each and every Subcontractor and/or Materialman for whom payment is requested in such requisition. Such signed statement shall be on the letterhead of the Subcontractor and/or Materialman for whom payment is requested and shall (i) verify that such Subcontractor and/or Materialman has been paid in full for all Work performed and/or material supplied to date, exclusive of any amount retained and any amount included on the current requisition, and (ii) state the total amount of retainage to date, exclusive of any amount retained on the current requisition.

ARTICLE 18. ASSIGNMENTS

- 18.1 The Contractor shall not assign, transfer, convey or otherwise dispose of this Contract, or the right to execute it, or the right, title or interest in or to it or any part thereof, or assign, by power of attorney or otherwise any of the monies due or to become due under this Contract, unless the previous written consent of the Commissioner shall first be obtained thereto, and the giving of any such consent to a particular assignment shall not dispense with the necessity of such consent to any further or other assignments.
- 18.2 Such assignment, transfer, conveyance or other disposition of this **Contract** shall not be valid until filed in the office of the **Commissioner** and the **Comptroller**, with the written consent of the **Commissioner** endorsed thereon or attached thereto.
- 18.3 Failure to obtain the previous written consent of the Commissioner to such an assignment, transfer, conveyance or other disposition, may result in the revocation and annulment of this Contract. The City shall thereupon be relieved and discharged from any further liability to the Contractor, its assignees, transferees or sublessees, who shall forfeit and lose all monies therefor earned under the Contract, except so much as may be required to pay the Contractor's employees.
- 18.4 The provisions of this clause shall not hinder, prevent, or affect an assignment by the **Contractor** for the benefit of its creditors made pursuant to the **Laws** of the State of New York.
- 18.5 This **Contract** may be assigned by the **City** to any corporation, agency or instrumentality having authority to accept such assignment.

CHAPTER V CONTRACTOR'S SECURITY AND GUARANTEE

ARTICLE 19. SECURITY DEPOSIT

- 19.1 If performance and payment bonds are required, the City shall retain the bid security to ensure that the successful bidder executes the Contract and furnishes the required payment and performance security within ten (10) Days after notice of the award of the Contract. If the successful bidder fails to execute the Contract and furnish the required payment and performance security, the City shall retain such bid security as set forth in the Information for Bidders. If the successful bidder executes the Contract and furnishes the required payment and performance security, the City shall return the bid security within a reasonable time after the furnishing of such bonds and execution of the Contract by the City.
- 19.2 If performance and payment bonds are not required, the bid security shall be retained by the **City** as security for the **Contractor**'s faithful performance of the **Contract**. If partial payments are provided, the bid security will be returned to the **Contractor** after the sum retained under Article 21 equals the amount of the bid security, subject to other provisions of this **Contract**. If partial payments are not provided, the bid security will be released when final payment is certified by the **City** for payment.
- 19.3 If the **Contractor** is declared in default under Article 48 prior to the return of the deposit, or if any claim is made such as referred to in Article 23, the amount of such deposit, or so much thereof as the **Comptroller** may deem necessary, may be retained and then applied by the **Comptroller**:
 - 19.3.1 To compensate the City for any expense, loss or damage suffered or incurred by reason of or resulting from such default, including the cost of re-letting and liquidated damages; or
 - 19.3.2 To indemnify the City against any and all claims.

ARTICLE 20. PAYMENT GUARANTEE

- 20.1 On **Contracts** where one hundred (100%) percent performance bonds and payment bonds are executed, this Article 20 does not apply.
- 20.2 In the event the terms of this Contract do not require the Contractor to provide a payment bond or where the Contract does not requite a payment bond for one hundred (100%) percent of the Contract price, the City shall, in accordance with the terms of this Article 20, guarantee payment of all lawful claims for:
 - 20.2.1 Wages and compensation for labor performed and/or services rendered; and
 - 20.2.2 Materials, equipment, and supplies provided, whether incorporated into the **Work** or not, when demands have been filed with the **City** as provided hereinafter by any person, firm, or corporation which furnished labor, material, equipment, supplies, or any combination thereof, in connection with the **Work** performed hereunder (hereinafter referred to as the "beneficiary") at the direction of the **City** or the **Contractor**.
 - 20.3 The provisions of Article 20.2 are subject to the following limitations and conditions:

- 20.3.1 If the Contractor provides a payment bond for a value that is less than one hundred (100%) percent of the value of the Contract Work, the payment bond provided by the Contractor shall be primary (and non-contributing) to the payment guarantee provided under this Article 20.
- 20.3.2 The guarantee is made for the benefit of all beneficiaries as defined in Article 20.2 provided that those beneficiaries strictly adhere to the terms and conditions of Article 20.3.4 and 20.3.5.
- 20.3.3 Nothing in this Article 20 shall prevent a beneficiary providing labor, services or material for the **Work** from suing the **Contractor** for any amounts due and owing the beneficiary by the **Contractor**.
- 20.3.4 Every person who has furnished labor or material, to the Contractor or to a Subcontractor of the Contractor, in the prosecution of the Work and who has not been paid in full therefor before the expiration of a period of ninety (90) Days after the date on which the last of the labor was performed or material was furnished by him/her for which the claim is made, shall have the right to sue on this payment guarantee in his/her own name for the amount, or the balance thereof, unpaid at the time of commencement of the action; provided, however, that a person having a direct contractual relationship with a Subcontractor of the Contractor but no contractual relationship express or implied with the Contractor shall not have a right of action upon the guarantee unless he/she shall have given written notice to the Contractor within one hundred twenty (120) Days from the date on which the last of the labor was performed or the last of the material was furnished, for which his/her claim is made, stating with substantial accuracy the amount claimed and the name of the party to whom the material was furnished or for whom the labor was performed. The notice shall be served by delivering the same personally to the Contractor or by mailing the same by registered mail, postage prepaid, in an envelope addressed to the Contractor at any place where it maintains an office or conducts its business; provided, however, that where such notice is actually received by the Contractor by other means, such notice shall be deemed sufficient.
- 20.3.5 Except as provided in Labor Law Section 220-g, no action on this payment guarantee shall be commenced after the expiration of the one-year limitations period set forth in Section 137(4)(b) of the State Finance Law.
- 20.3.6 The **Contractor** shall promptly forward to the **City** any notice or demand received pursuant to Article 20.3.4. The **Contractor** shall inform the **City** of any defenses to the notice or demand and shall forward to the **City** any documents the **City** requests concerning the notice or demand.
- 20.3.7 All demands made against the City by a beneficiary of this payment guarantee shall be presented to the Engineer along with all written documentation concerning the demand which the Engineer deems reasonably appropriate or necessary, which may include, but shall not be limited to: the subcontract; any invoices presented to the Contractor for payment; the notarized statement of the beneficiary that the demand is due and payable, that a request for payment has been made of the Contractor and that the demand has not been paid by the Contractor within the time allowed for such payment by the subcontract; and copies of any correspondence between the beneficiary and the Contractor concerning such demand. The City shall notify the Contractor that a demand has been made. The Contractor shall inform the City of any defenses to the demand and shall forward to the City any documents the City requests concerning the demand.

- 20.3.8 The City shall make payment only if, after considering all defenses presented by the Contractor, it determines that the payment is due and owing to the beneficiary making the demand.
- 20.3.9 No beneficiary shall be entitled to interest from the City, or to any other costs, including, but not limited to, attorneys' fees, except to the extent required by State Finance Law Section 137.
- 20.4 Upon the receipt by the **City** of a demand pursuant to this Article 20, the **City** may withhold from any payment otherwise due and owing to the **Contractor** under this **Contract** an amount sufficient to satisfy the demand.
 - 20.4.1 In the event the City determines that the demand is valid, the City shall notify the Contractor of such determination and the amount thereof and direct the Contractor to immediately pay such amount to the beneficiary. In the event the Contractor, within seven (7) Days of receipt of such notification from the City, fails to pay the beneficiary, such failure shall constitute an automatic and irrevocable assignment of payment by the Contractor to the beneficiary for the amount of the demand determined by the City to be valid. The Contractor, without further notification or other process, hereby gives its unconditional consent to such assignment of payment to the beneficiary and authorizes the City, on its behalf, to take all necessary actions to implement such assignment of payment, including without limitation the execution of any instrument or documentation necessary to effectuate such assignment.
 - 20.4.2In the event that the amount otherwise due and owing to the **Contractor** by the **City** is insufficient to satisfy such demand, the **City** may, at its option, require payment from the **Contractor** of an amount sufficient to cover such demand and exercise any other right to require or recover payment which the **City** may have under **Law** or **Contract**.
 - 20.4.3 In the event the City determines that the demand is invalid, any amount withheld pending the City's review of such demand shall be paid to the Contractor; provided, however, no lien has been filed. In the event a claim or an action has been filed, the terms and conditions set forth in Article 23 shall apply. In the event a lien has been filed, the parties will be governed by the provisions of the Lien Law of the State of New York.
- 20.5 The provisions of this Article 20 shall not prevent the **City** and the **Contractor** from resolving disputes in accordance with the **PPB** Rules, where applicable.
- 20.6 In the event the **City** determines that the beneficiary is entitled to payment pursuant to this Article 20, such determination and any defenses and counterclaims raised by the **Contractor** shall be taken into account in evaluating the **Contractor**'s performance.
- 20.7 Nothing in this Article 20 shall relieve the **Contractor** of the obligation to pay the claims of all persons with valid and lawful claims against the **Contractor** relating to the **Work**.
- 20.8 The Contractor shall not require any performance, payment or other bonds of any Subcontractor if this Contract does not require such bonds of the Contractor.
- 20.9 The payment guarantee made pursuant to this Article 20 shall be construed in a manner consistent with Section 137 of the State Finance Law and shall afford to persons furnishing labor or materials to the **Contractor** or its **Subcontractors** in the prosecution of the **Work** under this **Contract** all of the rights and remedies afforded to such persons by such section, including but not limited to, the right CITY OF NEW YORK

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to commence an action against the City on the payment guarantee provided by this Article 20 within the one-year limitations period set forth in Section 137(4)(b).

ARTICLE 21. RETAINED PERCENTAGE

- 21.1 If this Contract requires one hundred (100%) percent performance and payment security, then as further security for the faithful performance of this Contract, the Commissioner shall deduct, and retain until the substantial completion of the Work, five (5%) percent of the value of Work certified for payment in each partial payment voucher.
- 21.2 If this Contract does not require one hundred (100%) percent performance and payment security and if the price for which this Contract was awarded does not exceed one million (\$1,000,000) dollars, then as further security for the faithful performance of this Contract, the Commissioner shall deduct, and retain until the substantial completion of the Work, five (5%) percent of the value of Work certified for payment in each partial payment voucher.
- 21.3 If this **Contract** does not require one hundred (100%) percent performance and payment security and if the price for which this **Contract** was awarded exceeds one million (\$1,000,000) dollars, then as further security for the faithful performance of this **Contract**, the **Commissioner** shall deduct, and retain until the substantial completion of the **Work**, up to ten (10%) percent of the value of **Work** certified for payment in each partial payment voucher. The percentage to be retained is set forth in Schedule A of the General Conditions.

ARTICLE 22. INSURANCE

- 22.1 Types of Insurance: The Contractor shall procure and maintain the following types of insurance if, and as indicated, in Schedule A of the General Conditions (with the minimum limits and special conditions specified in Schedule A). Such insurance shall be maintained from the date the Contractor is required to provide Proof of Insurance pursuant to Article 22.3.1 through the date of completion of all required Work (including punch list work as certified in writing by the Resident Engineer), except for insurance required pursuant to Article 22.1.4, which may terminate upon Substantial Completion of the Contract. All insurance shall meet the requirements set forth in this Article 22. Wherever this Article requires that insurance coverage be "at least as broad" as a specified form (including all ISO forms), there is no obligation that the form itself be used, provided that the Contractor can demonstrate that the alternative form or endorsement contained in its policy provides coverage at least as broad as the specified form.
 - 22.1.1Commercial General Liability Insurance: The Contractor shall provide Commercial General Liability Insurance covering claims for property damage and/or bodily injury, including death, which may arise from any of the operations under this Contract. Coverage under this insurance shall be at least as broad as that provided by the latest edition of Insurance Services Office ("ISO") Form CG 0001. Such insurance shall be "occurrence" based rather than "claims-made" and include, without limitation, the following types of coverage: premises operations; products and completed operations; contractual liability (including the tort liability of another assumed in a contract); broad form property damage; independent contractors; explosion, collapse and underground (XCU); construction means and methods; and incidental malpractice. Such insurance shall contain a "per project" aggregate limit, as specified in Schedule A, that applies separately to operations under this Contract.

- 22.1.1(a) Such Commercial General Liability Insurance shall name the City as an Additional Insured. Coverage for the City shall specifically include the City's officials and employees, be at least as broad as the latest edition of ISO Form CG 20 10 and provide completed operations coverage at least as broad as the latest edition of ISO Form CG 20 37.
- 22.1.1(b) Such Commercial General Liability Insurance shall name all other entities designated as additional insureds in Schedule A but only for claims arising from the **Contractor's** operations under this **Contract**, with coverage at least as broad as the latest edition of ISO Form CG 20 26.
- 22.1.1(c) If the **Work** requires a permit from the Department of Buildings pursuant to 1 RCNY Section 101-08, at http://www.nyc.gov/html/dob/downloads/rules/1 RCNY 101-08.pdf, the **Contractor** shall provide Commercial General Liability Insurance with limits of at least those required by 1 RCNY section 101-08. If the **Work** does not require such a permit, the minimum limits shall be those provided for in Schedule A.
- 22.1.1(d) If any of the **Work** includes repair of a waterborne vessel owned by or to be delivered to the **City**, such Commercial General Liability shall include, or be endorsed to include, Ship Repairer's Legal Liability Coverage to protect against, without limitation, liability arising from navigation of such vessels prior to delivery to and acceptance by the **City**.
- 22.1.2 Workers' Compensation Insurance, Employers' Liability Insurance, and Disability Benefits Insurance: The Contractor shall provide, and shall cause its Subcontractors to provide, Workers Compensation Insurance, Employers' Liability Insurance, and Disability Benefits Insurance in accordance with the Laws of the State of New York on behalf of all employees providing services under this Contract (except for those employees, if any, for which the Laws require insurance only pursuant to Article 22.1.3).
- 22.1.3 United States Longshoremen's and Harbor Workers Act and/or Jones Act Insurance: If specified in Schedule A of the General Conditions or if required by **Law**, the **Contractor** shall provide insurance in accordance with the United States Longshoremen's and Harbor Workers Act and/or the Jones Act, on behalf of all qualifying employees providing services under this **Contract**.
- 22.1.4 Builders Risk Insurance: If specified in Schedule A of the General Conditions, the Contractor shall provide Builders Risk Insurance on a completed value form for the total value of the Work through Substantial Completion of the Work in its entirety. Such insurance shall be provided on an All Risk basis and include coverage, without limitation, for windstorm (including named windstorm), storm surge, flood and earth movement. Unless waived by the Commissioner, it shall include coverage for ordinance and law, demolition and increased costs of construction, debris removal, pollutant clean up and removal, and expediting costs. Such insurance shall cover, without limitation, (a) all buildings and/or structures involved in the Work, as well as temporary structures at the Site, and (b) any property that is intended to become a permanent part of such building or structure, whether such property is on the Site, in transit or in temporary storage. Policies shall name the Contractor as Named Insured and list the City as both an Additional Insured and a Loss Payee as its interest may appear.
 - 22.1.4(a) Policies of such insurance shall specify that, in the event a loss occurs at an occupied facility, occupancy of such facility is permitted without the consent of the issuing insurance company.

- 22.1.4(b) Such insurance may be provided through an Installation Floater, at the **Contractor's** option, if it otherwise conforms with the requirements of this Article 22.1.4.
- 22.1.5 Commercial Automobile Liability Insurance: The **Contractor** shall provide Commercial Automobile Liability Insurance for liability arising out of ownership, maintenance or use of any owned (if any), non-owned and hired vehicles to be used in connection with this **Contract**. Coverage shall be at least as broad as the latest edition of ISO Form CA0001. If vehicles are used for transporting hazardous materials, the Automobile Liability Insurance shall be endorsed to provide pollution liability broadened coverage for covered vehicles (endorsement CA 99 48) as well as proof of MCS 90.
- 22.1.6 Contractors Pollution Liability Insurance: If specified in Schedule A of the General Conditions, the Contractor shall maintain, or cause the Subcontractor doing such Work to maintain, Contractors Pollution Liability Insurance covering bodily injury and property damage. Such insurance shall provide coverage for actual, alleged or threatened emission, discharge, dispersal, seepage, release or escape of pollutants (including asbestos), including any loss, cost or expense incurred as a result of any cleanup of pollutants (including asbestos) or in the investigation, settlement or defense of any claim, action, or proceedings arising from the operations under this Contract. Such insurance shall be in the Contractor's name and list the City as an Additional Insured and any other entity specified in Schedule A. Coverage shall include, without limitation, (a) loss of use of damaged property or of property that has not been physically injured, (b) transportation, and (c) non-owned disposal sites.
 - 22.1.6(a) Coverage for the City as Additional Insured shall specifically include the City's officials and employees and be at least as broad as provided to the Contractor for this Project.
 - 22.1.6(b) If such insurance is written on a claims-made policy, such policy shall have a retroactive date on or before the effective date of this **Contract**, and continuous coverage shall be maintained, or an extended discovery period exercised, for a period of not less than three (3) years from the time the **Work** under this **Contract** is completed.

22.1.7 Marine Insurance:

22.1.7(a) Marine Protection and Indemnity Insurance: If specified in Schedule A of the General Conditions or if the Contractor engages in marine operations in the execution of any part of the Work, the Contractor shall maintain, or cause the Subcontractor doing such Work to maintain, Marine Protection and Indemnity Insurance with coverage at least as broad as Form SP-23. The insurance shall provide coverage for the Contractor or Subcontractor (whichever is doing this Work) and for the City (together with its officials and employees) and any other entity specified in Schedule A as an Additional Insured for bodily injury and property damage arising from marine operations under this Contract. Coverage shall include, without limitation, injury or death of crew members (if not fully provided through other insurance), removal of wreck, damage to piers, wharves and other fixed or floating objects and loss of or damage to any other vessel or craft, or to property on such other vessel or craft.

- 22.1.7(b) Hull and Machinery Insurance: If specified in Schedule A of the General Conditions or if the Contractor engages in marine operations in the execution of any part of the Work, the Contractor shall maintain, or cause the Subcontractor doing such Work to maintain, Hull and Machinery Insurance with coverage for the Contractor or Subcontractor (whichever is doing this Work) and for the City (together with its officials and employees) as Additional Insured at least as broad as the latest edition of American Institute Tug Form for all tugs used under this Contract and Collision Liability at least as broad as the latest edition of American Institute Hull Clauses.
- 22.1.7(c) Marine Pollution Liability Insurance: If specified in Schedule A of the General Conditions or if the Contractor engages in marine operations in the execution of any part of the Work, the Contractor shall maintain, or cause the Subcontractor doing such Work to maintain, Marine Pollution Liability Insurance covering itself (or the Subcontractor doing such Work) as Named Insured and the City (together with its officials and employees) and any other entity specified in Schedule A as an Additional Insured. Coverage shall be at least as broad as that provided by the latest edition of Water Quality Insurance Syndicate Form and include, without limitation, liability arising from the discharge or substantial threat of a discharge of oil, or from the release or threatened release of a hazardous substance including injury to, or economic losses resulting from, the destruction of or damage to real property, personal property or natural resources.
- 22.1.8 The **Contractor** shall provide such other types of insurance, at such minimum limits and with such conditions, as are specified in Schedule A of the General Conditions.
- 22.2 General Requirements for Insurance Coverage and Policies:
 - 22.2.1 All required insurance policies shall be maintained with companies that may lawfully issue the required policy and have an A.M. Best rating of at least A-/VII or a Standard and Poor's rating of at least A, unless prior written approval is obtained from the City Corporation Counsel.
 - 22.2.2 The **Contractor** shall be solely responsible for the payment of all premiums for all required policies and all deductibles and self-insured retentions to which such policies are subject, whether or not the **City** is an insured under the policy.
 - 22.2.3 In his/her sole discretion, the Commissioner may, subject to the approval of the Comptroller and the City Corporation Counsel, accept Letters of Credit and/or custodial accounts in lieu of required insurance.
 - 22.2.4 The City's limits of coverage for all types of insurance required pursuant to Schedule A of the General Conditions shall be the greater of (i) the minimum limits set forth in Schedule A or (ii) the limits provided to the Contractor as Named Insured under all primary, excess, and umbrella policies of that type of coverage.
 - 22.2.5 The **Contractor** may satisfy its insurance obligations under this Article 22 through primary policies or a combination of primary and excess/umbrella policies, so long as all policies provide the scope of coverage required herein.
 - 22.2.6 Policies of insurance provided pursuant to this Article 22 shall be primary and non-contributing to any insurance or self-insurance maintained by the City.

22.3 Proof of Insurance:

- For all types of insurance required by Article 22.1 and Schedule A, except for 22.3.1 insurance required by Articles 22.1.4 and 22.1.7, the Contractor shall file proof of insurance in accordance with this Article 22.3 within ten (10) Days of award. For insurance provided pursuant to Articles 22.1.4 and 22.1.7, proof shall be filed by a date specified by the Commissioner or ten (10) Days prior to the commencement of the portion of the Work covered by such policy, whichever is earlier.
- For Workers' Compensation Insurance provided pursuant to Article 22.1.2, the Contractor shall submit one of the following forms: C-105.2 Certificate of Workers' Compensation Insurance; U-26.3 - State Insurance Fund Certificate of Workers' Compensation Insurance; Request for WC/DB Exemption (Form CE-200); equivalent or successor forms used by the New York State Workers' Compensation Board; or other proof of insurance in a form acceptable to the Commissioner. For Disability Benefits Insurance provided pursuant to Article 22.1.2, the Contractor shall submit DB-120.1 - Certificate Of Insurance Coverage Under The NYS Disability Benefits Law, Request for WC/DB Exemption (Form CE-200); equivalent or successor forms used by the New York State Workers' Compensation Board; or other proof of insurance in a form acceptable to the Commissioner. ACORD forms are not acceptable.
- 22.3.3 For policies provided pursuant to all of Article 22.1 other than Article 22.1.2, the Contractor shall submit one or more Certificates of Insurance on forms acceptable to the All such Certificates of Insurance shall certify (a) the issuance and effectiveness of such policies of insurance, each with the specified minimum limits (b) for insurance secured pursuant to Article 22.1.1 that the City and any other entity specified in Schedule A is an Additional Insured with coverage at least as broad as the most recent edition of ISO Forms CG 20 10, CG 20 37, and CG 20 26, as applicable; (c) in the event insurance is required pursuant to Article 22.1.6 and/or Article 22.1.7, that the City is an Additional Insured thereunder; (d) the company code issued to the insurance company by the National Association of Insurance Commissioners (the NAIC number); and (e) the number assigned to the Contract by the City. All such Certificates of Insurance shall be accompanied by either a duly executed "Certification by Broker" in the form contained in Part III of Schedule A or copies of all policies referenced in such Certificate of Insurance as certified by an authorized representative of the issuing insurance carrier. If any policy is not available at the time of submission, certified binders may be submitted until such time as the policy is available, at which time a certified copy of the policy shall be submitted.
- Documentation confirming renewals of insurance shall be submitted to the Commissioner prior to the expiration date of coverage of policies required under this Contract. Such proofs of insurance shall comply with the requirements of Articles 22.3.2 and 22.3.3.
- 22.3.5 The Contractor shall be obligated to provide the City with a copy of any policy of insurance provided pursuant to this Article 22 upon the demand for such policy by the Commissioner or the City Corporation Counsel.

22.4 Operations of the **Contractor**:

The Contractor shall not commence the Work unless and until all required certificates have been submitted to and accepted by the Commissioner. Acceptance by the Commissioner of a certificate does not excuse the Contractor from securing insurance

consistent with all provisions of this Article 22 or of any liability arising from its failure to do so.

- 22.4.2 The **Contractor** shall be responsible for providing continuous insurance coverage in the manner, form, and limits required by this **Contract** and shall be authorized to perform **Work** only during the effective period of all required coverage.
- 22.4.3 In the event that any of the required insurance policies lapse, are revoked, suspended or otherwise terminated, for whatever cause, the Contractor shall immediately stop all Work, and shall not recommence Work until authorized in writing to do so by the Commissioner. Upon quitting the Site, except as otherwise directed by the Commissioner, the Contractor shall leave all plant, materials, equipment, tools, and supplies on the Site. Contract time shall continue to run during such periods and no extensions of time will be granted. The Commissioner may also declare the Contractor in default for failure to maintain required insurance.
- 22.4.4 In the event the Contractor receives notice, from an insurance company or other person, that any insurance policy required under this Article 22 shall be cancelled or terminated (or has been cancelled or terminated) for any reason, the Contractor shall immediately forward a copy of such notice to both the Commissioner and the New York City Comptroller, attn: Office of Contract Administration, Municipal Building, One Centre Street, room 1005, New York, New York 10007. Notwithstanding the foregoing, the Contractor shall ensure that there is no interruption in any of the insurance coverage required under this Article 22.
- 22.4.5 Where notice of loss, damage, occurrence, accident, claim or suit is required under an insurance policy maintained in accordance with this Article 22, the Contractor shall notify in writing all insurance carriers that issued potentially responsive policies of any such event relating to any operations under this Contract (including notice to Commercial General Liability insurance carriers for events relating to the Contractor's own employees) no later than 20 days after such event. For any policy where the City is an Additional Insured, such notice shall expressly specify that "this notice is being given on behalf of the City of New York as Insured as well as the Named Insured." Such notice shall also contain the following information: the number of the insurance policy, the name of the named insured, the date and location of the damage, occurrence, or accident, and the identity of the persons or things injured, damaged or lost. The Contractor shall simultaneously send a copy of such notice to the City of New York c/o Insurance Claims Specialist, Affirmative Litigation Division, New York City Law Department, 100 Church Street, New York, New York 10007.
- 22.4.6 In the event of any loss, accident, claim, action, or other event that does or can give rise to a claim under any insurance policy required under this Article 22, the **Contractor** shall at all times fully cooperate with the **City** with regard to such potential or actual claim.
- 22.5 Subcontractor Insurance: In the event the Contractor requires any Subcontractor to procure insurance with regard to any operations under this Contract and requires such Subcontractor to name the Contractor as an Additional Insured thereunder, the Contractor shall ensure that the Subcontractor name the City, including its officials and employees, as an Additional Insured with coverage at least as broad as the most recent edition of ISO Form CG 20 26.
- 22.6 Wherever reference is made in Article 7 or this Article 22 to documents to be sent to the **Commissioner** (e.g., notices, filings, or submissions), such documents shall be sent to the address set forth in Schedule A of the General Conditions. In the event no address is set forth in Schedule A, such documents are to be sent to the **Commissioner's** address as provided elsewhere in this **Contract**.

- 22.7 Apart from damages or losses covered by insurance provided pursuant to Articles 22.1.2, 22.1.3, or 22.1.5, the **Contractor** waives all rights against the **City**, including its officials and employees, for any damages or losses that are covered under any insurance required under this Article 22 (whether or not such insurance is actually procured or claims are paid thereunder) or any other insurance applicable to the operations of the **Contractor** and/or its employees, agents, or **Subcontractors**.
- 22.8 In the event the **Contractor** utilizes a self-insurance program to satisfy any of the requirements of this Article 22, the **Contractor** shall ensure that any such self-insurance program provides the **City** with all rights that would be provided by traditional insurance under this Article 22, including but not limited to the defense and indemnification obligations that insurers are required to undertake in liability policies.
- 22.9 Materiality/Non-Waiver: The **Contractor's** failure to secure policies in complete conformity with this Article 22, or to give an insurance company timely notice of any sort required in this **Contract** or to do anything else required by this Article 22 shall constitute a material breach of this **Contract**. Such breach shall not be waived or otherwise excused by any action or inaction by the **City** at any time.
- 22.10 Pursuant to General Municipal Law Section 108, this **Contract** shall be void and of no effect unless **Contractor** maintains Workers' Compensation Insurance for the term of this **Contract** to the extent required and in compliance with the New York State Workers' Compensation Law.
- 22.11 Other Remedies: Insurance coverage provided pursuant to this Article 22 or otherwise shall not relieve the **Contractor** of any liability under this **Contract**, nor shall it preclude the **City** from exercising any rights or taking such other actions available to it under any other provisions of this **Contract** or **Law**.

ARTICLE 23. MONEY RETAINED AGAINST CLAIMS

- 23.1 If any claim shall be made by any person or entity (including Other Contractors with the City on this Project) against the City or against the Contractor and the City for any of the following:
 - (a) An alleged loss, damage, injury, theft or vandalism of any of the kinds referred to in Articles 7 and 12, plus the reasonable costs of defending the City, which in the opinion of the Comptroller may not be paid by an insurance company (for any reason whatsoever); or
 - (b) An infringement of copyrights, patents or use of patented articles, tools, etc., as referred to in Article 57; or
 - (c) Damage claimed to have been caused directly or indirectly by the failure of the Contractor to perform the Work in strict accordance with this Contract,

the amount of such claim, or so much thereof as the Comptroller may deem necessary, may be withheld by the Comptroller, as security against such claim, from any money due hereunder. The Comptroller, in his/her discretion, may permit the Contractor to substitute other satisfactory security in lieu of the monies so withheld.

23.2 If an action on such claim is timely commenced and the liability of the City, or the Contractor, or both, shall have been established therein by a final judgment of a court of competent jurisdiction, or if such claim shall have been admitted by the Contractor to be valid, the Comptroller

shall pay such judgment or admitted claim out of the monies retained by the Comptroller under the provisions of this Article 23, and return the balance, if any, without interest, to the Contractor.

ARTICLE 24. MAINTENANCE AND GUARANTY

- 24.1 The **Contractor** shall promptly repair, replace, restore or rebuild, as the **Commissioner** may determine, any finished **Work** in which defects of materials or workmanship may appear or to which damage may occur because of such defects, during the one (1) year period subsequent to the date of **Substantial Completion** (or use and occupancy in accordance with Article 16), except where other periods of maintenance and guaranty are provided for in Schedule A.
- 24.2 As security for the faithful performance of its obligations hereunder, the Contractor, upon filing its requisition for payment on Substantial Completion, shall deposit with the Commissioner a sum equal to one (1%) percent of the price (or the amount fixed in Schedule A of the General Conditions) in cash or certified check upon a state or national bank and trust company or a check of such bank and trust company signed by a duly authorized officer thereof and drawn to the order of the Comptroller, or obligations of the City, which the Comptroller may approve as of equal value with the sum so required.
- 24.3 In lieu of the above, the **Contractor** may make such security payment to the **City** by authorizing the **Commissioner** in writing to deduct the amount from the **Substantial Completion** payment which shall be deemed the deposit required above.
- 24.4 If the **Contractor** has faithfully performed all of its obligations hereunder the **Commissioner** shall so certify to the **Comptroller** within five (5) **Days** after the expiration of one (1) year from the date of **Substantial Completion** and acceptance of the **Work** or within thirty (30) **Days** after the expiration of the guarantee period fixed in the **Specifications**. The security payment shall be repaid to the **Contractor** without interest within thirty (30) **Days** after certification by the **Commissioner** to the **Comptroller** that the **Contractor** has faithfully performed all of its obligations hereunder.
- 24.5 Notice by the Commissioner to the Contractor to repair, replace, rebuild or restore such defective or damaged Work shall be timely, pursuant to this article, if given not later than ten (10) Days subsequent to the expiration of the one (1) year period or other periods provided for herein.
- 24.6 If the **Contractor** shall fail to repair, replace, rebuild or restore such defective or damaged **Work** promptly after receiving such notice, the **Commissioner** shall have the right to have the **Work** done by others in the same manner as provided for in the completion of a defaulted **Contract**, under Article 51.
- 24.7 If the security payment so deposited is insufficient to cover the cost of such Work, the Contractor shall be liable to pay such deficiency on demand by the Commissioner.
- 24.8 The **Engineer's** certificate setting forth the fair and reasonable cost of repairing, replacing, rebuilding or restoring any damaged or defective **Work** when performed by one other than the **Contractor**, shall be binding and conclusive upon the **Contractor** as to the amount thereof.
- 24.9 The Contractor shall obtain all manufacturers' warranties and guaranties of all equipment and materials required by this Contract in the name of the City and shall deliver same to the Commissioner. All of the City's rights and title and interest in and to said manufacturers' warranties and guaranties may be assigned by the City to any subsequent purchasers of such equipment and materials or lessees of the premises into which the equipment and materials have been installed.

CHAPTER VI CHANGES, EXTRA WORK, AND DOCUMENTATION OF CLAIM

ARTICLE 25. CHANGES

- 25.1 Changes may be made to this **Contract** only as duly authorized in writing by the **Commissioner** in accordance with the **Law** and this **Contract**. All such changes, modifications, and amendments will become a part of the **Contract**. **Work** so ordered shall be performed by the **Contractor**.
- 25.2 Contract changes will be made only for Work necessary to complete the Work included in the original scope of the Contract and/or for non-material changes to the scope of the Contract. Changes are not permitted for any material alteration in the scope of Work in the Contract.
- 25.3 The **Contractor** shall be entitled to a price adjustment for **Extra Work** performed pursuant to a written change order. Adjustments to price shall be computed in one or more of the following ways:
 - 25.3.1 By applicable unit prices specified in the Contract; and/or
 - 25.3.2 By agreement of a fixed price; and/or
 - 25.3.3 By time and material records; and/or
 - 25.3.4 In any other manner approved by the CCPO.
- 25.4 All payments for change orders are subject to pre-audit by the **Engineering Audit Officer** and may be post-audited by the **Comptroller** and/or the **Agency**.

ARTICLE 26. METHODS OF PAYMENT FOR OVERRUNS AND EXTRA WORK

- 26.1 Overrun of Unit Price Item: An overrun is any quantity of a unit price item which the **Contractor** is directed to provide which is in excess of one hundred twenty-five (125%) percent of the estimated quantity for that item set forth in the bid schedule.
 - 26.1.1For any unit price item, the Contractor will be paid at the unit price bid for any quantity up to one hundred twenty-five (125%) percent of the estimated quantity for that item set forth in the bid schedule. If during the progress of the Work, the actual quantity of any unit price item required to complete the Work approaches the estimated quantity for that item, and for any reason it appears that the actual quantity of any unit price item necessary to complete the Work will exceed the estimated quantity for that item by twenty-five (25%) percent, the Contractor shall immediately notify the Engineer of such anticipated overrun. The Contractor shall not be compensated for any quantity of a unit price item provided which is in excess of one hundred twenty-five (125%) percent of the estimated quantity for that item set forth in the bid schedule without written authorization from the Engineer.
 - 26.1.2If the actual quantity of any unit price item necessary to complete the **Work** will exceed one hundred twenty five (125%) percent of the estimated quantity for that item set forth in the bid schedule, the **City** reserves the right and the **Contractor** agrees to negotiate a new unit price for such item. In no event shall such negotiated new unit price exceed the unit bid price. If the **City** and **Contractor** cannot agree on a new unit price, then the **City** shall order the **Contractor** and the **Contractor** agrees to provide additional quantities of the

item on the basis of time and material records for the actual and reasonable cost as determined under Article 26.2, but in no event at a unit price exceeding the unit price bid.

- 26.2 Extra Work: For Extra Work where payment is by agreement on a fixed price in accordance with Article 25.3.2, the price to be paid for such Extra Work shall be based on the fair and reasonable estimated cost of the items set forth below. For Extra Work where payment is based on time and material records in accordance with Article 25.3.3, the price to be paid for such Extra Work shall be the actual and reasonable cost of the items set forth below, calculated in accordance with the formula specified therein, if any.
 - 26.2.1 Necessary materials (including transportation to the Site); plus
 - 26.2.2 Necessary direct labor, including payroll taxes (subject to statutory wage caps) and supplemental benefits; plus
 - 26.2.3 Sales and personal property taxes, if any, required to be paid on materials not incorporated into such Extra Work; plus
 - Reasonable rental value of Contractor-owned (or Subcontractor-owned, as 26.2.4 applicable), necessary plant and equipment other than Small Tools, plus fuel/energy costs. Except for fuel costs for pick-up trucks which shall be reimbursed based on a consumption of five (5) gallons per shift, fuel costs shall be reimbursed based on actual costs or, in the absence of auditable documentation, the following fuel consumption formula per operating hour: (.035) x (HP rating) x (Fuel cost/gallon). Reasonable rental value is defined as the lower of either seventy-five percent of the monthly prorated rental rates established in "The AED Green Book, Rental Rates and Specifications for Construction Equipment" published by Equipment Watch (the "Green Book"), or seventy-five percent of the monthly prorated rental rates established in the "Rental Rate Blue Book for Construction Equipment" published by Equipment Watch (the "Blue Book") (the applicable Blue Book rate being for rental only without the addition of any operational costs listed in the Blue Book). The reasonable rental value is deemed to be inclusive of all operating costs except for fuel/energy consumption and equipment operator's wages/costs. For multiple shift utilization, reimbursement shall be calculated as follows: first shift shall be seventy-five (75%) percent of such rental rates; second shift shall be sixty (60%) percent of the first shift rate; and third shift shall be forty (40%) percent of the first shift rate. Equipment on standby shall be reimbursed at one-third (1/3) the prorated monthly rental rate. Contractor-owned (or Subcontractor-owned, as applicable) equipment includes equipment from rental companies affiliated with or controlled by the Contractor (or Subcontractor, as applicable), as determined by the Commissioner. In establishing cost reimbursement for non-operating Contractor-owned (or Subcontractor-owned, as applicable) equipment (scaffolding, sheeting systems, road plates, etc.), the City may restrict reimbursement to a purchase-salvage/life cycle basis if less than the computed rental costs; plus
 - 26.2.5 Necessary installation and dismantling of such plant and equipment, including transportation to and from the **Site**, if any, provided that, in the case of non-**Contractor**-owned (or non-**Subcontractor**-owned, as applicable) equipment rented from a third party, the cost of installation and dismantling are not allowable if such costs are included in the rental rate; plus
 - 26.2.6 Necessary fees charged by governmental entities; plus

- 26.2.7 Necessary construction-related service fees charged by non-governmental entities, such as landfill tipping fees; plus
- 26.2.8 Reasonable rental costs of non-Contractor-owned (or non-Subcontractor-owned, as applicable) necessary plant and equipment other than Small Tools, plus fuel/energy costs. Except for fuel costs for pick-up trucks which shall be reimbursed based on a consumption of five (5) gallons per shift, fuel costs shall be reimbursed based on actual costs or, in the absence of auditable documentation, the following fuel consumption formula per hour of operation: (.035) x (HP rating) x (Fuel cost/gallon). In lieu of renting, the City reserves the right to direct the purchase of non-operating equipment (scaffolding, sheeting systems, road plates, etc.), with payment on a purchase-salvage/life cycle basis, if less than the projected rental costs; plus
- 26.2.9 Workers' Compensation Insurance, and any insurance coverage expressly required by the City for the performance of the Extra Work which is different than the types of insurance required by Article 22 and Schedule A of the General Conditions. The cost of Workers' Compensation Insurance is subject to applicable payroll limitation caps and shall be based upon the carrier's Manual Rate for such insurance derived from the applicable class Loss Cost ("LC") and carrier's Lost Cost Multiplier ("LCM") approved by the New York State Department of Financial Services, and with the exception of experience rating, rate modifiers as promulgated by the New York Compensation Insurance Rating Board ("NYCIRB"); plus
- 26.2.10 Additional costs incurred as a result of the Extra Work for performance and payment bonds; plus
- 26.2.11 Twelve percent (12%) percent of the total of items in Articles 26.2.1 through 26.2.5 as compensation for overhead, except that no percentage for overhead will be allowed on **Payroll Taxes** or on the premium portion of overtime pay or on sales and personal property taxes. Overhead shall include without limitation, all costs and expenses in connection with administration, management superintendence, small tools, and insurance required by Schedule A of the General Conditions other than Workers' Compensation Insurance; plus
- 26.2.12 Ten (10%) percent of the total of items in Articles 26.2.1 through 26.2.5, plus the items in Article 26.2.11, as compensation for profit, except that no percentage for profit will be allowed on **Payroll Taxes** or on the premium portion of overtime pay or on sales and personal property taxes; plus
- 26.2.13 Five (5%) percent of the total of items in Articles 26.2.6 through 26.2.10 as compensation for overhead and profit.
- 26.3 Where the Extra Work is performed in whole or in part by other than the Contractor's own forces pursuant to Article 26.2, the Contractor shall be paid, subject to pre-audit by the Engineering Audit Officer, the cost of such Work computed in accordance with Article 26.2 above, plus an additional allowance of five (5%) percent to cover the Contractor's overhead and profit.
- 26.4 Where a change is ordered, involving both Extra Work and omitted or reduced Contract Work, the Contract price shall be adjusted, subject to pre-audit by the EAO, in an amount based on the difference between the cost of such Extra Work and of the omitted or reduced Work.
- 26.5 Where the Contractor and the Commissioner can agree upon a fixed price for Extra Work in accordance with Article 25.3.2 or another method of payment for Extra Work in accordance with Article CITY OF NEW YORK

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25.3.4, or for Extra Work ordered in connection with omitted Work, such method, subject to pre-audit by the EAO, may, at the option of the Commissioner, be substituted for the cost plus a percentage method provided in Article 26.2; provided, however, that if the Extra Work is performed by a Subcontractor, the Contractor shall not be entitled to receive more than an additional allowance of five (5%) percent for overhead and profit over the cost of such Subcontractor's Work as computed in accordance with Article 26.2.

ARTICLE 27. RESOLUTION OF DISPUTES

- 27.1 All disputes between the **City** and the **Contractor** of the kind delineated in this Article 27.1 that arise under, or by virtue of, this **Contract** shall be finally resolved in accordance with the provisions of this Article 27 and the **PPB** Rules. This procedure for resolving all disputes of the kind delineated herein shall be the exclusive means of resolving any such disputes.
 - 27.1.1 This Article 27 shall not apply to disputes concerning matters dealt with in other sections of the **PPB** Rules, or to disputes involving patents, copyrights, trademarks, or trade secrets (as interpreted by the courts of New York State) relating to proprietary rights in computer software.
 - 27.1.2 This Article 27 shall apply only to disputes about the scope of Work delineated by the Contract, the interpretation of Contract documents, the amount to be paid for Extra Work or disputed work performed in connection with the Contract, the conformity of the Contractor's Work to the Contract, and the acceptability and quality of the Contractor's Work; such disputes arise when the Engineer, Resident Engineer, Engineering Audit Officer, or other designee of the Commissioner makes a determination with which the Contractor disagrees.
- 27.2 All determinations required by this Article 27 shall be made in writing clearly stated, with a reasoned explanation for the determination based on the information and evidence presented to the party making the determination. Failure to make such determination within the time required by this Article 27 shall be deemed a non-determination without prejudice that will allow application to the next level.
- 27.3 During such time as any dispute is being presented, heard, and considered pursuant to this Article 27, the Contract terms shall remain in force and the Contractor shall continue to perform Work as directed by the ACCO or the Engineer. Failure of the Contractor to continue Work as directed shall constitute a waiver by the Contractor of its claim.

27.4 Presentation of Disputes to Commissioner.

Notice of Dispute and Agency Response. The Contractor shall present its dispute in writing ("Notice of Dispute") to the Commissioner within thirty (30) Days of receiving written notice of the determination or action that is the subject of the dispute. This notice requirement shall not be read to replace any other notice requirements contained in the Contract. The Notice of Dispute shall include all the facts, evidence, documents, or other basis upon which the Contractor relies in support of its position, as well as a detailed computation demonstrating how any amount of money claimed by the Contractor in the dispute was arrived at. Within thirty (30) Days after receipt of the detailed written submission comprising the complete Notice of Dispute, the Engineer, Resident Engineer, Engineering Audit Officer, or other designee of the Commissioner shall submit to the Commissioner all materials he or she deems pertinent to the dispute. Following initial submissions to the Commissioner, either party may demand of the other the production of any document or other material the demanding party believes may be relevant to the dispute. The requested party shall produce all relevant materials that are not otherwise

protected by a legal privilege recognized by the courts of New York State. Any question of relevancy shall be determined by the **Commissioner** whose decision shall be final. Willful failure of the **Contractor** to produce any requested material whose relevancy the **Contractor** has not disputed, or whose relevancy has been affirmatively determined, shall constitute a waiver by the **Contractor** of its claim.

- 27.4.1 Commissioner Inquiry. The Commissioner shall examine the material and may, in his or her discretion, convene an informal conference with the Contractor, the ACCO, and the Engineer, Resident Engineer, Engineering Audit Officer, or other designee of the Commissioner to resolve the issue by mutual consent prior to reaching a determination. The Commissioner may seek such technical or other expertise as he or she shall deem appropriate, including the use of neutral mediators, and require any such additional material from either or both parties as he or she deems fit. The Commissioner's ability to render, and the effect of, a decision hereunder shall not be impaired by any negotiations in connection with the dispute presented, whether or not the Commissioner participated therein. The Commissioner may or, at the request of any party to the dispute, shall compel the participation of any Other Contractor with a contract related to the Work of this Contract, and that Contractor shall be bound by the decision of the Commissioner. Any Other Contractor thus brought into the dispute resolution proceeding shall have the same rights and obligations under this Article 27 as the Contractor initiating the dispute.
- 27.4.2 Commissioner Determination. Within thirty (30) Days after the receipt of all materials and information, or such longer time as may be agreed to by the parties, the Commissioner shall make his or her determination and shall deliver or send a copy of such determination to the Contractor, the ACCO, and Engineer, Resident Engineer, Engineering Audit Officer, or other designee of the Commissioner, as applicable, together with a statement concerning how the decision may be appealed.
- 27.4.3 Finality of Commissioner's Decision. The Commissioner's decision shall be final and binding on all parties, unless presented to the Contract Dispute Resolution Board pursuant to this Article 27. The City may not take a petition to the Contract Dispute Resolution Board. However, should the Contractor take such a petition, the City may seek, and the Contract Dispute Resolution Board may render, a determination less favorable to the Contractor and more favorable to the City than the decision of the Commissioner.
- 27.5 Presentation of Dispute to the Comptroller. Before any dispute may be brought by the Contractor to the Contract Dispute Resolution Board, the Contractor must first present its claim to the Comptroller for his or her review, investigation, and possible adjustment.
 - 27.5.1 Time, Form, and Content of Notice. Within thirty (30) Days of its receipt of a decision by the Commissioner, the Contractor shall submit to the Comptroller and to the Commissioner a Notice of Claim regarding its dispute with the Agency. The Notice of Claim shall consist of (i) a brief written statement of the substance of the dispute, the amount of money, if any, claimed and the reason(s) the Contractor contends the dispute was wrongly decided by the Commissioner; (ii) a copy of the written decision of the Commissioner; and (iii) a copy of all materials submitted by the Contractor to the Agency, including the Notice of Dispute. The Contractor may not present to the Comptroller any material not presented to the Commissioner, except at the request of the Comptroller.
 - 27.5.2 Response. Within thirty (30) **Days** of receipt of the Notice of Claim, the **Agency** shall make available to the **Comptroller** a copy of all material submitted by the **Agency** to the **Commissioner** in connection with the dispute. The **Agency** may not present to the

Comptroller any material not presented to the Commissioner except at the request of the Comptroller.

- 27.5.3 Comptroller Investigation. The Comptroller may investigate the claim in dispute and, in the course of such investigation, may exercise all powers provided in Sections 7-201 and 7-203 of the Administrative Code. In addition, the Comptroller may demand of either party, and such party shall provide, whatever additional material the Comptroller deems pertinent to the claim, including original business records of the Contractor. Willful failure of the Contractor to produce within fifteen (15) Days any material requested by the Comptroller shall constitute a waiver by the Contractor of its claim. The Comptroller may also schedule an informal conference to be attended by the Contractor, Agency representatives, and any other personnel desired by the Comptroller.
- 27.5.4 Opportunity of Comptroller to Compromise or Adjust Claim. The Comptroller shall have forty-five (45) Days from his or her receipt of all materials referred to in Article 27.5.3 to investigate the disputed claim. The period for investigation and compromise may be further extended by agreement between the Contractor and the Comptroller, to a maximum of ninety (90) Days from the Comptroller's receipt of all materials. The Contractor may not present its petition to the Contract Dispute Resolution Board until the period for investigation and compromise delineated in this Article 27.5.4 has expired. In compromising or adjusting any claim hereunder, the Comptroller may not revise or disregard the terms of the Contract between the parties.
- 27.6 Contract Dispute Resolution Board. There shall be a Contract Dispute Resolution Board composed of:
 - 27.6.1 The chief administrative law judge of the Office of Administrative Trials and Hearings (OATH) or his/her designated OATH administrative law judge, who shall act as chairperson, and may adopt operational procedures and issue such orders consistent with this Article 27 as may be necessary in the execution of the Contract Dispute Resolution Board's functions, including, but not limited to, granting extensions of time to present or respond to submissions;
 - 27.6.2 The **CCPO** or his/her designee; any designee shall have the requisite background to consider and resolve the merits of the dispute and shall not have participated personally and substantially in the particular matter that is the subject of the dispute or report to anyone who so participated; and
 - 27.6.3 A person with appropriate expertise who is not an employee of the City. This person shall be selected by the presiding administrative law judge from a prequalified panel of individuals, established and administered by OATH with appropriate background to act as decision-makers in a dispute. Such individual may not have a contract or dispute with the City or be an officer or employee of any company or organization that does, or regularly represents persons, companies, or organizations having disputes with the City.
- 27.7 Petition to the Contract Dispute Resolution Board. In the event the claim has not been settled or adjusted by the Comptroller within the period provided in this Article 27, the Contractor, within thirty (30) Days thereafter, may petition the Contract Dispute Resolution Board to review the Commissioner's determination.
- 27.7.1 Form and Content of Petition by Contractor. The Contractor shall present its dispute to the Contract Dispute Resolution Board in the form of a petition, which shall STANDARD CONSTRUCTION CONTRACT DECEmber 2013

include (i) a brief written statement of the substance of the dispute, the amount of money, if any, claimed, and the reason(s) the **Contractor** contends the dispute was wrongly decided by the **Commissioner**; (ii) a copy of the written Decision of the **Commissioner**, (iii) copies of all materials submitted by the **Contractor** to the Agency; (iv) a copy of the written decision of the **Comptroller**, if any, and (v) copies of all correspondence with, or written material submitted by the **Contractor**, to the **Comptroller**. The **Contractor** shall concurrently submit four (4) complete sets of the Petition: one set to the **City** Corporation Counsel (Attn: Commercial and Real Estate Litigation Division) and three (3) sets to the Contract Dispute Resolution Board at OATH's offices with proof of service on the **City** Corporation Counsel. In addition, the **Contractor** shall submit a copy of the written statement of the substance of the dispute, cited in (i) above, to both the **Commissioner** and the **Comptroller**.

- Agency Response. Within thirty (30) Days of its receipt of the Petition by the City Corporation Counsel, the Agency shall respond to the brief written statement of the Contractor and make available to the Contract Dispute Resolution Board all material it submitted to the Commissioner and Comptroller. Three (3) complete copies of the Agency response shall be provided to the Contract Dispute Resolution Board and one to the Contractor. Extensions of time for submittal of the Agency response shall be given as necessary upon a showing of good cause or, upon consent of the parties, for an initial period of up to thirty (30) Days.
- 27.7.3 Further Proceedings. The Contract Dispute Resolution Board shall permit the Contractor to present its case by submission of memoranda, briefs, and oral argument. The Contract Dispute Resolution Board shall also permit the Agency to present its case in response to the Contractor by submission of memoranda, briefs, and oral argument. If requested by the City Corporation Counsel, the Comptroller shall provide reasonable assistance in the preparation of the Agency's case. Neither the Contractor nor the Agency may support its case with any documentation or other material that was not considered by the Comptroller, unless requested by the Contract Dispute Resolution Board. The Contract Dispute Resolution Board, in its discretion, may seek such technical or other expert advice as it shall deem appropriate and may seek, on its own or upon application of a party, any such additional material from any party as it deems fit. The Contract Dispute Resolution Board, in its discretion, may combine more than one dispute between the parties for concurrent resolution.
- 27.7.4 Contract Dispute Resolution Board Determination. Within forty-five (45) **Days** of the conclusion of all written submissions and oral arguments, the Contract Dispute Resolution Board shall render a written decision resolving the dispute. In an unusually complex case, the Contract Dispute Resolution Board may render its decision in a longer period, not to exceed ninety (90) **Days**, and shall so advise the parties at the commencement of this period. The Contract Dispute Resolution Board's decision must be consistent with the terms of the **Contract**. Decisions of the Contract Dispute Resolution Board shall only resolve matters before the Contract Dispute Resolution Board and shall not have precedential effect with respect to matters not before the Contract Dispute Resolution Board.
- 27.7.5 Notification of Contract Dispute Resolution Board Decision. The Contract Dispute Resolution Board shall send a copy of its decision to the Contractor, the ACCO, the Engineer, the Comptroller, the City Corporation Counsel, the CCPO, and the PPB. A decision in favor of the Contractor shall be subject to the prompt payment provisions of the PPB Rules. The Required Payment Date shall be thirty (30) Days after the date the parties are formally notified of the Contract Dispute Resolution Board's decision.

27.7.6 Finality of Contract Dispute Resolution Board Decision. The Contract Dispute Resolution

Board's decision shall be final and binding on all parties. Any party may seek review of the Contract Dispute Resolution Board's decision solely in the form of a challenge, filed within four (4) months of the date of the Contract Dispute Resolution Board's decision, in a court of competent jurisdiction of the State of New York, County of New York pursuant to Article 78 of the Civil Practice Law and Rules. Such review by the court shall be limited to the question of whether or not the Contract Dispute Resolution Board's decision was made in violation of lawful procedure, was affected by an error of Law, or was arbitrary and capricious or an abuse of discretion. No evidence or information shall be introduced or relied upon in such proceeding that was not presented to the Contract Dispute Resolution Board in accordance with this Article 27.

Any termination, cancellation, or alleged breach of the **Contract** prior to or during the pendency of any proceedings pursuant to this Article 27 shall not affect or impair the ability of the **Commissioner** or Contract Dispute Resolution Board to make a binding and final decision pursuant to this Article 27.

ARTICLE 28. RECORD KEEPING FOR EXTRA OR DISPUTED WORK OR WORK ON A TIME & MATERIALS BASIS

- 28.1 While the Contractor or any of its Subcontractors is performing Work on a time and material basis or Extra Work on a time and material basis ordered by the Commissioner under Article 25, or where the Contractor believes that it or any of its Subcontractors is performing Extra Work but a final determination by Agency has not been made, or the Contractor or any of its Subcontractors is performing disputed Work (whether on or off the Site), or complying with a determination or order under protest in accordance with Articles 11, 27, and 30, in each such case the Contractor shall furnish the Resident Engineer daily with three (3) copies of written statements signed by the Contractor's representative at the Site showing:
 - 28.1.1 The name, trade, and number of each worker employed on such **Work** or engaged in complying with such determination or order, the number of hours employed, and the character of the **Work** each is doing; and
 - 28.1.2 The nature and quantity of any materials, plant and equipment furnished or used in connection with the performance of such **Work** or compliance with such determination or order, and from whom purchased or rented.
- 28.2 A copy of such statement will be countersigned by the **Resident Engineer**, noting thereon any items not agreed to or questioned, and will be returned to the **Contractor** within two (2) **Days** after submission.
- 28.3 The Contractor and its Subcontractors, when required by the Commissioner, or the Comptroller, shall also produce for inspection, at the office of the Contractor or Subcontractor, any and all of its books, bid documents, financial statements, vouchers, records, daily job diaries and reports, and cancelled checks, and any other documents relating to showing the nature and quantity of the labor, materials, plant and equipment actually used in the performance of such Work, or in complying with such determination or order, and the amounts expended therefor, and shall permit the Commissioner and the Comptroller to make such extracts therefrom, or copies thereof, as they or either of them may desire.
- 28.4 In connection with the examination provided for herein, the Commissioner, upon demand therefor, will produce for inspection by the Contractor such records as the Agency may have with CITY OF NEW YORK

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respect to such Extra Work or disputed Work performed under protest pursuant to order of the Commissioner, except those records and reports which may have been prepared for the purpose of determining the accuracy and validity of the Contractor's claim.

28.5 Failure to comply strictly with these requirements shall constitute a waiver of any claim for extra compensation or damages on account of the performance of such **Work** or compliance with such determination or order.

ARTICLE 29. OMITTED WORK

- 29.1 If any Contract Work in a lump sum Contract, or if any part of a lump sum item in a unit price, lump sum, or percentage-bid Contract is omitted by the Commissioner pursuant to Article 33, the Contract price, subject to audit by the EAO, shall be reduced by a pro rata portion of the lump sum bid amount based upon the percent of Work omitted subject to Article 29.4. For the purpose of determining the pro rata portion of the lump sum bid amount, the bid breakdown submitted in accordance with Article 41 shall be considered, but shall not be the determining factor.
- 29.2 If the whole of a lump sum item or units of any other item is so omitted by the **Commissioner** in a unit price, lump sum, or percentage-bid **Contract**, then no payment will be made therefor except as provided in Article 29.4.
- 29.3 For units that have been ordered but are only partially completed, the unit price shall be reduced by a pro rata portion of the unit price bid based upon the percentage of **Work** omitted subject to Article 29.4.
- 29.4 In the event the **Contractor**, with respect to any omitted **Work**, has purchased any non-cancelable material and/or equipment that is not capable of use except in the performance of this **Contract** and has been specifically fabricated for the sole purpose of this **Contract**, but not yet incorporated into the **Work**, the **Contractor** shall be paid for such material and/or equipment in accordance with Article 64.2.1(b); provided, however, such payment is contingent upon the **Contractor's** delivery of such material and/or equipment in acceptable condition to a location designated by the **City**.
- 29.5 The Contractor agrees to make no claim for damages or for loss of overhead and profit with regard to any omitted Work.

ARTICLE 30. NOTICE AND DOCUMENTATION OF COSTS AND DAMAGES; PRODUCTION OF FINANCIAL RECORDS

30.1 If the Contractor shall claim to be sustaining damages by reason of any act or omission of the City or its agents, it shall submit to the Commissioner within forty-five (45) Days from the time such damages are first incurred, and every thirty (30) Days thereafter for as long as such damages are incurred, verified statements of the details and the amounts of such damages, together with documentary evidence of such damages. The Contractor may submit any of the above statements within such additional time as may be granted by the Commissioner in writing upon written request therefor. Failure of the Commissioner to respond in writing to a written request for additional time within thirty (30) Days shall be deemed a denial of the request. On failure of the Contractor to strictly comply with the foregoing provisions, such claims shall be deemed waived and no right to recover on such claims shall exist. Damages that the Contractor may claim in any action or dispute resolution procedure arising under or by reason of this Contract shall not be different from or in excess of the statements and documentation made pursuant to this Article 30.

- 30.2 In addition to the foregoing statements, the Contractor shall, upon notice from the Commissioner, produce for examination at the Contractor's office, by the Engineer, Architect or Project Manager, all of its books of account, bills, invoices, payrolls, subcontracts, time books, daily reports, bank deposit books, bank statements, check books, and cancelled checks, showing all of its acts and transactions in connection with or relating to or arising by reason of this Contract, and submit itself and persons in its employment, for examination under oath by any person designated by the Commissioner or Comptroller to investigate claims made or disputes against the City under this Contract. At such examination, a duly authorized representative of the Contractor may be present.
- 30.3 In addition to the statements required under Article 28 and this Article 30, the Contractor and/or its Subcontractor shall, within thirty (30) Days upon notice from the Commissioner or Comptroller, produce for examination at the Contractor's and/or Subcontractor's office, by a representative of either the Commissioner or Comptroller, all of its books of account, bid documents, financial statements, accountant workpapers, bills, invoices, payrolls, subcontracts, time books, daily reports, bank deposit books, bank statements, check books, and cancelled checks, showing all of its acts and transactions in connection with or relating to or arising by reason of this Contract. Further, the Contractor and/or its Subcontractor shall submit any person in its employment, for examination under oath by any person designated by the Commissioner or Comptroller to investigate claims made or disputes against the City under this Contract. At such examination, a duly authorized representative of the Contractor may be present.
- 30.4 Unless the information and examination required under Article 30.3 is provided by the Contractor and/or its Subcontractor upon thirty (30) Days' notice from the Commissioner or Comptroller, or upon the Commissioner's or Comptroller's written authorization to extend the time to comply, the City shall be released from all claims arising under, relating to or by reason of this Contract, except for sums certified by the Commissioner to be due under the provisions of this Contract. It is further stipulated and agreed that no person has the power to waive any of the foregoing provisions and that in any action or dispute resolution procedure against the City to recover any sum in excess of the sums certified by the Commissioner to be due under or by reason of this Contract, the Contractor must allege in its complaint and prove, at trial or during such dispute resolution procedure, compliance with the provisions of this Article 30.
- 30.5 In addition, after the commencement of any action or dispute resolution procedure by the Contractor arising under or by reason of this Contract, the City shall have the right to require the Contractor to produce for examination under oath, up until the trial of the action or hearing before the Contract Dispute Resolution Board, the books and documents described in Article 30.3 and submit itself and all persons in its employ for examination under oath. If this Article 30 is not complied with as required, then the Contractor hereby consents to the dismissal of the action or dispute resolution procedure.

CHAPTER VII POWERS OF THE RESIDENT ENGINEER, THE ENGINEER OR ARCHITECT AND THE COMMISSIONER

ARTICLE 31. THE RESIDENT ENGINEER

31.1 The **Resident Engineer** shall have the power to inspect, supervise, and control the performance of the **Work**, subject to review by the **Commissioner**. The **Resident Engineer** shall not, however, have the power to issue an **Extra Work** order, except as specifically designated in writing by the **Commissioner**.

ARTICLE 32. THE ENGINEER OR ARCHITECT OR PROJECT MANAGER

- 32.1 The **Engineer** or **Architect** or **Project Manager**, in addition to those matters elsewhere herein delegated to the **Engineer** and expressly made subject to his/her determination, direction or approval, shall have the power, subject to review by the **Commissioner**:
 - 32.1.1 To determine the amount, quality, and location of the **Work** to be paid for hereunder; and
 - 32.1.2 To determine all questions in relation to the Work, to interpret the Contract Drawings, Specifications, and Addenda, and to resolve all patent inconsistencies or ambiguities therein; and
 - 32.1.3 To determine how the **Work** of this **Contract** shall be coordinated with **Work** of **Other Contractors** engaged simultaneously on this **Project**, including the power to suspend any part of the **Work**, but not the whole thereof; and
 - 32.1.4 To make minor changes in the Work as he/she deems necessary, provided such changes do not result in a net change in the cost to the City or to the Contractor of the Work to be done under the Contract; and
 - 32.1.5 To amplify the **Contract Drawings**, add explanatory information and furnish additional **Specifications** and drawings, consistent with this **Contract**.
- 32.2 The foregoing enumeration shall not imply any limitation upon the power of the **Engineer** or **Architect** or **Project Manager**, for it is the intent of this **Contract** that all of the **Work** shall generally be subject to his/her determination, direction, and approval, except where the determination, direction or approval of someone other than the **Engineer** or **Architect** or **Project Manager** is expressly called for herein.
- 32.3 The Engineer or Architect or Project Manager shall not, however, have the power to issue an Extra Work order, except as specifically designated in writing by the Commissioner.

ARTICLE 33. THE COMMISSIONER

- 33.1 The **Commissioner**, in addition to those matters elsewhere herein expressly made subject to his/her determination, direction or approval, shall have the power:
 - 33.1.1 To review and make determinations on any and all questions in relation to this **Contract** and its performance; and
 - 33.1.2 To modify or change this **Contract** so as to require the performance of **Extra Work** (subject, however, to the limitations specified in Article 25) or the omission of **Contract Work**; and
 - 33.1.3 To suspend the whole or any part of the **Work** whenever in his/her judgment such suspension is required:
 - 33.1.3(a) In the interest of the City generally; or

- 33.1.3(b) To coordinate the **Work** of the various contractors engaged on this **Project** pursuant to the provisions of Article 12; or
- 33.1.3(c) To expedite the completion of the entire **Project** even though the completion of this particular **Contract** may thereby be delayed.

ARTICLE 34. NO ESTOPPEL

- 34.1 Neither the City nor any Agency, official, agent or employee thereof, shall be bound, precluded or estopped by any determination, decision, approval, order, letter, payment or certificate made or given under or in connection with this Contract by the City, the Commissioner, the Engineer, the Resident Engineer, or any other official, agent or employee of the City, either before or after the final completion and acceptance of the Work and payment therefor:
 - 34.1.1 From showing the true and correct classification, amount, quality or character of the **Work** actually done; or that any such determination, decision, order, letter, payment or certificate was untrue, incorrect or improperly made in any particular, or that the **Work**, or any part thereof, does not in fact conform to the requirements of this **Contract**; and
 - 34.1.2 From demanding and recovering from the Contractor any overpayment made to it, or such damages as the City may sustain by reason of the Contractor's failure to perform each and every part of its Contract.

CHAPTER VIII LABOR PROVISIONS

ARTICLE 35. EMPLOYEES

- 35.1 The Contractor and its Subcontractors shall not employ on the Work:
 - 35.1.1 Anyone who is not competent, faithful and skilled in the Work for which he/she shall be employed; and whenever the Commissioner shall inform the Contractor, in writing, that any employee is, in his/her opinion, incompetent, unfaithful or disobedient, that employee shall be discharged from the Work forthwith, and shall not again be employed upon it; or
 - 35.1.2 Any labor, materials or means whose employment, or utilization during the course of this Contract, may tend to or in any way cause or result in strikes, work stoppages, delays, suspension of Work or similar troubles by workers employed by the Contractor or its Subcontractors, or by any of the trades working in or about the buildings and premises where Work is being performed under this Contract, or by Other Contractors or their Subcontractors pursuant to other contracts, or on any other building or premises owned or operated by the City, its Agencies, departments, boards or authorities. Any violation by the Contractor of this requirement may, upon certification of the Commissioner, be considered as proper and sufficient cause for declaring the Contractor to be in default, and for the City to take action against it as set forth in Chapter X of this Contract, or such other article of this Contract as the Commissioner may deem proper; or
- 35.1.3 In accordance with Section 220.3-e of the Labor Law of the State of New York (hereinafter "Labor Law"), the Contractor and its Subcontractors shall not employ on the Work any apprentice, unless he/she is a registered individual, under a bona fide program STANDARD CONSTRUCTION CONTRACT December 2013

registered with the New York State Department of Labor. The allowable ratio of apprentices to journey-level workers in any craft classification shall not be greater than the ratio permitted to the Contractor as to its work force on any job under the registered program. Any employee listed on a payroll at an apprentice wage rate, who is not registered as above, shall be paid the wage rate determined by the Comptroller of the City for the classification of Work actually performed. The Contractor or Subcontractor will be required to furnish written evidence of the registration of its program and apprentices as well as all the appropriate ratios and wage rates, for the area of the construction prior to using any apprentices on the Contract Work.

- 35.2 If the total cost of the Work under this Contract is at least two hundred fifty thousand (\$250,000) dollars, all laborers, workers, and mechanics employed in the performance of the Contract on the public work site, either by the Contractor, Subcontractor or other person doing or contracting to do the whole or a part of the Work contemplated by the Contract, shall be certified prior to performing any Work as having successfully completed a course in construction safety and health approved by the United States Department of Labor's Occupational Safety and Health Administration that is at least ten (10) hours in duration.
- 35.3 In accordance with Local Law Nos. 30-2012 and 33-2012, codified at sections 6-132 and 12-113 of the Administrative Code, respectively,
 - 35.3.1 The Contractor shall not take an adverse personnel action with respect to an officer or employee in retaliation for such officer or employee making a report of information concerning conduct which such officer or employee knows or reasonably believes to involve corruption, criminal activity, conflict of interest, gross mismanagement or abuse of authority by any officer or employee relating to this Contract to (a) the Commissioner of the Department of Investigation, (b) a member of the New York City Council, the Public Advocate, or the Comptroller, or (c) the CCPO, ACCO, Agency head, or Commissioner.
 - 35.3.2 If any of the Contractor's officers or employees believes that he or she has been the subject of an adverse personnel action in violation of Article 35.3.1, he or she shall be entitled to bring a cause of action against the Contractor to recover all relief necessary to make him or her whole. Such relief may include but is not limited to: (a) an injunction to restrain continued retaliation, (b) reinstatement to the position such employee would have had but for the retaliation or to an equivalent position, (c) reinstatement of full fringe benefits and seniority rights, (d) payment of two times back pay, plus interest, and (e) compensation for any special damages sustained as a result of the retaliation, including litigation costs and reasonable attorney's fees.
 - 35.3.3 The Contractor shall post a notice provided by the City in a prominent and accessible place on any site where work pursuant to the Contract is performed that contains information about:
 - 35.3.3(a) how its employees can report to the New York City Department of Investigation allegations of fraud, false claims, criminality or corruption arising out of or in connection with the Contract; and
 - 35.3.3(b) the rights and remedies afforded to its employees under Administrative Code sections 7-805 (the New York City False Claims Act) and 12-113 (the Whistleblower Protection Expansion Act) for lawful acts taken in connection with the reporting of allegations of fraud, false claims, criminality or corruption in connection with the Contract.

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- 35.3.4 For the purposes of this Article 35.3, "adverse personnel action" includes dismissal, demotion, suspension, disciplinary action, negative performance evaluation, any action resulting in loss of staff, office space, equipment or other benefit, failure to appoint, failure to promote, or any transfer or assignment or failure to transfer or assign against the wishes of the affected officer or employee.
- 35.3.5 This Article 35.3 is applicable to all of the **Contractor**'s **Subcontractors** having subcontracts with a value in excess of \$100,000; accordingly, the **Contractor** shall include this rider in all subcontracts with a value a value in excess of \$100,000.
- 35.4 Article 35.3 is not applicable to this **Contract** if it is valued at \$100,000 or less. Articles 35.3.1, 35.3.2, 35.3.4, and 35.3.5 are not applicable to this **Contract** if it was solicited pursuant to a finding of an emergency.

ARTICLE 36. NO DISCRIMINATION

- 36.1 The Contractor specifically agrees, as required by Labor Law Section 220-e, as amended, that:
 - 36.1.1 In the hiring of employees for the performance of **Work** under this **Contract** or any subcontract hereunder, neither the **Contractor**, **Subcontractor**, nor any person acting on behalf of such **Contractor** or **Subcontractor**, shall by reason of race, creed, color or national origin discriminate against any citizen of the State of New York who is qualified and available to perform the **Work** to which the employment relates;
 - 36.1.2 Neither the Contractor, Subcontractor, nor any person on its behalf shall, in any manner, discriminate against or intimidate any employee hired for the performance of Work under this Contract on account of race, creed, color or national origin;
 - 36.1.3 There may be deducted from the amount payable to the **Contractor** by the **City** under this **Contract** a penalty of fifty (\$50.00) dollars for each person for each **Day** during which such person was discriminated against or intimidated in violation of the provisions of this **Contract**; and
 - 36.1.4 This Contract may be cancelled or terminated by the City and all moneys due or to become due hereunder may be forfeited, for a second or any subsequent violation of the terms or conditions of this Article 36.
 - 36.1.5 This Article 36 covers all construction, alteration and repair of any public building or public work occurring in the State of New York and the manufacture, sale, and distribution of materials, equipment, and supplies to the extent that such operations are performed within the State of New York pursuant to this **Contract**.
- 36.2 The Contractor specifically agrees, as required by Section 6-108 of the Administrative Code, as amended, that:
 - 36.2.1 It shall be unlawful for any person engaged in the construction, alteration or repair of buildings or engaged in the construction or repair of streets or highways pursuant to a **Contract** with the **City** or engaged in the manufacture, sale or distribution of materials, equipment or supplies pursuant to a **Contract** with the **City** to refuse to employ or to refuse to continue in any employment any person on account of the race, color or creed of such person.

- 36.2.2 It shall be unlawful for any person or any servant, agent or employee of any person, described in Article 36.1.2, to ask, indicate or transmit, orally or in writing, directly or indirectly, the race, color or creed or religious affiliation of any person employed or seeking employment from such person, firm or corporation.
- 36.2.3 Breach of the foregoing provisions shall be deemed a violation of a material provision of this **Contract**.
- 36.2.4 Any person, or the employee, manager or owner of or officer of such firm or corporation who shall violate any of the provisions of this Article 36.2 shall, upon conviction thereof, be punished by a fine of not more than one hundred (\$100.00) dollars or by imprisonment for not more than thirty (30) **Days**, or both.
- 36.3 This **Contract** is subject to the requirements of Executive Order No. 50 (1980) ("E.O. 50"), as revised, and the rules and regulations promulgated thereunder. No contract will be awarded unless and until these requirements have been complied with in their entirety. By signing this **Contract**, the **Contractor** agrees that it:
 - 36.3.1 Will not engage in any unlawful discrimination against any employee or applicant for employment because of race, creed, color, national origin, sex, age, disability, marital status or sexual orientation with respect to all employment decisions including, but not limited to, recruitment, hiring, upgrading, demotion, downgrading, transfer, training, rates of pay or other forms of compensation, layoff, termination, and all other terms and conditions of employment; and
 - 36.3.2 Will not engage in any unlawful discrimination in the selection of **Subcontractors** on the basis of the owner's race, color, creed, national origin, sex, age, disability, marital status or sexual orientation; and
 - 36.3.3 Will state in all solicitations or advertisements for employees placed by or on behalf of the **Contractor** that all qualified applicants will receive consideration for employment without unlawful discrimination based on race, creed, color, national origin, sex, age, citizens status, disability, marital status, sexual orientation, or that it is an equal employment opportunity employer; and
 - 36.3.4 Will send to each labor organization or representative of workers with which it has a collective bargaining agreement or other contract or memorandum of understanding, written notification of its equal employment opportunity commitments under E.O. 50 and the rules and regulations promulgated thereunder; and
 - 36.3.5 Will furnish, before the award of the **Contract**, all information and reports, including an employment report, that are required by E.O. 50, the rules and regulations promulgated thereunder, and orders of the **City** Department of Business Services, Division of Labor Services (**DLS**) and will permit access to its books, records, and accounts by the **DLS** for the purposes of investigation to ascertain compliance with such rules, regulations, and orders.
- 36.4 The Contractor understands that in the event of its noncompliance with the nondiscrimination clauses of this Contract or with any of such rules, regulations, or orders, such noncompliance shall constitute a material breach of this Contract and noncompliance with E.O. 50 and the rules and regulations promulgated thereunder. After a hearing held pursuant to the rules of the DLS, the Director of the DLS may direct the Commissioner to impose any or all of the following sanctions:

- 36.4.1 Disapproval of the Contractor; and/or
- 36.4.2 Suspension or termination of the Contract; and/or
- 36.4.3 Declaring the Contractor in default; and/or
- 36.4.4 In lieu of any of the foregoing sanctions, the Director of the DLS may impose an employment program.

In addition to any actions taken under this Contract, failure to comply with E.O. 50 and the rules and regulations promulgated thereunder, in one or more instances, may result in a City Agency declaring the Contractor to be non-responsible in future procurements. The Contractor further agrees that it will refrain from entering into any Contract or Contract modification subject to E.O. 50 and the rules and regulations promulgated thereunder with a Subcontractor who is not in compliance with the requirements of E.O. 50 and the rules and regulations promulgated thereunder.

- 36.5 The Contractor specifically agrees, as required by Section 6-123 of the Administrative Code, that:
 - 36.5.1 The Contractor will not engage in any unlawful discriminatory practice in violation of Title 8 of the Administrative Code; and
 - 36.5.2 Any failure to comply with this Article 36.5 may subject the Contractor to the remedies set forth in Section 6-123 of the Administrative Code, including, where appropriate, sanctions such as withholding of payment, imposition of an employment program, finding the Contractor to be in default, cancellation of the Contract, or any other sanction or remedy provided by Law or Contract.

ARTICLE 37. LABOR LAW REQUIREMENTS

- 37.1 The Contractor shall strictly comply with all applicable provisions of the Labor Law, as amended. Such compliance is a material term of this Contract.
- 37.2 The Contractor specifically agrees, as required by Labor Law Sections 220 and 220-d, as amended, that:
 - 37.2.1 Hours of Work: No laborer, worker, or mechanic in the employ of the Contractor, Subcontractor or other person doing or contracting to do the whole or a part of the Work contemplated by this Contract shall be permitted or required to work more than eight (8) hours in any one (1) Day, or more than five (5) Days in any one (1) week, except as provided in the Labor Law and in cases of extraordinary emergency including fire, flood, or danger to life or property, or in the case of national emergency when so proclaimed by the President of the United States of America.
 - 37.2.2 In situations in which there are not sufficient laborers, workers, and mechanics who may be employed to carry on expeditiously the Work contemplated by this Contract as a result of such restrictions upon the number of hours and Days of labor, and the immediate commencement or prosecution or completion without undue delay of the Work is necessary for the preservation of the Site and/or for the protection of the life and limb of the persons using the same, such laborers, workers, and mechanics shall be permitted or required to

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work more than eight (8) hours in any one (1) **Day**; or five (5) **Days** in any one (1) week; provided, however, that upon application of any **Contractor**, the **Commissioner** shall have first certified to the Commissioner of Labor of the State of New York (hereinafter "Commissioner of Labor") that such public **Work** is of an important nature and that a delay in carrying it to completion would result in serious disadvantage to the public; and provided, further, that such Commissioner of Labor shall have determined that such an emergency does in fact exist as provided in Labor Law Section 220.2.

- 37.2.3 Failure of the Commissioner to make such a certification to the Commissioner of Labor shall not entitle the Contractor to damages for delay or for any cause whatsoever.
- 37.2.4 Prevailing Rate of Wages: The wages to be paid for a legal day's **Work** to laborers, workers, or mechanics employed upon the **Work** contemplated by this **Contract** or upon any materials to be used thereon shall not be less than the "prevailing rate of wage" as defined in Labor Law Section 220, and as fixed by the **Comptroller** in the attached Schedule of Wage Rates and in updated schedules thereof. The prevailing wage rates and supplemental benefits to be paid are those in effect at the time the **Work** is being performed.
- 37.2.5 Requests for interpretation or correction in the Information for Bidders includes all requests for clarification of the classification of trades to be employed in the performance of the Work under this Contract. In the event that a trade not listed in the Contract is in fact employed during the performance of this Contract, the Contractor shall be required to obtain from the Agency the prevailing wage rates and supplementary benefits for the trades used and to complete the performance of this Contract at the price at which the Contract was awarded.
- 37.2.6 Minimum Wages: Except for employees whose wage is required to be fixed pursuant to Labor Law Section 220, all persons employed by the **Contractor** and any **Subcontractor** in the manufacture or furnishing of the supplies, materials, or equipment, or the furnishing of work, labor, or services, used in the performance of this **Contract**, shall be paid, without subsequent deduction or rebate unless expressly authorized by **Law**, not less than the sum mandated by **Law**.
- 37.3 Working Conditions: No part of the **Work**, labor or services shall be performed or rendered by the **Contractor** in any plants, factories, buildings or surroundings or under working conditions which are unsanitary or hazardous or dangerous to the health and safety of employees engaged in the performance of this **Contract**. Compliance with the safety, sanitary, and factory inspection **Laws** of the state in which the **Work** is to be performed shall be prima facie evidence of compliance with this Article 37.3.
- 37.4 Prevailing Wage Enforcement: The Contractor agrees to pay for all costs incurred by the City in enforcing prevailing wage requirements, including the cost of any investigation conducted by or on behalf of the Agency or the Comptroller, where the City discovers a failure to comply with any of the requirements of this Article 37 by the Contractor or its Subcontractor(s). The Contractor also agrees that, should it fail or refuse to pay for any such investigation, the Agency is hereby authorized to deduct from a Contractor's account an amount equal to the cost of such investigation.
 - 37.4.1 The Labor Law Section 220 and Section 220-d, as amended, provide that this **Contract** shall be forfeited and no sum paid for any **Work** done hereunder on a second conviction for willfully paying less than:
 - 37.4.1(a) The stipulated prevailing wage scale as provided in Labor Law section 220, as amended, or

- 37.4.1(b) The stipulated minimum hourly wage scale as provided in Labor Law section 220-d, as amended.
- 37.4.2 For any breach or violation of either working conditions (Article 37.3) or minimum wages (Article 37.2.6) provisions, the party responsible therefor shall be liable to the City for liquidated damages, which may be withheld from any amounts due on any contracts with the City of such party responsible, or may be recovered in actions brought by the City Corporation Counsel in the name of the City, in addition to damages for any other breach of this Contract, for a sum equal to the amount of any underpayment of wages due to any employee engaged in the performance of this Contract. In addition, the Commissioner shall have the right to cancel contracts and enter into other contracts for the completion of the original contract, with or without public letting, and the original Contractor shall be liable for any additional cost. All sums withheld or recovered as deductions, rebates, refunds, or underpayment of wages hereunder, shall be held in a special deposit account and shall be paid without interest, on order of the Comptroller, directly to the employees who have been paid less than minimum rates of pay as set forth herein and on whose account such sums were withheld or recovered, provided that no claims by employees for such payments shall be entertained unless made within two (2) years from the date of actual notice to the Contractor of the withholding or recovery of such sums by the City.
- 37.4.3 A determination by the **Comptroller** that a **Contractor** and/or its **Subcontractor** willfully violated Labor Law Section 220 will be forwarded to the **City's** five District Attorneys for review.
- 37.4.4 The Contractor's or Subcontractor's noncompliance with this Article 37.4 and Labor Law Section 220 may result in an unsatisfactory performance evaluation and the Comptroller may also find and determine that the Contractor or Subcontractor willfully violated the New York Labor Law.
 - 37.4.4(a) An unsatisfactory performance evaluation for noncompliance with this Article 37.4 may result in a determination that the **Contractor** is a non-responsible bidder on subsequent procurements with the **City** and thus a rejection of a future award of a contract with the **City**, as well as any other sanctions provided for by **Law**.
 - 37.4.4(b) Labor Law Section 220-b, as amended, provides that when two (2) final determinations have been rendered against a **Contractor** or **Subcontractor** within any consecutive six (6) year period determining that such **Contractor** or **Subcontractor** has willfully failed to pay the prevailing rate of wages or to provide supplements in accordance with the Labor Law and this Article 37.4, whether such failures were concurrent or consecutive and whether or not such final determinations concerning separate public works projects are rendered simultaneously, such **Contractor** or **Subcontractor** shall be ineligible to submit a bid on or be awarded any public works contract with the **City** for a period of five (5) years from the second final determination. If the final determination involves the falsification of payroll records or the kickback of wages or supplements, the **Contractor** or **Subcontractor** shall be ineligible to submit a bid on or be awarded any public works contract with the **City** for a period of five (5) years from the first final determination.
 - 37.4.4(c) Labor Law Section 220, as amended, provides that the Contractor or Subcontractor found to have violated this Article 37.4 may be directed to make payment of wages or supplements including interest found to be due, and the Contractor or Subcontractor may be directed to make payment of a further sum as

a civil penalty in an amount not exceeding twenty-five (25%) percent of the total amount found to be due.

37.5 The Contractor and its Subcontractors shall within ten (10) Days after mailing of a Notice of Award or written order, post in prominent and conspicuous places in each and every plant, factory, building, and structure where employees of the Contractor and its Subcontractors engaged in the performance of this Contract are employed, notices furnished by the City, in relation to prevailing wages and supplements, minimum wages, and other stipulations contained in Sections 220 and 220-h of the Labor Law, and the Contractor and its Subcontractors shall continue to keep such notices posted in such prominent and conspicuous places until Final Acceptance of the supplies, materials, equipment, or Work, labor, or services required to be furnished or rendered under this Contract.

37.6 The **Contractor** shall strictly comply with all of the provisions of Articles 37.6.1 through 37.6.5, and provide for all workers, laborers or mechanics in its employ, the following:

37.6.1 Notices Posted At Site: Post, in a location designated by the City, schedules of prevailing wages and supplements for this Project, a copy of all re-determinations of such schedules for the Project, the Workers' Compensation Law Section 51 notice, all other notices required by Law to be posted at the Site, the City notice that this Project is a public works project on which each worker is entitled to receive the prevailing wages and supplements for the occupation at which he or she is working, and all other notices which the City directs the Contractor to post. The Contractor shall provide a surface for such notices which is satisfactory to the City. The Contractor shall maintain and keep current such notices in a legible manner and shall replace any notice or schedule which is damaged, defaced, illegible or removed for any reason. The Contractor shall post such notices before commencing any Work on the Site and shall maintain such notices until all Work on the Site is complete; and

37.6.2 Daily Site Sign-in Sheets: Maintain daily Site sign-in sheets, and require that Subcontractors maintain daily Site sign-in sheets for its employees, which include blank spaces for an employee's name to be both printed and signed, job title, date started and Social Security number, the time the employee began work and the time the employee left work, until Final Acceptance of the supplies, materials, equipment, or Work, labor, or services to be furnished or rendered under this Contract unless exception is granted by the Comptroller upon application by the Agency. In the alternative, subject to the approval of the CCPO, the Contractor and Subcontractor may maintain an electronic or biometric sign-in system, which provides the information required by this Article 37.6.2; and

37.6.3 Individual Employee Information Notices: Distribute a notice to each worker, laborer or mechanic employed under this Contract, in a form provided by the Agency, that this Project is a public works project on which each worker, laborer or mechanic is entitled to receive the prevailing rate of wages and supplements for the occupation at which he or she is working. If the total cost of the Work under this Contract is at least two hundred fifty thousand (\$250,000) dollars, such notice shall also include a statement that each worker, laborer or mechanic must be certified prior to performing any Work as having successfully completed a course in construction safety and health approved by the United States Department of Labor's Occupational Safety and Health Administration that is at least ten (10) hours in duration. Such notice shall be distributed to each worker before he or she starts performing any Work of this Contract and with the first paycheck after July first of each year. "Worker, laborer or mechanic" includes employees of the Contractor and all Subcontractors and all employees of suppliers entering the Site. At the time of distribution, the Contractor shall have each worker, laborer or mechanic sign a statement, in a form provided by the Agency, certifying that the worker has received the notice required by this

Article 37.6.3, which signed statement shall be maintained with the payroll records required by this Contract; and

37.6.3(a) The Contractor and each Subcontractor shall notify each worker, laborer or mechanic employed under this Contract in writing of the prevailing rate of wages for their particular job classification. Such notification shall be given to every worker, laborer, and mechanic on their first pay stub and with every pay stub thereafter; and

37.6.4 Site Laminated Identification Badges: The Contractor shall provide laminated identification badges which include a photograph of the worker's, laborer's or mechanic's face and indicate the worker's, laborer's or mechanic's name, trade, employer's name, and employment starting date (month/day/year). Further, the Contractor shall require as a condition of employment on the Site, that each and every worker, laborer or mechanic wear the laminated identification badge at all times and that it may be seen by any representative of the City. The Commissioner may grant a written waiver from the requirement that the laminated identification badge include a photograph if the Contractor demonstrates that the identity of an individual wearing a laminated identification badge can be easily verified by another method; and

37.6.5 Language Other Than English Used On Site: Provide the ACCO notice when three (3) or more employees (worker and/or laborer and/or mechanic) on the Site, at any time, speak a language other than English. The ACCO will then provide the Contractor the notices described in Article 37.6.1 in that language or languages as may be required. The Contractor is responsible for all distributions under this Article 37; and

37.6.6 Provision of Records: The Contractor and Subcontractor(s) shall produce within five (5) Days on the Site of the Work and upon a written order of the Engineer, the Commissioner, the ACCO, the Agency EAO, or the Comptroller, such records as are required to be kept by this Article 37.6; and

37.6.7 The Contractor and Subcontractor(s) shall pay employees by check or direct deposit. If this Contract is for an amount greater than one million (\$1,000,000) dollars, checks issued by the Contractor to covered employees shall be generated by a payroll service or automated payroll system (an in-house system may be used if approved by the Agency). For any subcontract for an amount greater than seven hundred fifty thousand (\$750,000) dollars, checks issued by a Subcontractor to covered employees shall be generated by a payroll service or automated payroll system (an in-house system may be used if approved by the Agency); and

37.6.8 The failure of the Contractor or Subcontractor(s) to comply with the provisions of Articles 37.6.1 through 37.6.7 may result in the Commissioner declaring the Contractor in default and/or the withholding of payments otherwise due under the Contract.

37.7 The Contractor and its Subcontractors shall keep such employment and payroll records as are required by Section 220 of the Labor Law. The failure of the Contractor or Subcontractor(s) to comply with the provisions of this Article 37.7 may result in the Commissioner declaring the Contractor in default and/or the withholding of payments otherwise due under the Contract.

37.8 At the time the Contractor makes application for each partial payment and for final payment, the Contractor shall submit to the Commissioner a written payroll certification, in the form provided by this Contract, of compliance with the prevailing wage, minimum wage, and other provisions and stipulations required by Labor Law Section 220 and of compliance with the training requirements of CITY OF NEW YORK STANDARD CONSTRUCTION CONTRACT

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Labor Law Section 220-h set forth in Article 35.2. This certification of compliance shall be a condition precedent to payment and no payment shall be made to the **Contractor** unless and until each such certification shall have been submitted to and received by the **Commissioner**.

- 37.9 This **Contract** is executed by the **Contractor** with the express warranty and representation that the **Contractor** is not disqualified under the provisions of Section 220 of the Labor Law from the award of the **Contract**.
- 37.10 Any breach or violation of any of the foregoing shall be deemed a breach or violation of a material provision of this **Contract**, and grounds for cancellation thereof by the **City**.

ARTICLE 38. PAYROLL REPORTS

- 38.1 The Contractor and its Subcontractor(s) shall maintain on the Site during the performance of the Work the original payrolls or transcripts thereof which the Contractor and its Subcontractor(s) are required to maintain and shall submit such original payrolls or transcripts, subscribed and affirmed by it as true, within thirty (30) Days after issuance of its first payroll, and every thirty (30) Days thereafter, pursuant to Labor Law Section 220(3-a)(a)(iii). The Contractor and Subcontractor(s) shall submit such original payrolls or transcripts along with each and every payment requisition. If payment requisitions are not submitted at least once a month, the Contractor and its Subcontractor(s) shall submit original payrolls and transcripts both along with its payment requisitions and independently of its payment requisitions.
- 38.2 The Contractor shall maintain payrolls or transcripts thereof for six (6) years from the date of completion of the Work on this Contract. If such payrolls and transcripts are maintained outside of New York City after the completion of the Work and their production is required pursuant to this Article 38, the Contractor shall produce such records in New York City upon request by the City.
- 38.3 The Contractor and Subcontractor(s) shall comply with any written order, direction, or request made by the Engineer, the Commissioner, the ACCO, the Agency EAO, the Agency Labor Law Investigator(s), or the Comptroller, to provide to the requesting party any of the following information and/or records within five (5) Days of such written order, direction, or request:
 - 38.3.1 Such original payrolls or transcripts thereof subscribed and affirmed by it as true and the statements signed by each worker pursuant to this Chapter VIII; and/or
 - 38.3.2 Attendance sheets for each **Day** on which any employee of the **Contractor** and/or any of the **Subcontractor(s)** performed **Work** on the **Site**, which attendance sheet shall be in a form acceptable to the **Agency** and shall provide information acceptable to the **Agency** to identify each such employee; and/or
 - 38.3.3 Any other information to satisfy the Engineer, the Commissioner, the ACCO, the Agency EAO, the Agency Labor Law Investigator(s) or the Comptroller, that this Chapter VIII and the Labor Law, as to the hours of employment and prevailing rates of wages and/or supplemental benefits, are being observed.
- 38.4 The failure of the **Contractor** or **Subcontractor(s)** to comply with the provisions of Articles 38.1 and/or 38.2 may result in the **Commissioner** declaring the **Contractor** in default and/or the withholding of payments otherwise due under the **Contract**.

ARTICLE 39. DUST HAZARDS

39.1 Should a harmful dust hazard be created in performing the **Work** of this **Contract**, for the elimination of which appliances or methods have been approved by the Board of Standards and Appeals of the City of New York, such appliances and methods shall be installed, maintained, and effectively operated during the continuance of such harmful dust hazard. Failure to comply with this provision after notice shall make this **Contract** voidable at the sole discretion of the **City**.

CHAPTER IX PARTIAL AND FINAL PAYMENTS

ARTICLE 40. CONTRACT PRICE

40.1 The City shall pay, and the Contractor agrees to accept, in full consideration for the Contractor's performance of the Work subject to the terms and conditions hereof, the lump sum price or unit prices for which this Contract was awarded, plus the amount required to be paid for any Extra Work ordered by the Commissioner under Article 25, less credit for any Work omitted pursuant to Article 29.

ARTICLE 41. BID BREAKDOWN ON LUMP SUM

- 41.1 Within fifteen (15) Days after the commencement date specified in the Notice to Proceed or Order to Work, unless otherwise directed by the Resident Engineer, the Contractor shall submit to the Resident Engineer a breakdown of its bid price, or of lump sums bid for items of the Contract, showing the various operations to be performed under the Contract, as directed in the progress schedule required under Article 9, and the value of each of such operations, the total of such items to equal the lump sum price bid. Said breakdown must be approved in writing by the Resident Engineer.
- 41.2 No partial payment will be approved until the **Contractor** submits a bid breakdown that is acceptable to the **Resident Engineer**.
- 41.3 The Contractor shall also submit such other information relating to the bid breakdown as directed by the Resident Engineer. Thereafter, the breakdown may be used only for checking the Contractor's applications for partial payments hereunder, but shall not be binding upon the City, the Commissioner, or the Engineer for any purpose whatsoever.

ARTICLE 42. PARTIAL PAYMENTS

- 42.1 From time to time as the **Work** progresses satisfactorily, but not more often than once each calendar month (except where the **Commissioner** approves in writing the submission of invoices on a more frequent basis and for invoices relating to **Work** performed pursuant to a change order), the **Contractor** may submit to the **Engineer** a requisition for a partial payment in the prescribed form, which shall contain an estimate of the quantity and the fair value of the **Work** done during the payment period.
- 42.2 Partial payments may be made for materials, fixtures, and equipment in advance of their actual incorporation in the **Work**, as the **Commissioner** may approve, and upon the terms and conditions set forth in the General Conditions.

- 42.3 The **Contractor** shall also submit to the **Commissioner** in connection with every application for partial payment a verified statement in the form prescribed by the **Comptroller** setting forth the information required under Labor Law Section 220-a.
- 42.4 Within thirty (30) **Days** after receipt of a satisfactory payment application, and within sixty (60) **Days** after receipt of a satisfactory payment application in relation to **Work** performed pursuant to a change order, the **Engineer** will prepare and certify, and the **Commissioner** will approve, a voucher for a partial payment in the amount of such approved estimate, less any and all deductions authorized to be made by the **Commissioner** under the terms of this **Contract** or by **Law**.

ARTICLE 43. PROMPT PAYMENT

- 43.1 The Prompt Payment provisions of the **PPB** Rules in effect at the time of the bid will be applicable to payments made under this **Contract**. The provisions require the payment to the **Contractor** of interest on payments made after the required payment date, except as set forth in the **PPB** Rules.
- 43.2 The Contractor shall submit a proper invoice to receive payment, except where the Contract provides that the Contractor will be paid at predetermined intervals without having to submit an invoice for each scheduled payment.
 - 43.3 Determination of interest due will be made in accordance with the **PPB** Rules.
- 43.4 If the **Contractor** is paid interest, the proportionate share(s) of that interest shall be forwarded by the **Contractor** to its **Subcontractor**(s).
- 43.5 The Contractor shall pay each Subcontractor or Materialman not later than seven (7) Days after receipt of payment out of amounts paid to the Contractor by the City for Work performed by the Subcontractor or Materialman under this Contract.
 - 43.5.1 If Contractor fails to make any payment to any Subcontractor or Materialman within seven (7) Days after receipt of payment by the City pursuant to this Article 43.5, then the Contractor shall pay interest on amounts due to such Subcontractor or Materialman at the rate of interest in effect on the date such payment is made by the Contractor computed in accordance with Section 756-b (1)(b) of the New York General Business Law. Accrual of interest shall commence on the Day immediately following the expiration of the seventh Day following receipt of payment by the Contractor from the City and shall end on the date on which payment is made.
- 43.6 The Contractor shall include in each of its subcontracts a provision requiring each Subcontractor to make payment to each of its Subcontractors or Materialmen for Work performed under this Contract in the same manner and within the same time period set forth above.

ARTICLE 44. SUBSTANTIAL COMPLETION PAYMENT

- 44.1 The Contractor shall submit with the Substantial Completion requisition:
 - 44.1.1 A final verified statement of any pending Article 27 disputes in accordance with the **PPB** Rules and this **Contract** and any and all alleged claims against the **City**, in any way connected with or arising out of this **Contract** (including those as to which details may have been furnished pursuant to Articles 11, 27, 28, and 30) setting forth with respect to each

such claim the total amount thereof, the various items of labor and materials included therein, and the alleged value of each item; and if the alleged claim be one for delay, the alleged cause of each such delay, the period or periods of time, giving the dates when the **Contractor** claims the performance of the **Work** or a particular part thereof was delayed, and an itemized statement and breakdown of the amount claimed for each such delay.

44.1.1(a) With respect to each such claim, the Commissioner, the Comptroller and, in the event of litigation, the City Corporation Counsel shall have the same right to inspect, and to make extracts or copies of, the Contractor's books, vouchers, records, etc., as is referred to in Articles 11, 27, 28, and 30. Nothing contained in this Article 44.1.1(a) is intended to or shall relieve the Contractor from the obligation of complying strictly with Articles 11, 27, 28, and 30. The Contractor is warned that unless such claims are completely set forth as herein required, the Contractor upon acceptance of the Substantial Completion payment pursuant to this Article 44, will have waived any such claims.

44.1.2 A Final Approved Punch List.

- 44.1.3 Where required, a request for an extension of time to achieve **Substantial** Completion or final extension of time.
- 44.2 The Commissioner shall issue a voucher calling for payment of any part or all of the balance due for Work performed under the Contract, including monies retained under Article 21, less any and all deductions authorized to be made by the Commissioner, under this Contract or by Law, and less twice the amount the Commissioner considers necessary to ensure the completion of the balance of the Work by the Contractor. Such a payment shall be considered a partial and not a final payment. No Substantial Completion payment shall be made under this Article 44 where the Contractor failed to complete the Work within the time fixed for such completion in the Schedule A of the General Conditions, or within the time to which completion may have been extended, until an extension or extensions of time for the completion of Work have been acted upon pursuant to Article 13.
- 44.3 No further partial payments shall be made to the Contractor after Substantial Completion, except the Substantial Completion payment and payment pursuant to any Contractor's requisition that were properly filed with the Commissioner prior to the date of Substantial Completion; however, the Commissioner may grant a waiver for further partial payments after the date of Substantial Completion to permit payments for change order Work and/or release of retainage and deposits pursuant to Articles 21 and 24. Such waiver shall be in writing.
- 44.4 The **Contractor** acknowledges that nothing contained in this Article 44 is intended to or shall in any way diminish the force and effect of Article 13.

ARTICLE 45. FINAL PAYMENT

45.1 After completion and Final Acceptance of the Work, the Contractor shall submit all required certificates and documents, together with a requisition for the balance claimed to be due under the Contract, less the amount authorized to be retained for maintenance under Article 24. Such submission shall be within 90 days of the date of the Commissioner's written determination of Final Acceptance, or within such additional time as may be granted by the Commissioner in writing. If the Contractor fails to submit all required certificates and documents within the time allowed, no payment of the balance claimed shall be made to the Contractor and the Contractor shall be deemed to have forfeited its right to

payment of any balance claimed. A verified statement similar to that required in connection with applications for partial payments shall also be submitted to the Commissioner.

- 45.2 Amended Verified Statement of Claims: The Contractor shall also submit with the final requisition any amendments to the final verified statement of any pending dispute resolution procedures in accordance with the PPB Rules and this Contract and any and all alleged claims against the City, in any way connected with or arising out of this Contract (including those as to which details may have been furnished pursuant to Articles 11, 27, 28, and 30) that have occurred subsequent to Substantial Completion, setting forth with respect to each such claim the total amount thereof, the various items of labor and materials included therein, and the alleged value of each such item; and if the alleged claim be one for delay, the alleged cause of each such delay, the period or periods of time, giving the dates when the Contractor claims the performance of the Work or a particular part thereof was delayed, and an itemized statement and breakdown of the amount claimed for each such delay. With reference to each such claim, the Commissioner, the Comptroller and, in the event of litigation, the City Corporation Counsel shall have the same right to inspect, and to make extracts or copies of, the Contractor's books, vouchers, records, etc., as is referred to in Articles 11, 27, 28, and 30. Nothing contained in this Article 45.2, is intended to or shall relieve the Contractor from the obligation of complying strictly with Articles 11, 27, 28, and 30. The Contractor is warned that unless such claims are completely set forth as herein required, the Contractor, upon acceptance of the Final Payment pursuant to Article 46, will have waived any such claims.
- 45.3 Preparation of Final Voucher: Upon determining the balance due hereunder other than on account of claims, the Engineer will prepare and certify, for the Commissioner's approval, a voucher for final payment in that amount less any and all deductions authorized to be made by the Commissioner under this Contract or by Law. In the case of a lump sum Contract, the Commissioner shall certify the voucher for final payment within thirty (30) Days from the date of completion and acceptance of the Work, provided all requests for extensions of time have been acted upon.
 - 45.3.1 All prior certificates and vouchers upon which partial payments were made, being merely estimates made to enable the Contractor to prosecute the Work more advantageously, shall be subject to correction in the final voucher, and the certification of the Engineer thereon and the approval of the Commissioner thereof, shall be conditions precedent to the right of the Contractor to receive any money hereunder. Such final voucher shall be binding and conclusive upon the Contractor.
 - 45.3.2 Payment pursuant to such final voucher, less any deductions authorized to be made by the Commissioner under this Contract or by Law, shall constitute the final payment, and shall be made by the Comptroller within thirty (30) Days after the filing of such voucher in his/her office.
- 45.4 The Contractor acknowledges that nothing contained in this Article 45 is intended to or shall in any way diminish the force and effect of Article 13.

ARTICLE 46. ACCEPTANCE OF FINAL PAYMENT

46.1 The acceptance by the Contractor, or by anyone claiming by or through it, of the final payment, whether such payment be made pursuant to any judgment of any court, or otherwise, shall constitute and operate as a release of the City from any and all claims of and liability to the Contractor for anything heretofore done or furnished for the Contractor relating to or arising out of this Contract and the Work done hereunder, and for any prior act, neglect or default on the part of the City or any of its officials, agents or employees, excepting only a claim against the City for the amounts deducted or retained in accordance with the terms and provisions of this Contract or by Law, and excepting any STANDARD CONSTRUCTION CONTRACT CITY OF NEW YORK 61 December 2013

claims, not otherwise waived, or any pending dispute resolution procedures which are contained in the verified statement filed with the Contractor's substantial and final requisitions pursuant to Articles 44 and 45.

- 46.2 The Contractor is warned that the execution by it of a release, in connection with the acceptance of the final payment, containing language purporting to reserve claims other than those herein specifically excepted from the operation of this Article 46, or those for amounts deducted by the Commissioner from the final requisition or from the final payment as certified by the Engineer and approved by the Commissioner, shall not be effective to reserve such claims, anything stated to the Contractor orally or in writing by any official, agent or employee of the City to the contrary notwithstanding.
- 46.3 Should the Contractor refuse to accept the final payment as tendered by the Comptroller, it shall constitute a waiver of any right to interest thereon.
- 46.4 The Contractor, however, shall not be barred by this Article 46 from commencing an action for breach of Contract to the extent permitted by Law and by the terms of the Contract for any claims that are contained in the verified statement filed with the Contractor's substantial and final requisitions pursuant to Articles 44 and 45 or that arose after submission of the final payment requisition, provided that a detailed and verified statement of claim is served upon the contracting Agency and Comptroller not later than forty (40) Days after the making of such final payment by electronic funds transfer (EFT) or the mailing of such final payment. The statement shall specify the items upon which the claim will be based and any such claim shall be limited to such items.

ARTICLE 47. APPROVAL BY PUBLIC DESIGN COMMISSION

47.1 All works of art, including paintings, mural decorations, stained glass, statues, bas-reliefs, and other sculptures, monuments, fountains, arches, and other structures of a permanent character intended for ornament or commemoration, and every design of the same to be used in the performance of this Contract, and the design of all bridges, approaches, buildings, gates, fences, lamps, or structures to be erected, pursuant to the terms of this Contract, shall be submitted to the Art Commission, d/b/a the Public Design Commission of the City of New York, and shall be approved by the Public Design Commission prior to the erection or placing in position of the same. The final payment shall not become due or payable under this Contract unless and until the Public Design Commission shall certify that the design for the Work herein contracted for has been approved by the said Public Design Commission, and that the same has been executed in substantial accordance with the design so approved, pursuant to the provisions of Chapter 37, Section 854 of the City Charter, as amended.

CHAPTER X **CONTRACTOR'S DEFAULT**

ARTICLE 48. COMMISSIONER'S RIGHT TO DECLARE CONTRACTOR IN DEFAULT

- In addition to those instances specifically referred to in other Articles herein, the 48.1 Commissioner shall have the right to declare the Contractor in default of this Contract if:
 - 48.1.1 The Contractor fails to commence Work when notified to do so by the Commissioner; or if
 - 48.1.2 The Contractor shall abandon the Work; or if

- 48.1.3 The **Contractor** shall refuse to proceed with the **Work** when and as directed by the **Commissioner**; or if
- 48.1.4 The Contractor shall, without just cause, reduce its working force to a number which, if maintained, would be insufficient, in the opinion of the Commissioner, to complete the Work in accordance with the progress schedule; or if
- 48.1.5 The Contractor shall fail or refuse to increase sufficiently such working force when ordered to do so by the Commissioner; or if
- 48.1.6 The Contractor shall sublet, assign, transfer, convert or otherwise dispose of this Contract other than as herein specified; or sell or assign a majority interest in the Contractor; or if
- 48.1.7 The Contractor fails to secure and maintain all required insurance; or if
- 48.1.8 A receiver or receivers are appointed to take charge of the Contractor's property or affairs; or if
- 48.1.9 The Commissioner shall be of the opinion that the Contractor is or has been unnecessarily or unreasonably or willfully delaying the performance and completion of the Work, or the award of necessary subcontracts, or the placing of necessary material and equipment orders; or if
- 48.1.10 The Commissioner shall be of the opinion that the Contractor is or has been willfully or in bad faith violating any of the provisions of this Contract; or if
- 48.1.11 The Commissioner shall be of the opinion that the Work cannot be completed within the time herein provided therefor or within the time to which such completion may have been extended; provided, however, that the impossibility of timely completion is, in the Commissioner's opinion, attributable to conditions within the Contractor's control; or if
- 48.1.12 The Work is not completed within the time herein provided therefor or within the time to which the Contractor may be entitled to have such completion extended; or if
- 48.1.13 Any statement or representation of the Contractor in the Contract or in any document submitted by the Contractor with respect to the Work, the Project, or the Contract (or for purposes of securing the Contract) was untrue or incorrect when made; or if
- 48.1.14 The Contractor or any of its officers, directors, partners, five (5%) percent shareholders, principals, or other persons substantially involved in its activities, commits any of the acts or omissions specified as the grounds for debarment in the **PPB** Rules.
- 48.2 Before the Commissioner shall exercise his/her right to declare the Contractor in default, the Commissioner shall give the Contractor an opportunity to be heard, upon not less than two (2) Days notice.

ARTICLE 49. EXERCISE OF THE RIGHT TO DECLARE DEFAULT

- 49.1 The right to declare the **Contractor** in default for any of the grounds specified or referred to in Article 48 shall be exercised by sending the **Contractor** a notice, signed by the **Commissioner**, setting forth the ground or grounds upon which such default is declared (hereinafter referred to as a "Notice of Default").
- 49.2 The Commissioner's determination that the Contractor is in default shall be conclusive, final, and binding on the parties and such a finding shall preclude the Contractor from commencing a plenary action for any damages relating to the Contract. If the Contractor protests the determination of the Commissioner, the Contractor may commence an action in a court of competent jurisdiction of the State of New York under Article 78 of the New York Civil Practice Law and Rules.

ARTICLE 50. QUITTING THE SITE

50.1 Upon receipt of such notice the **Contractor** shall immediately discontinue all further operations under this **Contract** and shall immediately quit the **Site**, leaving untouched all plant, materials, equipment, tools, and supplies then on the **Site**.

ARTICLE 51. COMPLETION OF THE WORK

- 51.1 The Commissioner, after declaring the Contractor in default, may then have the Work completed by such means and in such manner, by contract with or without public letting, or otherwise, as he/she may deem advisable, utilizing for such purpose such of the Contractor's plant, materials, equipment, tools, and supplies remaining on the Site, and also such Subcontractors, as he/she may deem advisable.
- 51.2 After such completion, the **Commissioner** shall make a certificate stating the expense incurred in such completion, which shall include the cost of re-letting and also the total amount of liquidated damages (at the rate provided for in the **Contract**) from the date when the **Work** should have been completed by the **Contractor** in accordance with the terms hereof to the date of actual completion of the **Work**. Such certificate shall be binding and conclusive upon the **Contractor**, its sureties, and any person claiming under the **Contractor**, as to the amount thereof.
- 51.3 The expense of such completion, including any and all related and incidental costs, as so certified by the **Commissioner**, and any liquidated damages assessed against the **Contractor**, shall be charged against and deducted out of monies which are earned by the **Contractor** prior to the date of default. Should the expense of such completion, as certified by the **Commissioner**, exceed the total sum which would have been payable under the **Contract** if it had been completed by the **Contractor**, any excess shall be paid by the **Contractor**.

ARTICLE 52. PARTIAL DEFAULT

52.1 In case the Commissioner shall declare the Contractor in default as to a part of the Work only, the Contractor shall discontinue such part, shall continue performing the remainder of the Work in strict conformity with the terms of this Contract, and shall in no way hinder or interfere with any Other

Contractor(s) or persons whom the Commissioner may engage to complete the Work as to which the Contractor was declared in default.

52.2 The provisions of this Chapter relating to declaring the Contractor in default as to the entire Work shall be equally applicable to a declaration of partial default, except that the Commissioner shall be entitled to utilize for completion of the part of the Work as to which the Contractor was declared in default only such plant, materials, equipment, tools, and supplies as had been previously used by the Contractor on such part.

ARTICLE 53. PERFORMANCE OF UNCOMPLETED WORK

53.1 In completing the whole or any part of the **Work** under the provisions of this Chapter X, the **Commissioner** shall have the power to depart from or change or vary the terms and provisions of this **Contract**, provided, however, that such departure, change or variation is made for the purpose of reducing the time or expense of such completion. Such departure, change or variation, even to the extent of accepting a lesser or different performance, shall not affect the conclusiveness of the **Commissioner's** certificate of the cost of completion referred to in Article 51, nor shall it constitute a defense to an action to recover the amount by which such certificate exceeds the amount which would have been payable to the **Contractor** hereunder but for its default.

ARTICLE 54. OTHER REMEDIES

- 54.1 In addition to the right to declare the **Contractor** in default pursuant to this Chapter X, the **Commissioner** shall have the absolute right, in his/her sole discretion and without a hearing, to complete or cause to be completed in the same manner as described in Articles 51 and 53, any or all unsatisfactory or uncompleted punch list **Work** that remains after the completion date specified in the **Final Approved Punch List**. A written notice of the exercise of this right shall be sent to the **Contractor** who shall immediately quit the **Site** in accordance with the provisions of Article 50.
- 54.2 The expense of completion permitted under Article 54.1, including any and all related and incidental costs, as so certified by the **Commissioner**, shall be charged against and deducted out of monies which have been earned by the **Contractor** prior to the date of the exercise of the right set forth in Article 54.1; the balance of such monies, if any, subject to the other provisions of this **Contract**, to be paid to the **Contractor** without interest after such completion. Should the expense of such completion, as certified by the **Commissioner**, exceed the total sum which would have been payable under the **Contract** if it had been completed by the **Contractor**, any excess shall be paid by the **Contractor**.
- 54.3 The previous provisions of this Chapter X shall be in addition to any and all other remedies available under **Law** or in equity.
- 54.4 The exercise by the **City** of any remedy set forth herein shall not be deemed a waiver by the **City** of any other legal or equitable remedy contained in this **Contract** or provided under **Law**.

CHAPTER XI MISCELLANEOUS PROVISIONS

ARTICLE 55. CONTRACTOR'S WARRANTIES

- 55.1 In consideration of, and to induce, the award of this **Contract** to the **Contractor**, the **Contractor** represents and warrants:
 - 55.1.1 That it is financially solvent, sufficiently experienced and competent to perform the **Work**; and
 - 55.1.2 That the facts stated in its bid and the information given by it pursuant to the Information for Bidders is true and correct in all respects; and
 - 55.1.3 That it has read and complied with all requirements set forth in the **Contract**.

ARTICLE 56. CLAIMS AND ACTIONS THEREON

- 56.1 Any claim, that is not subject to dispute resolution under the **PPB** Rules or this **Contract**, against the **City** for damages for breach of **Contract** shall not be made or asserted in any action, unless the **Contractor** shall have strictly complied with all requirements relating to the giving of notice and of information with respect to such claims, as herein before provided.
- 56.2 Nor shall any action be instituted or maintained on any such claims unless such action is commenced within six (6) months after **Substantial Completion**; except that:
 - 56.2.1 Any claims arising out of events occurring after Substantial Completion and before Final Acceptance of the Work shall be asserted within six (6) months of Final Acceptance of the Work;
 - 56.2.2 Any claims for monies deducted, retained or withheld under the provisions of this **Contract** shall be asserted within six (6) months after the date when such monies otherwise become due and payable hereunder; and
 - 56.2.3 If the Commissioner exercises his/her right to terminate the Contract pursuant to Article 64, any such action shall be commenced within six (6) months of the date the Commissioner exercises said right.

ARTICLE 57. INFRINGEMENT

57.1 The Contractor shall be solely responsible for and shall defend, indemnify, and hold the City harmless from any and all claims (even if the allegations of the lawsuit are without merit) and judgments for damages and from costs and expenses to which the City may be subject to or which it may suffer or incur allegedly arising out of or in connection with any infringement by the Contractor of any copyright, trade secrets, trademark or patent rights or any other property or personal right of any third party by the Contractor and/or its Subcontractors in the performance or completion of the Work. Insofar as the facts or Law relating to any claim would preclude the City from being completely indemnified by the Contractor, the City shall be partially indemnified by the Contractor to the fullest extent permitted by Law.

ARTICLE 58. NO CLAIM AGAINST OFFICIALS, AGENTS OR EMPLOYEES

58.1 No claim whatsoever shall be made by the Contractor against any official, agent or employee of the City for, or on account of, anything done or omitted to be done in connection with this Contract.

ARTICLE 59. SERVICE OF NOTICES

- 59.1 The Contractor hereby designates the business address, fax number, and email address specified in its bid, as the place where all notices, directions or other communications to the Contractor may be delivered, or to which they may be mailed. Any notice, direction, or communication from either party to the other shall be in writing and shall be deemed to have been given when (i) delivered personally; (ii) sent by certified mail, return receipt requested; (iii) delivered by overnight or same day courier service in a properly addressed envelope with confirmation; or (iv) sent by fax or email and, unless receipt of the fax or e-mail is acknowledged by the recipient by fax or e-mail, deposited in a post office box regularly maintained by the United States Postal Service in a properly addressed, postage prepaid envelope.
- 59.2 Contractor's notice address, email address, or fax number may be changed at any time by an instrument in writing, executed and acknowledged by the Contractor, and delivered to the Commissioner.
- 59.3 Nothing herein contained shall, however, be deemed to preclude or render inoperative the service of any notice, direction or other communication upon the Contractor personally, or, if the Contractor is a corporation, upon any officer thereof.

ARTICLE 60. UNLAWFUL PROVISIONS DEEMED STRICKEN FROM CONTRACT

60.1 If this Contract contains any unlawful provision not an essential part of the Contract and which shall not appear to have been a controlling or material inducement to the making thereof, the same shall be deemed of no effect and shall, upon notice by either party, be deemed stricken from the Contract without affecting the binding force of the remainder.

ARTICLE 61. ALL LEGAL PROVISIONS DEEMED INCLUDED

61.1 It is the intent and understanding of the parties to this Contract that each and every provision of Law required to be inserted in this Contract shall be and is inserted herein. Furthermore, it is hereby stipulated that every such provision is to be deemed to be inserted herein, and if, through mistake or otherwise, any such provision is not inserted, or is not inserted in correct form, then this Contract shall forthwith upon the application of either party be amended by such insertion so as to comply strictly with the Law and without prejudice to the rights of either party hereunder.

ARTICLE 62. TAX EXEMPTION

62.1 The City is exempt from payment of Federal, State, and local taxes, including sales and compensating use taxes of the State of New York and its cities and counties on all tangible personal property sold to the City pursuant to the provisions of this Contract. These taxes are not to be included in bids. However, this exemption does not apply to tools, machinery, equipment or other property leased by or to the Contractor, Subcontractor or Materialman or to tangible personal property which, even STANDARD CONSTRUCTION CONTRACT CITY OF NEW YORK 67 December 2013

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though it is consumed, is not incorporated into the completed **Work** (consumable supplies) and tangible personal property that the **Contractor** is required to remove from the **Site** during or upon completion of the **Work**. The **Contractor** and its **Subcontractors** and **Materialmen** shall be responsible for and pay any and all applicable taxes, including sales and compensating use taxes, on such leased tools, machinery, equipment or other property and upon all such consumable supplies and tangible personal property that the **Contractor** is required to remove from the **Site** during or upon completion of the **Work**.

- 62.2 The Contractor agrees to sell and the City agrees to purchase all tangible personal property, other than consumable supplies and other tangible personal property that the Contractor is required to remove from the Site during or upon completion of the Work, that is required, necessary or proper for or incidental to the construction of the Project covered by this Contract. The sum paid under this Contract for such tangible personal property shall be in full payment and consideration for the sale of such tangible personal property.
 - 62.2.1 The Contractor agrees to construct the Project and to perform all Work, labor and services rendered, necessary, proper or incidental thereto for the sum shown in the bid for the performance of such Work, labor, and services, and the sum so paid pursuant to this Contract for such Work, labor, and services, shall be in full consideration for the performance by the Contractor of all its duties and obligations under this Contract in connection with said Work, labor, and services.
- 62.3 20 NYCRR Section 541.3(d) provides that a **Contractor**'s purchases of tangible personal property that is either incorporated into real property owned by a governmental entity or purchased for and sold to a governmental entity are exempt from sales and use tax. The **City** shall not pay sales tax for any such tangible personal property that it purchases from the **Contractor** pursuant to the **Contract.** With respect to such tangible personal property, the **Contractor**, at the request of the **City**, shall furnish to the **City** such bills of sale and other instruments as may be required by the **City**, properly executed, acknowledged and delivered assuring to the **City** title to such tangible personal property, free of liens and/or encumbrances, and the **Contractor** shall mark or otherwise identify all such tangible personal property as the property of the **City**.
- 62.4 Title to all tangible personal property to be sold by the **Contractor** to the **City** pursuant to the provisions of the **Contract** shall immediately vest in and become the sole property of the **City** upon delivery of such tangible personal property to the **Site**. Notwithstanding such transfer of title, the **Contractor** shall have the full and continuing responsibility to install such tangible personal property in accordance with the provisions of this **Contract**, protect it, maintain it in a proper condition and forthwith repair, replace and make good any damage thereto, theft or disappearance thereof, and furnish additional tangible personal property in place of any that may be lost, stolen or rendered unusable, without cost to the **City**, until such time as the **Work** covered by the **Contract** is fully accepted by the **City**. Such transfer of title shall in no way affect any of the **Contractor's** obligations hereunder. In the event that, after title has passed to the **City**, any of the tangible personal property is rejected as being defective or otherwise unsatisfactory, title to all such tangible personal property shall be deemed to have been transferred back to the **Contractor**.
- 62.5 The purchase by **Subcontractors** or **Materialmen** of tangible personal property to be sold hereunder shall be a purchase or procurement for resale to the **Contractor** (either directly or through other **Subcontractors**) and therefore not subject to the aforesaid sales and compensating use taxes, provided that the subcontracts and purchase agreements provide for the resale of such tangible personal property and that such subcontracts and purchase agreements are in a form similar to this **Contract** with respect to the separation of the sale of consumable supplies and tangible personal property that the **Contractor** is required to remove from the **Site** during or upon completion of the **Work** from the **Work** and labor, services, and any other matters to be provided, and provided further that the subcontracts and

purchase agreements provide separate prices for tangible personal property and all other services and matters. Such separation shall actually be followed in practice, including the separation of payments for tangible personal property from the payments for other **Work** and labor and other things to be provided.

- 62.6 The **Contractor** and its **Subcontractors** and **Materialmen** shall furnish a **Contractor** Exempt Purchase Certificate to all persons, firms or corporations from which they purchase tangible personal property for the performance of the **Work** covered by this **Contract**.
- 62.7 In the event any of the provisions of this Article 62 shall be deemed to be in conflict with any other provisions of this **Contract** or create any ambiguity, then the provisions of this Article 62 shall control.

ARTICLE 63. INVESTIGATION(S) CLAUSE

- 63.1 The parties to this **Contract** agree to cooperate fully and faithfully with any investigation, audit or inquiry conducted by a United States, a State of New York (State) or a **City** governmental agency or authority that is empowered directly or by designation to compel the attendance of witnesses and to examine witnesses under oath, or conducted by the Inspector General of a governmental agency that is a party in interest to the transaction, submitted bid, submitted proposal, contract, lease, permit or license that is the subject of the investigation, audit or inquiry.
- 63.2 If any person who has been advised that his/her statement, and any information from such statement, will not be used against him/her in any subsequent criminal proceeding refuses to testify before a grand jury or other governmental agency or authority empowered directly or by designation to compel the attendance of witnesses and to examine witnesses under oath concerning the award of or performance under any transaction, agreement, lease, permit, contract, or license entered into with the City, the State, or any political subdivision or public authority thereof, or the Port Authority of New York and New Jersey, or any local development corporation within the City, or any public benefit corporation organized under the Laws of the State of New York, or;
- 63.3 If any person refuses to testify for a reason other than the assertion of his/her privilege against self incrimination in an investigation, audit or inquiry conducted by a **City** or State governmental agency or authority empowered directly or by designation to compel the attendance of witnesses and to take testimony under oath, or by the Inspector General of the governmental agency that is a party in interest in, and is seeking testimony concerning the award of, or performance under any transaction, agreement, lease, permit, contract, or license entered into with the **City**, the State, or any political subdivision thereof or any local development corporation within the **City**, then;
- 63.4 The **Commissioner** whose **Agency** is a party in interest to the transaction, submitted bid, submitted proposal, contract, lease, permit, or license shall convene a hearing, upon not less than five (5) **Days**' written notice to the parties involved to determine if any penalties should attach for the failure of a person to testify.
- 63.5 If any non-governmental party to the hearing requests an adjournment, the **Commissioner** who convened the hearing may, upon granting the adjournment, suspend any contract, lease, permit, or license, pending the final determination pursuant to Article 63.7 without the **City** incurring any penalty or damages for delay or otherwise.
- 63.6 The penalties which may attach after a final determination by the **Commissioner** may include but shall not exceed:

- 63.6.1 The disqualification for a period not to exceed five (5) years from the date of an adverse determination for any person, or any entity of which such person was a member at the time the testimony was sought, from submitting bids for, or transacting business with, or entering into or obtaining any contract, lease, permit or license with or from the City; and/or
- 63.6.2 The cancellation or termination of any and all such existing City contracts, leases, permits or licenses that the refusal to testify concerns and that have not been assigned as permitted under this Contract, nor the proceeds of which pledged, to an unaffiliated and unrelated institutional lender for fair value prior to the issuance of the notice scheduling the hearing, without the City incurring any penalty or damages on account of such cancellation or termination; monies lawfully due for goods delivered, work done, rentals, or fees accrued prior to the cancellation or termination shall be paid by the City.
- 63.7 The **Commissioner** shall consider and address in reaching his/her determination and in assessing an appropriate penalty the factors in Articles 63.7.1 and 63.7.2. The **Commissioner** may also consider, if relevant and appropriate, the criteria established in Articles 63.7.3 and 63.7.4, in addition to any other information which may be relevant and appropriate:
 - 63.7.1 The party's good faith endeavors or lack thereof to cooperate fully and faithfully with any governmental investigation or audit, including but not limited to the discipline, discharge, or disassociation of any person failing to testify, the production of accurate and complete books and records, and the forthcoming testimony of all other members, agents, assignees or fiduciaries whose testimony is sought.
 - 63.7.2 The relationship of the person who refused to testify to any entity that is a party to the hearing, including but not limited to, whether the person whose testimony is sought has an ownership interest in the entity and/or the degree of authority and responsibility the person has within the entity.
 - 63.7.3 The nexus of the testimony sought to the subject entity and its contracts, leases, permits or licenses with the City.
 - 63.7.4 The effect a penalty may have on an unaffiliated and unrelated party or entity that has a significant interest in an entity subject to penalties under Article 63.6, provided that the party or entity has given actual notice to the **Commissioner** upon the acquisition of the interest, or at the hearing called for in Article 63.4, gives notice and proves that such interest was previously acquired. Under either circumstance the party or entity shall present evidence at the hearing demonstrating the potential adverse impact a penalty will have on such person or entity.

63.8 Definitions:

- 63.8.1 The term "license" or "permit" as used in this Article 63 shall be defined as a license, permit, franchise or concession not granted as a matter of right.
- 63.8.2 The term "person" as used in this Article 63 shall be defined as any natural person doing business alone or associated with another person or entity as a partner, director, officer, principal or employee.
- 63.8.3 The term "entity" as used in this Article 63 shall be defined as any firm, partnership, corporation, association, joint venture, or person that receives monies, benefits, licenses, leases, or permits from or through the City or otherwise transacts business with the City.

- 63.8.4 The term "member" as used in this Article 63 shall be defined as any person associated with another person or entity as a partner, director, officer, principal or employee.
- 63.9 In addition to and notwithstanding any other provision of this Contract, the Commissioner may in his/her sole discretion terminate this Contract upon not less than three (3) Days' written notice in the event the Contractor fails to promptly report in writing to the Commissioner of the Department of Investigations ("DOI") of the City any solicitation of money, goods, requests for future employment or other benefit or thing of value, by or on behalf of any employee of the City or other person, firm, corporation or entity for any purpose which may be related to the procurement or obtaining of this Contract by the Contractor, or affecting the performance of this Contract.

ARTICLE 64. TERMINATION BY THE CITY

- 64.1 In addition to termination pursuant to any other article of this Contract, the Commissioner may, at any time, terminate this Contract by written notice to the Contractor. In the event of termination, the Contractor shall, upon receipt of such notice, unless otherwise directed by the Commissioner:
 - 64.1.1 Stop Work on the date specified in the notice;
 - 64.1.2 Take such action as may be necessary for the protection and preservation of the City's materials and property;
 - 64.1.3 Cancel all cancelable orders for material and equipment;
 - 64.1.4 Assign to the City and deliver to the Site or another location designated by the Commissioner, any non-cancelable orders for material and equipment that is not capable of use except in the performance of this Contract and has been specifically fabricated for the sole purpose of this Contract and not incorporated in the Work;
 - 64.1.5 Take no action which will increase the amounts payable by the City under this Contract.
- 64.2 In the event of termination by the **City** pursuant to this Article 64, payment to the **Contractor** shall be in accordance with Articles 64.2.1, 64.2.2 or 64.2.3, to the extent that each respective article applies.
 - 64.2.1 Lump Sum Contracts or Items: On all lump sum Contracts, or on lump sum items in a Contract, the City will pay the Contractor the sum of the amounts described in Articles 64.2.1(a) and 64.2.1(b), less all payments previously made pursuant to this Contract. On lump sum Contracts only, the City will also pay the Contractor an additional sum as provided in Article 64.2.1(c).
 - 64.2.1(a) For Work completed prior to the notice of termination, the Contractor shall be paid a pro rata portion of the lump sum bid amount, plus approved change orders, based upon the percent completion of the Work, as determined by the Commissioner. For the purpose of determining the pro rata portion of the lump sum bid amount to which the Contractor is entitled, the bid breakdown submitted in accordance with Article 41 shall be considered, but shall not be dispositive. The Commissioner's determination hereunder shall be final, binding, and conclusive.

- 64.2.1(b) For non-cancelable material and equipment that is not capable of use except in the performance of this **Contract** and has been specifically fabricated for the sole purpose of this **Contract**, but not yet incorporated in the **Work**, the **Contractor** shall be paid the lesser of the following, less salvage value:
 - 64.2.1(b)(i) The Direct Cost, as defined in Article 64.2.4; or
 - 64.2.1(b)(ii) The fair and reasonable value, if less than Direct Cost, of such material and equipment, plus necessary and reasonable delivery costs.
 - 64.2.1(b)(iii) In addition, the **Contractor** shall be paid five (5%) percent of the amount described in Article 64.2.1(b)(i) or Article 64.2.1(b)(ii), whichever applies.
- 64.2.1(c) Except as otherwise provided in Article 64.2.1(d), on all lump sum Contracts, the Contractor shall be paid the percentage indicated below applied to the difference between the total lump sum bid amount and the total of all payments made prior to the notice of termination plus all payments allowed pursuant to Articles 64.2.1(a) and 64.2.1(b):
 - 64.2.1(c)(i) Five (5%) percent of the first five million (\$5,000,000) dollars; and
 - 64.2.1(c)(ii) Three (3%) percent of any amount between five million (\$5,000,000) dollars and fifteen million (\$15,000,000) dollars; plus
 - 64.2.1(c)(iii) One (1%) percent of any amount over fifteen million (\$15,000,000) dollars.
- 64.2.1(d) In the event the City terminates a lump sum Contract pursuant to this Article 64 within ninety (90) Days after registration of the Contract with the Comptroller, the Contractor shall be paid one (1%) percent of the difference between the lump sum bid amount and the total of all payments made pursuant to this Article 64.2.
- 64.2.2 Unit Price Contracts or Items: On all unit price Contracts, or on unit price items in a Contract, the City will pay the Contractor the sum of the amounts described in Articles 64.2.2(a) and 64.2.2(b), less all payments previously made pursuant to this Contract:
 - 64.2.2(a) For all completed units, the unit price stated in the Contract, and
 - 64.2.2(b) For units that have been ordered but are only partially completed, the **Contractor** will be paid:
 - 64.2.2(b)(i) A pro rata portion of the unit price stated in the **Contract** based upon the percent completion of the unit and
 - 64.2.2(b)(ii) For non-cancelable material and equipment, payment will be made pursuant to Article 64.2.1(b).
- 64.2.3 Time and Materials Contracts or Items Based on Time and Material Records: On all Contracts or items in a Contract where payment for the Work is based on time and

material records, the **Contractor** shall be paid in accordance with Article 26, less all payments previously made pursuant to this **Contract**.

- 64.2.4 Direct Costs: Direct Costs as used in this Article 64.2 shall mean:
 - 64.2.4(a) The actual purchase price of material and equipment, plus necessary and reasonable delivery costs,
 - 64.2.4(b) The actual cost of labor involved in construction and installation at the Site, and
 - 64.2.4(c) The actual cost of necessary bonds and insurance purchased pursuant to requirements of this **Contract** less any amounts that have been or should be refunded by the **Contractor's** sureties or insurance carriers.
 - 64.2.4(d) Direct Costs shall not include overhead.
- 64.3 In no event shall any payments under this Article 64 exceed the Contract price for such items.
- 64.4 All payments pursuant to Article 64 shall be in the nature of liquidated damages and shall be accepted by the **Contractor** in full satisfaction of all claims against the **City**.
- 64.5 The City may deduct or set off against any sums due and payable pursuant to this Article 64, any deductions authorized by this Contract or by Law (including but not limited to liquidated damages) and any claims it may have against the Contractor. The City's exercise of the right to terminate the Contract pursuant to this Article 64 shall not impair or otherwise effect the City's right to assert any claims it may have against the Contractor in a plenary action.
- 64.6 Where the **Work** covered by the **Contract** has been substantially completed, as determined in writing by the **Commissioner**, termination of the **Work** shall be handled as an omission of **Work** pursuant to Articles 29 and 33, in which case a change order will be issued to reflect an appropriate reduction in the **Contract** sum, or if the amount is determined after final payment, such amount shall be paid by the **Contractor**.

ARTICLE 65. CHOICE OF LAW, CONSENT TO JURISDICTION AND VENUE

- 65.1 This Contract shall be deemed to be executed in the City regardless of the domicile of the Contractor, and shall be governed by and construed in accordance with the Laws of the State of New York and the Laws of the United States, where applicable.
- 65.2 The parties agree that any and all claims asserted against the City arising under this Contract or related thereto shall be heard and determined in the courts of the State of New York ("New York State Courts") located in the City and County of New York. To effect this Contract and intent, the Contractor agrees:
 - 65.2.1 If the City initiates any action against the Contractor in Federal court or in a New York State Court, service of process may be made on the Contractor either in person, wherever such Contractor may be found, or by registered mail addressed to the Contractor at its address as set forth in this Contract, or to such other address as the Contractor may provide to the City in writing; and

- 65.2.2 With respect to any action between the **City** and the **Contractor** in a New York State Court, the **Contractor** hereby expressly waives and relinquishes any rights it might otherwise have:
 - 65.2.2(a) To move to dismiss on grounds of forum non conveniens;
 - 65.2.2(b) To remove to Federal Court; and
 - 65.2.2(c) To move for a change of venue to a New York State Court outside New York County.
- 65.2.3 With respect to any action brought by the City against the Contractor in a Federal Court located in the City, the Contractor expressly waives and relinquishes any right it might otherwise have to move to transfer the action to a Federal Court outside the City.
- 65.2.4 If the Contractor commences any action against the City in a court located other than in the City and County of New York, upon request of the City, the Contractor shall either consent to a transfer of the action to a New York State Court of competent jurisdiction located in the City and County of New York or, if the Court where the action is initially brought will not or cannot transfer the action, the Contractor shall consent to dismiss such action without prejudice and may thereafter reinstate the action in a New York State Court of competent jurisdiction in New York County.
- 65.3 If any provision(s) of this Article 65 is held unenforceable for any reason, each and all other provision(s) shall nevertheless remain in full force and effect.

ARTICLE 66. PARTICIPATION IN AN INTERNATIONAL BOYCOTT

- 66.1 The **Contractor** agrees that neither the **Contractor** nor any substantially owned affiliated company is participating or shall participate in an international boycott in violation of the provisions of the Federal Export Administration Act of 1979, as amended, or the regulations of the United States Department of Commerce (Commerce Department) promulgated thereunder.
- 66.2 Upon the final determination by the Commerce Department or any other agency of the United States as to, or conviction of the Contractor or a substantially-owned affiliated company thereof for participation in an international boycott in violation of the provisions of the Export Administration Act of 1979, as amended, or the regulations promulgated thereunder, the Comptroller may, at his/her option, render forfeit and void this Contract.
- 66.3 The **Contractor** shall comply in all respects, with the provisions of Section 6-114 of the Administrative Code and the rules and regulations issued by the **Comptroller** thereunder.

ARTICLE 67. LOCALLY BASED ENTERPRISE PROGRAM

67.1 This **Contract** is subject to the requirements of Section 6-108.1 of the Administrative Code and regulations promulgated thereunder. No construction contract shall be awarded unless and until these requirements have been complied with in their entirety; however, compliance with this Article 67 is not required if the Agency sets Subcontractor Participation Goals for Minority- and Women-Owned Business Enterprises (M/WBEs).

- 67.2 Unless specifically waived by the **Commissioner** with the approval of the Division of Economic and Financial Opportunity of the **City** Department of Business Services, if any portion of the **Contract** is subcontracted, not less than ten (10%) percent of the total dollar amount of the **Contract** shall be awarded to locally based enterprises (LBEs); except that where less than ten (10%) percent of the total dollar amount of the **Contract** is subcontracted, such lesser percentage shall be so awarded.
 - 67.3 The Contractor shall not require performance and payment bonds from LBE Subcontractors.
- 67.4 If the **Contractor** has indicated prior to award that no **Work** will be subcontracted, no **Work** shall be subcontracted without the prior approval of the **Commissioner**, which shall be granted only if the **Contractor** makes a good faith effort beginning at least six (6) weeks before the **Work** is to be performed to obtain LBE **Subcontractors** to perform the **Work**.
- 67.5 If the Contractor has not identified sufficient LBE Subcontractors prior to award, it shall sign a letter of compliance stating that it complies with Section 6-108.1 of the Administrative Code, recognizes that achieving the LBE requirement is a condition of its Contract, and shall submit documentation demonstrating its good faith efforts to obtain LBEs. After award, the Contractor shall begin to solicit LBE's to perform subcontracted Work at least six (6) weeks before the date such Work is to be performed and shall demonstrate that a good faith effort has been made to obtain LBEs on each subcontract until it meets the required percentage.
- 67.6 Failure of the **Contractor** to comply with the requirements of Section 6-108.1 of the Administrative Code and the regulations promulgated thereunder shall constitute a material breach of this **Contract**. Remedy for such breach may include the imposition of any or all of the following sanctions:
 - 67.6.1 Reducing the Contractor's compensation by an amount equal to the dollar value of the percentage of the LBE subcontracting requirement not complied with;
 - 67.6.2 Declaring the Contractor in default;
 - 67.6.3 If the Contractor is an LBE, de-certifying and declaring the Contractor ineligible to participate in the LBE program for a period of up to three (3) years.

ARTICLE 68. ANTITRUST

68.1 The Contractor hereby assigns, sells, and transfers to the City all right, title, and interest in and to any claims and causes of action arising under the antitrust Laws of New York State or of the United States relating to the particular goods or services purchased or procured by the City under this Contract.

ARTICLE 69. MacBRIDE PRINCIPLES PROVISIONS

- 69.1 Notice To All Prospective Contractors:
 - 69.1.1 Local Law No. 34 of 1991 became effective on September 10, 1991 and added Section 6-115.1 of the Administrative Code. The local Law provides for certain restrictions on City Contracts to express the opposition of the people of the City to employment discrimination practices in Northern Ireland to promote freedom of work-place opportunity.
- 69.1.2 Pursuant to Section 6-115.1, prospective Contractors for Contracts to provide goods or services involving an expenditure of an amount greater than ten thousand CITY OF NEW YORK 75 STANDARD CONSTRUCTION CONTRACT December 2013

- (\$10,000.) dollars, or for construction involving an amount greater than fifteen thousand (\$15,000.) dollars, are asked to sign a rider in which they covenant and represent, as a material condition of their **Contract**, that any business operations in Northern Ireland conducted by the **Contractor** and any individual or legal entity in which the **Contractor** holds a ten (10%) percent or greater ownership interest in the **Contractor** will be conducted in accordance with the MacBride Principles of nondiscrimination in employment.
- 69.1.3 Prospective **Contractors** are not required to agree to these conditions. However, in the case of **Contracts** let by competitive sealed bidding, whenever the lowest responsible bidder has not agreed to stipulate to the conditions set forth in this notice and another bidder who has agreed to stipulate to such conditions has submitted a bid within five (5%) percent of the lowest responsible bid for a **Contract** to supply goods, services or contraction of comparable quality, the **Agency** shall refer such bids to the Mayor, the Speaker or other officials, as appropriate, who may determine, in accordance with applicable **Law**, that it is in the best interest of the **City** that the **Contract** be awarded to other than the lowest responsible pursuant to Section 313(b)(2) of the **City** Charter.
- 69.1.4 In the case of **Contracts** let by other than competitive sealed bidding, if a prospective **Contractor** does not agree to these conditions, no **Agency**, elected official or the **City** Council shall award the **Contract** to that bidder unless the **Agency** seeking to use the goods, services or construction certifies in writing that the **Contract** is necessary for the **Agency** to perform its functions and there is no other responsible **Contractor** who will supply goods, services or construction of comparable quality at a comparable price.
- 69.2 In accordance with Section 6-115.1 of the Administrative Code, the **Contractor** stipulates that such **Contractor** and any individual or legal entity in which the **Contractor** holds a ten (10%) percent or greater ownership interest in the **Contractor** either:
 - 69.2.1 Have no business operations in Northern Ireland, or
 - 69.2.2 Shall take lawful steps in good faith to conduct any business operations they have in Northern Ireland in accordance with the MacBride Principles, and shall permit independent monitoring of their compliance with such principles.
 - 69.3 For purposes of this Article, the following terms shall have the following meanings:
 - 69.3.1 "MacBride Principles" shall mean those principles relating to nondiscrimination in employment and freedom of work-place opportunity which require employers doing business in Northern Ireland to:
 - 69.3.1(a) increase the representation of individuals from under-represented religious groups in the workforce, including managerial, supervisory, administrative, clerical and technical jobs;
 - 69.3.1(b) take steps to promote adequate security for the protection of employees from under-represented religious groups both at the work-place and while traveling to and from **Work**;
 - 69.3.1(c) ban provocative religious or political emblems from the workplace;
 - 69.3.1(d) publicly advertise all job openings and make special recruitment efforts to attract applicants from under-represented religious groups;

- 69.3.1(e) establish layoff, recall, and termination procedures which do not in practice favor a particular religious group;
- 69.3.1(f) abolish all job reservations, apprenticeship restrictions and different employment criteria which discriminate on the basis of religion;
- 69.3.1(g) develop training programs that will prepare substantial numbers of current employees from under-represented religious groups for skilled jobs, including the expansion of existing programs and the creation of new programs to train, upgrade, and improve the skills of workers from under-represented religious groups;
- 69.3.1(h) establish procedures to asses, identify, and actively recruit employees from under-represented religious groups with potential for further advancement; and
- 69.3.1(i) appoint a senior management staff member to oversee affirmative action efforts and develop a timetable to ensure their full implementation.
- 69.4 The Contractor agrees that the covenants and representations in Article 69.2 are material conditions to this Contract. In the event the Agency receives information that the Contractor who made the stipulation required by this Article 69 is in violation thereof, the Agency shall review such information and give the Contractor an opportunity to respond. If the Agency finds that a violation has occurred, the Agency shall have the right to declare the Contractor in default in default and/or terminate this Contract for cause and procure supplies, services or Work from another source in the manner the Agency deems proper. In the event of such termination, the Contractor shall pay to the Agency, or the Agency in its sole discretion may withhold from any amounts otherwise payable to the Contractor, the difference between the Contract price for the uncompleted portion of this Contract and the cost to the Agency of completing performance of this Contract either itself or by engaging another Contractor or Contractors. In the case of a requirement Contract, the Contractor shall be liable for such difference in price for the entire amount of supplies required by the Agency for the uncompleted term of Contractor's Contract. In the case of a construction Contract, the Agency shall also have the right to hold the Contractor in partial or total default in accordance with the default provisions of this Contract, and/or may seek debarment or suspension of the Contractor. The rights and remedies of the Agency hereunder shall be in addition to, and not in lieu of, any rights and remedies the Agency has pursuant to this Contract or by operation of Law.

ARTICLE 70. ELECTRONIC FILING/NYC DEVELOPMENT HUB

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

ARTICLE 71. PROHIBITION OF TROPICAL HARDWOODS

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

ARTICLE 72. CONFLICTS OF INTEREST

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

ARTICLE 73. MERGER CLAUSE

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

ARTICLE 74. STATEMENT OF WORK

74.1 The Contractor shall furnish all labor and materials and perform all Work in strict accordance with the Specifications and Addenda thereto, numbered ______.

ARTICLE 75. COMPENSATION TO BE PAID TO CONTRACTOR

ARTICLE 76. ELECTRONIC FUNDS TRANSFER

- 76.1 In accordance with Section 6-107.1 of the Administrative Code, the Contractor agrees to accept payments under this Contract from the City by electronic funds transfer (EFT). An EFT is any transfer of funds, other than a transaction originated by check, draft or similar paper instrument, which is initiated through an electronic terminal, telephonic instrument or computer or magnetic tape so as to order, instruct or authorize a financial institution to debit or credit an account. Prior to the first payment made under this Contract, the Contractor shall designate one financial institution or other authorized payment agent and shall complete the attached "EFT Vendor Payment Enrollment Form" in order to provide the Commissioner of the City Department of Finance with information necessary for the Contractor to receive electronic funds transfer payments through a designated financial institution or authorized payment agent. The crediting of the amount of a payment to the appropriate account on the books of a financial institution or other authorized payment agent designated by the Contractor shall constitute full satisfaction by the City for the amount of the payment under this Contract. The account information supplied by the Contractor to facilitate the electronic funds transfer shall remain confidential to the fullest extent provided by Law.
- 76.2 The Commissioner may waive the application of the requirements of this Article 76 to payments on contracts entered into pursuant to Section 315 of the City Charter. In addition, the Commissioner of the Department of Finance and the Comptroller may jointly issue standards pursuant to CITY OF NEW YORK

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which the **Agency** may waive the requirements of this Article 76 for payments in the following circumstances: (i) for individuals or classes of individuals for whom compliance imposes a hardship; (ii) for classifications of types of checks; or (iii) in other circumstances as may be necessary in the interest of the **City**.

ARTICLE 77. RECORDS RETENTION

77.1 The **Contractor** agrees to retain all books, records, and other documents relevant to this **Contract** for six years after the final payment or termination of this **Contract**, whichever is later. **City**, state, and federal auditors and any other persons duly authorized by the **City** shall have full access to and the right to examine any such books, records, and other documents during the retention period.

ARTICLE 78. PARTICIPATION BY MINORITY-OWNED AND WOMEN-OWNED BUSINESS ENTERPRISES IN CITY PROCUREMENT

NOTICE TO ALL PROSPECTIVE CONTRACTORS

ARTICLE I. M/WBE PROGRAM

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

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

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

PART A

<u>PARTICIPATION GOALS FOR CONSTRUCTION, STANDARD</u> AND PROFESSIONAL SERVICES CONTRACTS OR TASK ORDERS

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

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

2. If **Participation Goals** have been established for this Contract or Task Orders issued pursuant to this Contract, Contractor agrees or shall agree as a material term of the Contract that Contractor shall be subject to the **Participation**

Goals, unless the goals are waived or modified by Agency in accordance with Section 6-129 and Part A, Sections 10 and 11 below, respectively.

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

A Contractor that is a qualified joint venture (as defined in Section 6-129(c)(30)) shall be permitted to count a percentage of its own participation toward fulfillment of the relevant **Participation Goal**. In accordance with Section 6-129, the value of Contractor's participation shall be determined by subtracting from the total value of the Contract or Task Order, as applicable, any amounts that Contractor pays to direct subcontractors, and then multiplying the remainder by the percentage to be applied to total profit to determine the amount to which an MBE or WBE is entitled pursuant to the joint venture agreement, provided that where a participant in a joint venture is certified as both an MBE and a WBE, such amount shall be counted either toward the goal for MBEs or the goal for WBEs, but not both.

- 4. A. If **Participation Goals** have been established for this Contract, a prospective contractor shall be required to submit with its bid or proposal, as applicable, a completed Schedule B, M/WBE Utilization Plan, Part II (see Pages 2-4) indicating: (a) whether the contractor is an MBE or WBE, or qualified joint venture; (b) the percentage of work it intends to award to direct subcontractors; and (c) in cases where the contractor intends to award direct subcontracts, a description of the type and dollar value of work designated for participation by MBEs and/or WBEs, and the time frames in which such work is scheduled to begin and end. In the event that this M/WBE Utilization Plan indicates that the bidder or proposer, as applicable, does not intend to meet the **Participation Goals**, the bid or proposal, as applicable, shall be deemed non-responsive, unless Agency has granted the bidder or proposer, as applicable, a pre- award waiver of the Participation Goals in accordance with Section 6-129 and Part A, Section 10 below.
- B. (i) If this Contract is for a master services agreement or other requirements type contract that will result in the issuance of Task Orders that will be individually registered ("Master Services Agreement") and is subject to M/WBE Participation Goals, a prospective contractor shall be required to submit with its bid or proposal, as applicable, a completed Schedule B, M/WBE Participation Requirements for Master Services Agreements That Will Require Individually Registered Task Orders, Part II (page 2) indicating the prospective contractor's certification and required affirmations to make all reasonable good faith efforts to meet participation goals established on each individual Task Order issued pursuant to this Contract, or if a partial waiver is obtained or such goals are modified by the Agency, to meet the modified Participation Goals by soliciting and obtaining the participation of certified MBE and/or WBE firms. In the event that the Schedule B indicates that the bidder or proposer, as applicable, does not intend to meet the Participation Goals that may be established on Task Orders issued pursuant to this Contract, the bid or proposal, as applicable, shall be deemed nonresponsive.
- (ii) Participation Goals on a Master Services Agreement will be established for individual Task Orders issued after the Master Services Agreement is awarded. If Participation Goals have been established on a Task Order, a contractor shall be required to submit a Schedule B M/WBE Utilization Plan For Independently Registered Task Orders That Are Issued Pursuant to Master Services Agreements, Part II (see Pages 2-4) indicating: (a) whether the contractor is an MBE or WBE, or qualified joint venture; (b) the percentage of work it intends to award to direct subcontractors; and (c) in cases where the contractor intends to award direct subcontracts, a description of the type and dollar value of work designated for participation by MBEs and/or WBEs, and the time frames in which such work is scheduled to begin and end. The contractor must engage in good faith efforts to meet the Participation Goals as established for the Task Order unless Agency has granted the contractor a pre-award waiver of the Participation Goals in accordance with Section 6-129 and Part A, Section 10 below.
- C. THE BIDDER/PROPOSER MUST COMPLETE THE SCHEDULE B INCLUDED HEREIN (SCHEDULE B, PART II). A SCHEDULE B SUBMITTED BY THE BIDDER/PROPOSER WHICH DOES NOT INCLUDE THE VENDOR CERTIFICATION AND REQUIRED AFFIRMATIONS (SEE SECTION V OF PART II) WILL BE DEEMED TO BE NON-RESPONSIVE, UNLESS A FULL WAIVER OF THE PARTICIPATION GOALS IS GRANTED (SCHEDULE B, PART III). IN THE EVENT THAT THE CITY DETERMINES THAT THE BIDDER/PROPOSER HAS SUBMITTED A SCHEDULE B WHERE THE VENDOR CERTIFICATION AND REQUIRED AFFIRMATIONS ARE COMPLETED BUT OTHER

ASPECTS OF THE SCHEDULE B ARE NOT COMPLETE, OR CONTAIN A COPY OR COMPUTATION ERROR THAT IS AT ODDS WITH THE VENDOR CERTIFICATION AND AFFIRMATIONS, THE BIDDER/PROPOSER WILL BE NOTIFIED BY THE AGENCY AND WILL BE GIVEN FOUR (4) CALENDAR DAYS FROM RECEIPT OF NOTIFICATION TO CURE THE SPECIFIED DEFICIENCIES AND RETURN A COMPLETED SCHEDULE B TO THE AGENCY. FAILURE TO DO SO WILL RESULT IN A DETERMINATION THAT THE BID/PROPOSAL IS NON-RESPONSIVE. RECEIPT OF NOTIFICATION IS DEFINED AS THE DATE NOTICE IS E-MAILED OR FAXED (IF THE BIDDER/PROPOSER HAS PROVIDED AN E-MAIL ADDRESS OR FAX NUMBER), OR NO LATER THAN FIVE (5) CALENDAR DAYS FROM THE DATE OF MAILING OR UPON DELIVERY, IF DELIVERED.

- Solution More an M/WBE Utilization Plan has been submitted, the Contractor shall, within 30 days of issuance by Agency of a notice to proceed, submit a list of proposed persons or entities to which it intends to award subcontracts within the subsequent 12 months. In the case of multiyear contracts, such list shall also be submitted every year thereafter. The Agency may also require the Contractor to report periodically about the contracts awarded by its direct subcontractors to indirect subcontractors (as defined in Section 6-129(c)(22)). PLEASE NOTE: If this Contract is a public works project subject to GML §101(5) (i.e., a contract valued at or below \$3M for projects in New York City) or if the Contract is subject to a project labor agreement in accordance with Labor Law §222, and the bidder is required to identify at the time of bid submission its intended subcontractors for the Wicks trades (plumbing and gas fitting; steam heating, hot water heating, ventilating and air conditioning (HVAC); and electric wiring), the Contractor must identify all those to which it intends to award construction subcontracts for any portion of the Wicks trade work at the time of bid submission, regardless of what point in the life of the contract such subcontracts will occur. In identifying intended subcontractors in the bid submission, bidders may satisfy any Participation Goals established for this Contract by proposing one or more subcontractors that are MBEs and/or WBEs for any portion of the Wicks trade work. In the event that the Contractor's selection of a subcontractor is disapproved, the Contractor shall have a reasonable time to propose alternate subcontractors.
- 6. MBE and WBE firms must be certified by DSBS in order for the Contractor to credit such firms' participation toward the attainment of the **Participation Goals**. Such certification must occur prior to the firms' commencement of work. A list of MBE and WBE firms may be obtained from the DSBS website at www.nyc.gov/buycertified, by emailing DSBS at buyer@sbs.nyc.gov, by calling (212) 513-6356, or by visiting or writing DSBS at 110 William St., New York, New York, 10038, 7th floor. Eligible firms that have not yet been certified may contact DSBS in order to seek certification by visiting www.nyc.gov/getcertified, emailing MWBE@sbs.nyc.gov, or calling the DSBS certification helpline at (212) 513-6311. A firm that is certified as both an MBE and a WBE may be counted either toward the goal for MBEs or the goal for WBEs, but not both. No credit shall be given for participation by a graduate MBE or graduate WBE, as defined in Section 6-129(c)(20).
- 7. Where an M/WBE Utilization Plan has been submitted, the Contractor shall, with each voucher for payment, and/or periodically as Agency may require, submit statements, certified under penalty of perjury, which shall include, but not be limited to,: the total amount the Contractor paid to its direct subcontractors, and, where applicable pursuant to Section 6-129(j), the total amount direct subcontractors paid to indirect subcontractors; the names, addresses and contact numbers of each MBE or WBE hired as a subcontractor by the Contractor, and, where applicable, hired by any of the Contractor's direct subcontractors; and the dates and amounts paid to each MBE or WBE. The Contractor shall also submit, along with its voucher for final payment: the total amount it paid to subcontractors, and, where applicable pursuant to Section 6-129(j), the total amount its direct subcontractors paid directly to their indirect subcontractors; and a final list, certified under penalty of perjury, which shall include the name, address and contact information of each subcontractor that is an MBE or WBE, the work performed by, and the dates and amounts paid to each.
- 8. If payments made to, or work performed by, MBEs or WBEs are less than the amount specified in the Contractor's M/WBE Utilization Plan, Agency shall take appropriate action, in accordance with Section 6-129 and Article II below, unless the Contractor has obtained a modification of its M/WBE Utilization Plan in accordance with Section 6-129 and Part A, Section 11 below.
- 9. Where an M/WBE Utilization Plan has been submitted, and the Contractor requests a change order the value of which exceeds the greater of 10 percent of the Contract or Task Order, as applicable, or \$500,000, Agency shall review the scope of work for the Contract or Task Order, as applicable, and the scale and types of work involved in the change order, and determine whether the **Participation Goals** should be modified.
- 10. Pre-award waiver of the **Participation Goals**. (a) A bidder or proposer, or contractor with respect to a Task Order, may seek a pre-award full or partial waiver of the **Participation Goals** in accordance with Section 6-129, which

requests that Agency change one or more Participation Goals on the grounds that the Participation Goals are unreasonable in light of the availability of certified firms to perform the services required, or by demonstrating that it has legitimate business reasons for proposing a lower level of subcontracting in its M/WBE Utilization Plan.

- (b) To apply for a full or partial waiver of the Participation Goals, a bidder, proposer, or contractor, as applicable, must complete Part III (Page 5) of Schedule B and submit such request no later than seven (7) calendar days prior to the date and time the bids, proposals, or Task Orders are due, in writing to the Agency by email at poped@ddc.nyc.gov or via facsimile at (718) 391-1886. Bidders, proposers, or contractors, as applicable, who have submitted requests will receive an Agency response by no later than two (2) calendar days prior to the due date for bids, proposals, or Task Orders; provided, however, that if that date would fall on a weekend or holiday, an Agency response will be provided by close-of-business on the business day before such weekend or holiday date.
- (c) If the Agency determines that the Participation Goals are unreasonable in light of the availability of certified firms to perform the services required, it shall revise the solicitation and extend the deadline for bids and proposals, or revise the Task Order, as applicable.
- (d) Agency may grant a full or partial waiver of the Participation Goals to a bidder, proposer or contractor, as applicable, who demonstrates—before submission of the bid, proposal or Task Order, as applicable—that it has legitimate business reasons for proposing the level of subcontracting in its M/WBE Utilization Plan. In making its determination, Agency shall consider factors that shall include, but not be limited to, whether the bidder, proposer or contractor, as applicable, has the capacity and the bona fide intention to perform the Contract without any subcontracting, or to perform the Contract without awarding the amount of subcontracts represented by the Participation Goals. In making such determination, Agency may consider whether the M/WBE Utilization Plan is consistent with past subcontracting practices of the bidder, proposer or contractor, as applicable, has made efforts to form a joint venture with a certified firm, and whether the bidder, proposer, or contractor, as applicable, has made good faith efforts to identify other portions of the Contract that it intends to subcontract.
- 11. Modification of M/WBE Utilization Plan. (a) A Contractor may request a modification of its M/WBE Utilization Plan after award of this Contract. PLEASE NOTE: If this Contract is a public works project subject to GML §101(5) (i.e., a contract valued at or below \$3M for projects in New York City) or if the Contract is subject to a project labor agreement in accordance with Labor Law §222, and the bidder is required to identify at the time of bid submission its intended subcontractors for the Wicks trades (plumbing and gas fitting; steam heating, hot water heating, ventilating and air conditioning (HVAC); and electric wiring), the Contractor may request a Modification of its M/WBE Utilization Plan as part of its bid submission. The Agency may grant a request for Modification of a Contractor's M/WBE Utilization Plan if it determines that the Contractor has established, with appropriate documentary and other evidence, that it made reasonable, good faith efforts to meet the Participation Goals. In making such determination, Agency shall consider evidence of the following efforts, as applicable, along with any other relevant factors:
- (i) The Contractor advertised opportunities to participate in the Contract, where appropriate, in general circulation media, trade and professional association publications and small business media, and publications of minority and women's business organizations;
- (ii) The Contractor provided notice of specific opportunities to participate in the Contract, in a timely manner, to minority and women's business organizations;
- (iii) The Contractor sent written notices, by certified mail or facsimile, in a timely manner, to advise MBEs or WBEs that their interest in the Contract was solicited;
- (iv) The Contractor made efforts to identify portions of the work that could be substituted for portions originally designated for participation by MBEs and/or WBEs in the M/WBE Utilization Plan, and for which the Contractor claims an inability to retain MBEs or WBEs;
- (v) The Contractor held meetings with MBEs and/or WBEs prior to the date their bids or proposals were due, for the purpose of explaining in detail the scope and requirements of the work for which their bids or proposals were solicited;
- (vi) The Contractor made efforts to negotiate with MBEs and/or WBEs as relevant to perform specific subcontracts, or act as suppliers or service providers;
- (vii) Timely written requests for assistance made by the Contractor to Agency's M/WBE liaison officer and to DSBS;

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

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

- (b) The Agency may modify the **Participation Goals** when the scope of the work has been changed by the Agency in a manner that affects the scale and types of work that the Contractor indicated in its **M/WBE** Utilization Plan would be awarded to subcontractors.
- 12. If this Contract is for an indefinite quantity of construction, standard or professional services or is a requirements type contract and the Contractor has submitted an M/WBE Utilization Plan and has committed to subcontract work to MBEs and/or WBEs in order to meet the Participation Goals, the Contractor will not be deemed in violation of the M/WBE Program requirements for this Contract with regard to any work which was intended to be subcontracted to an MBE and/or WBE to the extent that the Agency has determined that such work is not needed.
- 13. If Participation Goals have been established for this Contract or a Task Order issued pursuant to this Contract, at least once annually during the term of the Contract or Task Order, as applicable, Agency shall review the Contractor's progress toward attainment of its M/WBE Utilization Plan, including but not limited to, by reviewing the percentage of work the Contractor has actually awarded to MBE and/or WBE subcontractors and the payments the Contractor made to such subcontractors.
- 14. If Participation Goals have been established for this Contract or a Task Order issued pursuant to this Contract, Agency shall evaluate and assess the Contractor's performance in meeting those goals, and such evaluation and assessment shall become part of the Contractor's overall contract performance evaluation.

PART B: MISCELLANEOUS

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

ARTICLE II. ENFORCEMENT

1. If Agency determines that a bidder or proposer, as applicable, has, in relation to this procurement, violated Section 6-129 or the DSBS rules promulgated pursuant to Section 6-129, Agency may disqualify such bidder or proposer, as applicable, from competing for this Contract and the Agency may revoke such bidder's or proposer's prequalification status, if applicable.

- 2. Whenever Agency believes that the Contractor or a subcontractor is not in compliance with Section 6-129 or the DSBS rules promulgated pursuant to Section 6-129, or any provision of this Contract that implements Section 6-129, including, but not limited to any **M/WBE** Utilization Plan, Agency shall send a written notice to the Contractor describing the alleged noncompliance and offering the Contractor an opportunity to be heard. Agency shall then conduct an investigation to determine whether such Contractor or subcontractor is in compliance.
- 3. In the event that the Contractor has been found to have violated Section 6-129, the DSBS rules promulgated pursuant to Section 6-129, or any provision of this Contract that implements Section 6-129, including, but not limited to, any M/WBE Utilization Plan, Agency may determine that one of the following actions should be taken:
- (a) entering into an agreement with the Contractor allowing the Contractor to cure the violation;
- (b) revoking the Contractor's pre-qualification to bid or make proposals for future contracts;
- (c) making a finding that the Contractor is in default of the Contract;
- (d) terminating the Contract;
- (e) declaring the Contractor to be in breach of Contract;
- (f) withholding payment or reimbursement;
- (g) determining not to renew the Contract;
- (h) assessing actual and consequential damages;
- assessing liquidated damages or reducing fees, provided that liquidated damages may be based on amounts representing costs of delays in carrying out the purposes of the M/WBE Program, or in meeting the purposes of the Contract, the costs of meeting utilization goals through additional procurements, the administrative costs of investigation and enforcement, or other factors set forth in the Contract;
- (j) exercising rights under the Contract to procure goods, services or construction from another contractor and charge the cost of such contract to the Contractor that has been found to be in noncompliance; or
- (k) taking any other appropriate remedy.
- 4. If an M/WBE Utilization Plan has been submitted, and pursuant to this Article II, Section 3, the Contractor has been found to have failed to fulfill its Participation Goals contained in its M/WBE Utilization Plan or the Participation Goals as modified by Agency pursuant to Article I, Part A, Section 11, Agency may assess liquidated damages in the amount of ten percent (10%) of the difference between the dollar amount of work required to be awarded to MBE and/or WBE firms to meet the Participation Goals and the dollar amount the Contractor actually awarded and paid, and/or credited, to MBE and/or WBE firms. In view of the difficulty of accurately ascertaining the loss which the City will suffer by reason of Contractor's failure to meet the Participation Goals, the foregoing amount is hereby fixed and agreed as the liquidated damages that the City will suffer by reason of such failure, and not as a penalty. Agency may deduct and retain out of any monies which may become due under this Contract the amount of any such liquidated damages; and in case the amount which may become due under this Contract shall be less than the amount of liquidated damages suffered by the City, the Contractor shall be liable to pay the difference.
- 5. Whenever Agency has reason to believe that an MBE and/or WBE is not qualified for certification, or is participating in a contract in a manner that does not serve a commercially useful function (as defined in Section 6-129(c)(8)), or has violated any provision of Section 6-129, Agency shall notify the Commissioner of DSBS who shall determine whether the certification of such business enterprise should be revoked.
- 6. Statements made in any instrument submitted to Agency pursuant to Section 6-129 shall be submitted under penalty of perjury and any false or misleading statement or omission shall be grounds for the application of any applicable criminal and/or civil penalties for perjury. The making of a false or fraudulent statement by an MBE and/or WBE in any instrument submitted pursuant to Section 6-129 shall, in addition, be grounds for revocation of its certification.
- 7. The Contractor's record in implementing its M/WBE Utilization Plan shall be a factor in the evaluation of its performance. Whenever Agency determines that a Contractor's compliance with an M/WBE Utilization Plan has been unsatisfactory, Agency shall, after consultation with the City Chief Procurement Officer, file an advice of caution form for inclusion in VENDEX as caution data.

IN WITNESS WHEREOF, the Commissioner, on behalf of the City of New York, and the Contractor, have executed this agreement in quadruplicate, two parts of which are to remain with the Commissioner, another to be filed with the Comptroller of the City, and the fourth to be delivered to the Contractor.

THE CITY OF NEW YORK
By: <u>Aufaulau</u> Commissioner
CONTRACTOR: Centennial Elevator Industries, Inc.
By: Shar (Stellar) (Member of Firm or Officer of Corporation)
Title: Vice President
(Seal)

ACKNOWLEDGMENT OF PRINCIPAL, IF A CORPORATION

State of New York	_ County of	ens ss:
to me known, who, being by referring the theory Heights ny of the corporation described	ne duly sworn did dep th in and which execute eals affixed to said ins	personally came John O'Sulliving bose and say that he resides at 753 Brender lawe hat he is the Vice Prosident do the foregoing instrument; that he knows the seal of said strument is such seal; that it was so affixed by order of the name thereto by like order.
VICTORIA AYO-VAUGHAN Notary Public, State of New York Registration #01AY5014042 Qualified in Queens County ommission Expires July 15,	Notary Pullic or	Commissioner of Deeds
ACKN	OWLEDGMENT OF	PRINCIPAL, IF A PARTNERSHIP
State of	County of	SS:
	described i	sonally appearedmbers of the firm ofn n and who executed the foregoing instrument; and he nd for the act and deed of said firm.
	Notary Public or	Commissioner of Deeds
<u>ACKN</u> (OWLEDGMENT OF	PRINCIPAL, IF AN INDIVIDUAL
State of	County of	\$s:
On this day of to me known, and known to m acknowledged that he executed		personally appearedscribed in and who executed the foregoing instrument; and
	Notary Public or	Commissioner of Deeds

ACKNOWLEDGMENT BY COMMISSIONER

· /
On this 14 day of Locander, before me personally came Eric Wacker to me known, and known to be the Deputy Commissioner of the Department of Design and Construction of The City of New York, the person described as such in and who as such executed the foregoing instrument and he acknowledged to me that he executed the same as Deputy Commissioner for the purposes therein
Notary Public or Commissioner of Deeds

VICTORIA AYO-VAUGHAN
Notary Public, State of New York
Registration #01AY5014042
Qualified in Queens County
Commission Expires July 15,

AUTHORITY

MAYOR'S CERTIFICATE NO. CBX BUDGET DIRECTOR'S CERTIFICATE NO.

DATED DATED

APPROPRIATION COMMISSIONER'S CERTIFICATE

In conformity with the provisions of Section 6-101of the Administrative Code of the City of New York, it is hereby certified that the estimated cost of the work, materials and supplies required by the within Contract, amounting to

Ten Million rine hundred
Seventy Rive thousand Seven 50/100 Hundred ninery three thousand 1/100 Dollars (\$10,975,793.00
is chargeable to the fund of the Department of Design and Construction entitled Code
C0300 Ely2
Department of Design and Construction
I hereby certify that the specifications contained herein comply with the terms and conditions of the BUDGET. Commissioner
COMPTROLLER'S CERTIFICATE
The City of New York
Pursuant to the provisions of Section 6-101 of the Administrative Code of the City of New York, I hereby certify that there remains unapplied and unexpended a balance of the above mentioned fund applicable to this Contract sufficient to pay the estimated expense of executing the same viz:
\$
Comptroller

MAYOR'S CERTIFICATE OR CERTIFICATE OF THE DIRECTOR OF THE BUDGET

PERFORMANCE BOND #1 (Page 1)

PERFORMANCE BOND #1
KNOW ALL PERSONS BY THESE PRESENTS, That we,
hereinafter referred to as the "Principal", and
hereinafter referred to as the "Surety" ("Sureties") are held and firmly bound to THE CITY OF NEW YORK hereinafter referred to as the "City" or to its successors and assigns, in the penal sum of
(\$) Dollars, lawful money of the United States, for the payment of which said sum of money well and truly to be made, we, and each of us, bind ourselves, our heirs, executors, administrators, successor and assigns, jointly and severally, firmly by these presents.
WHEREAS, the Principal is about to enter, or has entered, into a Contract in writing with the City for
a copy of which Contract is annexed to and hereby made a part of this bond as though herein set forth in full;

PERFORMANCE BOND #1 (Page 2)

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

The Surety (Sureties), for value received, hereby stipulates and agrees, upon written notice from the City that the City has determined that the Principal is in default of the Contract, to (1) pay the City the cost to complete the contract as determined by the City in excess of the balance of the Contract held by the City, plus any damages or costs to which the City is entitled, up to the full amount of the above penal sum, (2) fully perform and complete the Work to be performed under the Contract, pursuant to the terms, conditions, and covenants thereof, or (3) tender a completion Contractor that is acceptable to the City. The Surety (Sureties) further agrees, at its option, either to notify the City that it elects to pay the city the cost of completion plus any applicable damages and costs under option (1) above, or to commence and diligently perform the Work specified in the Contract, including physical site work, within twenty-five (25) business days after written notice thereof from the City and, if the Surety elects to fully perform and complete the Work, then to complete all Work within the time set forth in the Contract or such other time as agreed to between the City and Surety in accordance with the Contract. If the Surety elects to tender payment pursuant to (1) above, then the Surety shall tender such amount within fifteen (15) business days notification from the City of the cost of completion. The Surety and the City reserve all rights and defenses each may have against the other; provided, however, that the Surety expressly agrees that its reservation of rights shall not provide a basis for non-performance of its obligation to pay the City the cost of completion, to commence and complete all Work as provided herein, or to tender a completion contractor.

The Surety (Sureties), for value received, for itself and its successors and assigns, hereby stipulates and agrees that the obligation of said Surety (Sureties) and its bond shall be in no way impaired or affected by any extension of time, modification, omission, addition, or change in or to the said Contract or the Work to be performed thereunder, or by any payment thereunder before the time required therein, or by any waiver of any provisions thereof, or any moneys due or to become due thereunder; and said Surety (Sureties) does hereby waive notice of any and all of such extensions, modifications, omissions, additions, changes, payments, and waivers, and hereby expressly stipulates and agrees that any and all things done and omitted to be done by and in relation to subcontractors shall have the same effect as to said Surety (Sureties) as though done or omitted to be done by or in relation to said Principal. Notwithstanding the above, if the City makes payments to the Principal before the time required by the contract that in the aggregate exceed \$100,000 or 10% of the Contract price, whichever is less, and that have not become earned prior to the Principal being found to be in default, then all payments made to the Principal before the time required by the Contract shall be added to the remaining contract value available to be paid for the completion of the Contract as if such sums had not been paid to the Principal, but shall not provide a basis for non-performance of its obligation to pay the City the cost of completion, to commence and to complete all Work as provided herein, or to tender a completion contractor.

PERFORMANCE BOND #1 (Page 3)

IN WITNESS WHEREOF, the Pland such of them as are corporations have signed by their proper officers, this	caused the	eir corporate	seals to be hereunto a	eunto set their hands affixed and these pre	and seals, sents to be
(Seal)			Principal	(L.S.)	
		Ву:	rincipar		
(Seal)					
		Ву:	Surety		
(Seel)					
(Seal)	p.F	4	Surety		
	•	Ву:			
(Seal)		de Marie Service - Are - Service to -	Surety		
		Ву:		<u> </u>	
Bond Premium Rate	-				
Bond Premium Cost	_				
If the Contractor (Principal) is a partnership	p, the bon	d should be s	igned by each of the	individuals who are	partners.
If the Contractor (Principal) is a corporat authorized officer, agent, or attorney-in-fac		bond should	be signed in its corn	rect corporate name	by a duly
There should be executed an appropriate counterparts of the Contract.	e number	of counterp	arts of the bond con	rresponding to the	number of

PERFORMANCE BOND #1 (Page 4)

	<u>ACKNOWLEDGMEN</u>	T OF PRINCIPAL, IF A CORPORATION	
State of	County of	ss:	
On this day of	by me duly eworn did o	efore me personally camelepose and say that he resides at	
to me known, who, being	by file duly sworn did t	that he is the	of the
corporation described in that one of the seals affix corporation, and that he s	xed to said instrument i	_that he is the	al of said corporation of the directors of said
	Note	ary Public or Commissioner of Deeds	
	ACKNOWLEDGMEN	T OF PRINCIPAL, IF A PARTNERSHIP	
State of	County of	ss:	
		before me personally appeared members of the firm of	
to the known, and known	described in and v	who executed the foregoing instrument; and h	e acknowledged to me
that he executed the same			C
		·	
	Nota	ary Public or Commissioner of Deeds	
	ACKNOWLEDGMEN	T OF PRINCIPAL, IF AN INDIVIDUAL	
State of	County of	ss:	
On this day of		before me personally appeared	
to me known, and know acknowledged that he exe	n to me to be the pers	son described in and who executed the fore	going instrument; and
	Nota	ary Public or Commissioner of Deeds	

Affix Acknowledgments and Justification of Sureties

PERFORMANCE BOND #2 (Page 1)

PERFORMANCE BOND #2

KNOW ALL PERSONS BY THESE PRESENTS, That we,
hereinafter referred to as the "Principal", and
hereinafter referred to as the "Surety" ("Sureties") are held and firmly bound to THE CITY OF NEW YORK, hereinafter referred to as the "City" or to its successors and assigns, in the penal sum of
(\$) Dollars, lawful money of the United States, for the payment of which said sum of money well and truly to be made, we, and each of us, bind ourselves, our heirs, executors, administrators, successors and assigns, jointly and severally, firmly by these presents.
WHEREAS, the Principal is about to enter, or has entered, into a Contract in writing with the City for
a copy of which Contract is annexed to and hereby made a part of this bond as though herein set forth in full;

PERFORMANCE BOND #2 (Page 1)

PERFORMANCE BOND #2

	Centennial Elevator Industries, Inc.			
24-35 47th Street Astoria, NY 11103				
ereinafter referred to as the "Principal", a	and			
	Fidelity and Deposit Company of Maryland			
	3910 Keswick Road			
	Beltimore, MD 21203			
ereinafter referred to as the "City" or to	Sureties") are held and firmly bound to THE CITY OF NEW YORK, its successors and assigns, in the penal sum of			
Ten Million Nine Hur	ndred Seventy Five Thousand Seven Hundred Ninety Three and 00/100			
and sever	e, and each of us, bind ourselves, our heirs, executors, administrators,			
successors and assigns, jointly and sever WHEREAS, the Principal is abo	out to enter, or has entered, into a Contract in writing with the City for			
SUCCESSORS and assigns, jointly and sever WHEREAS, the Principal is abo Queens Supreme C	but to enter, or has entered, into a Contract in writing with the City for ourt Elevator Modernization Project to CO300ELV2			
WHEREAS, the Principal is abo Queens Supreme C	out to enter, or has entered, into a Contract in writing with the City for			
WHEREAS, the Principal is abo Queens Supreme C	but to enter, or has entered, into a Contract in writing with the City for ourt Elevator Modernization Project ID CO300ELV2			

PERFORMANCE BOND #2 (Page2)

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

The Surety (Sureties), for value received, hereby stipulates and agrees, upon written notice from the City that the City has determined that the Principal is in default of the Contract, to either (1) pay the full amount of the above penal sum in complete discharge and exoneration of this bond and of all the liabilities of the Surety relating to this bond, or (2) fully perform and complete the Work to be performed under the Contract, pursuant to the terms, conditions, and covenants thereof. The Surety (Sureties) further agrees, at its option, either to tender the penal sum or to commence and diligently perform the Work specified in the Contract, including physical site work, within twenty-five (25) business days after written notice thereof from the City and to complete all Work within the time set forth in the Contract or such other time as agreed to between the City and Surety in accordance with the Contract. The Surety and the City reserve all rights and defenses each may have against the other; provided, however, that the Surety expressly agrees that its reservation of rights shall not provide a basis for non-performance of its obligation to commence and to complete all Work as provided herein.

The Surety (Sureties), for value received, for itself and its successors and assigns, hereby stipulates and agrees that the obligation of said Surety (Sureties) and its bond shall be in no way impaired or affected by any extension of time, modification, ominsion, addition, or change in or to the said Contract or the Work to be performed thereunder, or by any payment thereunder before the time required therein, or by any waiver of any provisions thereof, or by any assignment, subletting or other transfer thereof or of any Work to be performed or any moneys due or to become due thereunder; and said Surety (Sureties) does hereby waive notice of any and all of such extensions, modifications, omissions, additions, changes, payments, waivers, assignments, subcontracts and transfers, and hereby expressly stipulates and agrees that any and all things done and omitted to be done by and in relation to assignees, subcontractors, and other transferees shall have the same effect as to said Surety (Sureties) as though done or omitted to be done by or in relation to said Principal.

PERFORMANCE BOND #2 (Page 3)

CITY OF NEW YORK DDC	A Design and A management of the state of th	96	STANDARD CONSTRUCTION CONTRACT December 2013		
			of the bond corresponding to the number of		
If the Contractor (Princ authorized officer, agent	ipal) is a corporation, t, or attorney-in-fact.	, the bond should be	signed in its correct corporate name by a duly		
If the Contractor (Principal) is a partnership, the bond should be signed by each of the individuals who are partners.					
Bond Premium Cost	\$70,840.00				
Bond Premium Rate	Sliding Scale				
-			y		
(Seal)			Surety		
(See1)			4-14-14-14-14-14-14-14-14-14-14-14-14-14		
		Ву:	-		
(0001)		And the second s	Surety		
(Seal)					
		Ву:			
(OCEI)		AMPROPATE PROMOTE ACCIDENT AND A SPECIAL TO ANY ACCIDENT AND ACCIDENT ACCIDENT.	Surety		
(Seal)		***************************************			
		By:	Suiciy		
(Seal)			Surety		
(O))		Lois J	. Treiber-Curran, Attorney-m-Fact		
		ву: Хо	surely Curan		
(Seal)		Fidelity and	Deposit Company of Maryland		
		7	MA L'ETPERANCE, PARS.		
		By: R	Principal		
(Seal)		Centennial	Elevator Industries, Inc. (L.S.)		
orance by their prop	er officers, this 8th	day of _December			
and such of them as	SSS WHEREOF, the P	rincipal and the Suret caused their corporate	y (Surcties) have hereunto set their hands and seals to be hereunto affixed and these presents to be		
121 1277000 on	****				

Performance Bond #2 (Pages 94 to 97): Use if the total contract price is more than \$5 Million.

PERFORMANCE BOND #2 (Page 4)

	LEDGMENT OF PRINCIP	AL, IF A CORPORATION	
State of NEW York Cour	TY OF QUEENS SS.	·	
a share		rsonally came Richard Lesysters that he/she resides at 94 Country Universident of Ce. Imentaged that he signed his name to the for authorized and binding act thereof. ARY PUBLIC-STATE OF NEW YORK	
to me known, who, being by me duly	www.did.depose and say	rsonally came ICICHONE LESPANT	6 AV
ft. Washington NY 1105	that he/she is the	esident ofte.	Final Elevata Ind Inc
corporation described in and which e	xecuted the foregoing instru	ament and that he signed his name to the for	egoing
	NOT	ARY PUBLIC-STATE OF NEW YORK	
ante		NO. UTBAQU14881	
Notary Public or Commissioner of D	eeds My (tualified in Rockland County Commission Expires July 12, 2 011 70	19
/	LEDGMENT OF PRINCIP		
State of C	ounty of	ss:	
On this day of,	20 before me perso	onally came	
to me known, who, being by me duly	swom did depose and say tha	t hc/she resides at	
	; that he/sh	ne ispartner of	
, a limited/ger	<u>ieral</u> partnership existing und	ler the laws of the State of	· ·
		ument; and that he/she signed his/her name to	D the
foregoing instrument as the duly author	nzed and binding act of said	partnership.	
_			
Notary Public or Commissioner of De	eds		
ACKNOW	LEDGMENT OF PRINCIPA	AL, IF AN INDIVIDUAL	
State of	County of		
State of	•		
On thisday of20	before me personally	y came	
to me known, who, being by me duly so	worn did depose and say that	he/she resides at	and had to
the within instrument and acknowledge the instrument.	ged to me that by his/her sig	e/she is the individual whose name is subs gnature on the instrument, said individual	executed
Notary Public or Commissioner of De	eds		
(b) appropriate duly certified copy of agent, officer or other representative of	Power of Attorney or other of Principal or Surety; (c) a mey or other certificate of a		cuted by solutions
Affix A	Acknowledgments and Justif	fication of Sureties	
CITY OF NEW YORK	07	CTANDAND CONVENIENCE	
WAR OF FIGHT 4 DANK	97	STANDARD CONSTRUCTION CON	IIKAL'I

SURETY ACKNOWLEDGMENT	P
STATE OF NEW YORK	SS:
COUNTY OF NASSAU	66.
ah o i	1. Truby Com
On this day of December in the year 20 15 be	fore me personally came Lois J. Treiber - Curran to me
KNOWA WAO DEIDO OV DIE OUIV SWOM. DIG DEDOSE AND SAV MALDE TESIOES II	nGen Care NV ; that he is the attorney-in-fact of Fidel (o d which executed the above instrument; that he knows the seal of said (
corporation; that the seal affixed to said instrument is such corporate seal	i; 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.	, and a substantial strain of the Double of Date of Cold Corporation,
NOTARY PUBLIC STAMP RC BERT G. TIMAN	10
Notary Public, State of New York	
No. 30-4046970	
Qualified in Nassau County Commission Expires May 30, 20 19	
	NOTARY PUBLIC
INDIVIDUAL - PRINCIPAL	•
CTATE OF	SS:
STATE OF COUNTY OF	
0001111 01	
On this day of 20 before me, the undersign	ned personally came and appeared to me
	who executed the foregoing instrument and duly acknowledged to me that
executed the same.	
NOTARY PUBLIC STAMP	
	NOTARY PUBLIC
CORROBATION PRINCIPAL	No man a substitution of the substitution of t
CORPORATION - PRINCIPAL	(
-STATE OF NEW YORK	SS:
STATE OF NEW YORK	L
and the second s	Margan
On this day of Delember 20, before me came Richard depose and say that he/she resides at the Comparation described in and which executed the	to me known, who, being by me duly, sworn, did
Industrial the corporation described in and which executed the	ne foregoing instrument as principal; that he/she knows the seal of said
corporation; that the seal affixed to said instrument is such corporate seal	; that it was so affixed by order of the Board of Directors of said corporation,
and that he/she signed his name thereto by like order.	
NOTARY PUBLIC STAMP EMANUEL BACOLAS	
NOTARY PUBLIC-STATE OF NEW YORK	
No. 018A5014881	1 St Fl
Qualified in Rockland County	NOTABLE DUBLIC
My Commission Expires July 12, 2917 2019	NOTARY PUBLIC
PARTNERSHIP - PRINCIPAL	r /
STATE OF	SS:
COUNTY OF	L
On this day of 20 before me personally came	to me personally known, and known to
me to be a member of the firm of and purposes therein mentioned.	he duly acknowledged to me that he executed the same for the uses and
NOTARY PUBLIC STAMP	
	NOTARY PUBLIC

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

KNOW ALL MEN BY THESE PRESENTS: That the ZURICH AMERICAN INSURANCE COMPANY, a corporation of the State of New York, the COLONIAL AMERICAN CASUALTY AND SURETY COMPANY, a corporation of the State of Maryland, and the FIDELITY AND DEPOSIT COMPANY OF MARYLAND a corporation of the State of Maryland (herein collectively called the "Companies"), by GERALD F. HALEY, Vice President, in pursuance of authority granted by Article V, Section 8, of the By-Laws of said Companies, which are set forth on the reverse side hereof and are hereby certified to be in full force and effect on the date hereof, do hereby nominate, constitute, and appoint Richard GUARINI, John H. TREIBER, Lois J. TREIBER-CURRAN and Mary Ann MENDEZ, all of Garden City, New York, EACH its true and lawful agent and Attorney-in-Fact, to make, execute, seal and deliver, for, and on its behalf as surety, and as its act and deed: any and all bonds and undertakings, and the execution of such bonds or undertakings in pursuance of these presents, shall be as binding upon said Companies, as fully and amply, to all intents and purposes, as if they had been duly executed and acknowledged by the regularly elected officers of the ZURICH AMERICAN INSURANCE COMPANY at its office in New York, New York., the regularly elected officers of the COLONIAL AMERICAN CASUALTY AND SURETY COMPANY at its office in Owings Mills, Maryland., and the regularly elected officers of the FIDELITY AND DEPOSIT COMPANY OF MARYLAND at its office in Owings Mills, Maryland., in their own proper persons.

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

IN WITNESS WHEREOF, the said Vice-President has hereunto subscribed his/her names and affixed the Corporate Seals of the said ZURICH AMERICAN INSURANCE COMPANY, COLONIAL AMERICAN CASUALTY AND SURETY COMPANY, and FIDELITY AND DEPOSIT COMPANY OF MARYLAND, this 11th day of May, A.D. 2015.

ATTEST:

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

SEAL

THE STATE OF THE S



By: ____

Secretary
Eric D. Barnes
ate of Maryland

State of Maryland County of Baltimore Vice President Gerald F. Halev

dinnin,

On this 11th day of May, A.D. 2015, before the subscriber, a Notary Public of the State of Maryland, duly commissioned and qualified, GERALD F. HALEY, Vice President, and ERIC D. BARNES, Secretary, of the Companies, to me personally known to be the individuals and officers described in and who executed the preceding instrument, and acknowledged the execution of same, and being by me duly sworn, deposeth and saith, that he/she is the said officer of the Company aforesaid, and that the seals affixed to the preceding instrument are the Corporate Seals of said Companies, and that the said Corporate Seals and the signature as such officer were duly affixed and subscribed to the said instrument by the authority and direction of the said Corporations.

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

Maria D. Adamski, Notary Public

My Commission Expires: July 8, 2015

EXTRACT FROM BY-LAWS OF THE COMPANIES

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

CERTIFICATE

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

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

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

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

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







Thomas O. McClellan, Vice President

The o. melill

FIDELITY AND DEPOSIT COMPANY

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

Statement of Financial Condition

As Of December 31, 2014

ASSETS

Bonds\$	142,720,308
Stocks	21,816,223
Cash and Short Term Investments	2,077,768
Reinsurance Recoverable	10,375,303
Other Accounts Receivable	46,778,921
TOTAL ADMITTED ASSETS\$	223,768,523
LIABILITIES, SURPLUS AND OTHER FUNDS Reserve for Taxes and Expenses	1,321,332 49,965,411 4,009,064
TOTAL LIABILITIES\$	55,295,807
Capital Stock, Paid Up	
Surplus as regards Policyholders	168,472,716
TOTAL\$	223,768,523

Securities carried at \$58,191,540 in the above statement are deposited with various states as required by law.

Securities carried on the basis prescribed by the National Association of Insurance Commissioners. On the basis of market quotations for all bonds and stocks owned, the Company's total admitted assets at December 31, 2014 would be \$227,936,393 and surplus as regards policyholders \$172,640,586.

I, DENNIS F. KERRIGAN, Corporate Secretary of the FIDELITY AND DEPOSIT COMPANY OF MARYLAND, do hereby certify that the foregoing statement is a correct exhibit of the assets and liabilities of the said Company on the 31st day of December, 2014.

Corporate Secretary

State of Illinois
City of Schaumburg

SS:

Subscribed and sworn to, before me, a Notary Public of the State of Illinois, in the City of Schaumburg, this 15th day of March, 2015.

Darry fire

Notary Public



PAYMENT BOND (Page 1)

PAYMENT BOND

KNOW ALL PERSONS I	BY THESE PRESENTS, Tha	l we,				
Centennial Elevator Industries, Inc.						
24-35 47th Street						
	Astoria, NY 11103					
hereinafter referred to as the "Princ	cipal", and					
	Fidelity and Deposit	Company of Maryland				
	3910 Keswick Road	1				
	Baltimore, MD 21	203				
hereinafter referred to as the "City"	ety" ("Sureties") are held and " or to its successors and assi	firmly bound to THE CITY OF NEW YORK, gns, in the penal sum of busand Seven Hundred Ninety Three and 00/100				
well and truly to be made, we, and and assigns, jointly and severally,	d each of us, bind ourselves, firmly by these presents.	for the payment of which said sum of money our heirs, executors, administrators, successors				
	reme Court Elevator Moderniza	red, into a Contract in writing with the City for				
Queens Su	yello court clovate.					
NOW THEREPORE the conditi	ons of this obligation are su to whom Work under this	of this bond as though herein set forth in full; ch that if the Principal, his or its representatives or Contract is sublet and his or their successors and for				
	ld Contract, and any amends	services rendered by all persons engaged in the tent or extension thereof or addition thereto, whether or any such Subcontractor, including all persons so				
CITY OF NEW YORK	98	STANDARD CONSTRUCTION CONTRACT December 2013				

PAYMENT BOND (Page 2)

engaged who perform the work of laborers or mechanics at or in the vicinity of the site of the Project regardless of any contractual relationship between the Principal or such Subcontractors, or his or their successors or assigns, on the one hand and such laborers or mechanics on the other, but not including office employees not regularly stationed at the site of the project; and

(b) Materials and supplies (whether incorporated in the permanent structure or not), as well as teams, fuels, oils, implements or machinery furnished, used or consumed by said Principal or any subcontractor at or in the vicinity of the site of the Project in the prosecution of the Work under said Contract and any amendment or extension thereof or addition thereto; then this obligation shall be void, otherwise to remain in full force and effect.

This bond is subject to the following additional conditions, limitations and agreements:

- (a) The Principal and Surety (Sureties) agree that this bond shall be for the benefit of any materialmen or laborer having a just claim, as well as the City itself.
- (b) All persons who have performed labor, rendered services or furnished materials and supplies, as aforesaid, shall have a direct right of action against the Principal and his, its or their successors and assigns, and the Surety (Sureties) herein, or against either or both or any of them and their successors and assigns. Such persons may sue in their own name, and may prosecute the suit to judgment and execution without the necessity of joining with any other persons as party plaintiff.
- (c) The Principal and Surety (Sureties) agree that neither of them will hold the City liable for any judgment for costs of otherwise, obtained by either or both of them against a laborer or materialman in a suit brought by either a laborer or materialman under this bond for moneys allegedly due for performing work or furnishing material.
- (d) The Surety (Sureties) or its successors and assigns shall not be liable for any compensation recoverable by an employee or laborer under the Workmen's Compensation Law.
- (e) In no event shall the Surety (Sureties), or its successors or assigns, be liable for a greater sum than the penalty of this bond or be subject to any suit, action or proceeding hereon that is instituted by any person, firm, or corporation hereunder later than two years after the complete performance of said Contract and final settlement thereof.

The Principal, for himself and his successors and assigns, and the Surety (Sureties), for itself and its successors and assigns, do hereby expressly waive any objection that might be interposed as to the right of the City to require a bond containing the foregoing provisions, and they do hereby further expressly waive any defense which they or either of them might interpose to an action brought hereon by any person, firm or corporation, including subcontractors, materialmen and third persons, for work, labor, services, supplies or material performed rendered, or furnished as aforesaid upon the ground that there is no law authorizing the City to require the foregoing provisions to be placed in this bond.

And the Surety (Sureties), for value received, for itself and its successors and assigns, hereby stipulates and agrees that the obligation of said Surety (Sureties), and its bonds shall be in no way impaired or affected by any extension of time, modification, omission, addition, or change in or of the said Contract or the work to be performed thereunder, or by any payment thereunder before the time required therein, or by any waiver of any provisions thereof, or by any assignment, subletting or other transfer thereof or of any part thereof, or of any Work to be performed, or any moneys due to become due thereunder and said Surety (Sureties) does hereby waive notice of any and all of such extensions, modifications, omissions, additions, changes, payments, waivers, assignments, subcontracts and transfers, and hereby expressly stipulates and agrees that any and all things done and omitted to be done by and in relation to assignees, Subcontractors, and other transferees shall have the same effect as to said Surety (Sureties) as though done or omitted to be done or in relation to said Principal.

PAYMENT BOND (Page 3)

IN WITNESS HEREOF, the Principal and such of them as are corporations have cause be signed by their proper officers, this 8th	and the Surety (Sureties) have hereunto set their hands and seals, d their corporate seals to be hereunto affixed and these presents to day of December
(Seal)	Centennial Elevator Industries, Inc. (I.,S.) Principal
(Seal)	By: Richard Vespennice, Pres Fidelity and Deposit Company of Maryland Surety By: Lois J. Treiber-Gurran, Attorney-In-Fact
(Seal)	Surety
(Seal)	By:Surety By:
(Seal)	Surety
	Ву:
If the Contractor (Principal) is a partnership, the	bond should be signed by each of the individuals who are partners.
	the bond should be signed in its correct corporate name by a duly
There should be executed an appropriate nuncounterparts of the Contract.	nber of counterparts of the bond corresponding to the number of
CITY OF NEW YORK DDC	100 STANDARD CONSTRUCTION CONTRACT December 2013

PAYMENT BOND (Page 4)

ACKNOWLEDGMENT OF PRINCIPAL, IF A CORPORATI	ION
State of New County of Quens ss:	
On this day of property	me personally came
to me known, who, being by me duly sworn and depose and a gy Country CLV3 Dr. PT-WASHINGTON NY 11070	of the
corporation described in and which executed the foregoing instrument, that he knows that one of the seals affixed to said instrument is such seal; that it was so affixed by the seals affixed to said instrument is such seal; that it was so affixed by the seals affixed to said instrument is such seal; that it was so affixed by the seals affixed to said instrument is such seal; that it was so affixed by the seals affixed to said instrument is such seal; that it was so affixed by the seals affixed by the seals affixed to said instrument is such seal; that it was so affixed by the seals affixed to said instrument is such seal; that it was so affixed by the seals affixed to said instrument is such seal; that it was so affixed by the seals affixed to said instrument is such seal; that it was so affixed by the seals affixed to said instrument is such seal; that it was so affixed by the seals affixed to said instrument is such seal; that it was so affixed by the seals affixed to said instrument is such seal; the seals affixed to said instrument is such seal; the seals affixed to said instrument is such seals; the seals affixed to said instrument is such seals; the seals affixed to said instrument is such seals; the seals affixed to said instrument is such seals; the seals affixed to said instrument is such seals affixed to said instrument.	the seal of said corporation; order of the directors of said EMANUEL BACOLAS
A Commissioner of Deeds	NOTARY PUBLIC-STATE OF NEW Y No. 01BA5014881 Qualified in Rockland Count My Commission Expires July 12, 5
ACKNOWLEDGMENT OF PRINCIPAL, IF A PARTNERS	•
State of County of ss:	
	me personally appeared
to me known, and known to me to be one of the mem	
described in and who executed the foregoing instrume	ent; and he acknowledged to
me that he executed the same as and for the act and deed of said firm.	
Notary Public or Commissioner of Deeds	
ACKNOWLEDGMENT OF PRINCIPAL, IF AN INDIVIDU	UAL
State of County of ss:	
On this day of,before m	ne personally appeared
to me known, and known to me to be the person described in and who executed to acknowledged that he executed the same.	the foregoing instrument; and
Notary Public or Commissioner of Deeds	
Each executed bond should be accompanied by: (a) appropriate acknowledger (b) appropriate duly certified copy of Power of Attorney or other certificate of author agent, officer or other representative of Principal or Surety; (c) a duly certified extract of Surety under which Power of Attorney or other certificate of authority of its agent issued, and (d) certified copy of latest published financial statement of assets and liable to the statement of assets as a statement of assets and liable to the statement of assets as a statement of as a statement of assets as a	t from By-Laws or resolutions t, officer or representative was
Affix Acknowledgments and Justification of Sureties	
101 STANDARD C	CONSTRUCTION CONTRACT December 2013

SURETY ACKNOWLEDGMENT STATE OF NEW YORK	SS:
On this day of brember in the year 20 15 before known, who being by me duly sworn, did depose and say that he resides in the corporation described in and corporation; that the seal affixed to said instrument is such corporate seal; and that he signed his name thereto by like order.	re me personally came Lots J. Treiber - Curian to me ; that he is the attorney-in-fact of Hadrid and which executed the above instrument; that he knows the seal of said that it was so affixed by order of the Board of Directors of said corporation,
NOTARY PUBLIC STAMP RC BERT G. T.MAN Notary Public, State of New York No. 30-4046970 Qualified in Nassau County Commission Expires May 30, 20	NOTARY PUBLIC
STATE OF COUNTY OF	SS:
On this day of 20 before me, the undersign personally known and known to me to be the individual described in and executed the same.	ned personally came and appeared to me who executed the foregoing instrument and duly acknowledged to me that
NOTARY PUBLIC STAMP	NOTARY PUBLIC
STATE OF NEW YORK.	ss:
On this 9 day of December 2015 before me came Richaldepose and say that he/she resides at 94Com hy Clab IX. Provided in the corporation described in and which executed it corporation; that the seal affixed to said instrument is such corporate sea and that he/she signed his name thereto by like order.	to me known, who, being by me duly sworn, did of landennic, leto. It is that he/she is resident of landennic, leto. It is foregoing instrument as principal; that he/she knows the seal of said al; that it was so affixed by order of the Board of Directors of said corporation,
NOTARY PUBLIC STAMP NOTARY PUBLIC-STATE OF NEW YORK No. 01BA5014881 Qualified in Rockland County My Commission Expires July 12, 2017 7019	NOTARY PUBLIC
PARTNERSHIP - PRINCIPAL STATE OF	SS:
COUNTY OF	to me personally known, and known to and he duly acknowledged to me that he executed the same for the uses and
NOTARY PUBLIC STAMP	NOTARY PUBLIC

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

KNOW ALL MEN BY THESE PRESENTS: That the ZURICH AMERICAN INSURANCE COMPANY, a corporation of the State of New York, the COLONIAL AMERICAN CASUALTY AND SURETY COMPANY, a corporation of the State of Maryland, and the FIDELITY AND DEPOSIT COMPANY OF MARYLAND a corporation of the State of Maryland (herein collectively called the "Companies"), by GERALD F. HALEY, Vice President, in pursuance of authority granted by Article V, Section 8, of the By-Laws of said Companies, which are set forth on the reverse side hereof and are hereby certified to be in full force and effect on the date hereof, do hereby nominate, constitute, and appoint Richard GUARINI, John H. TREIBER, Lois J. TREIBER-CURRAN and Mary Ann MENDEZ, all of Garden City, New York, EACH its true and lawful agent and Attorney-in-Fact, to make, execute, seal and deliver, for, and on its behalf as surety, and as its act and deed: any and all bonds and undertakings, and the execution of such bonds or undertakings in pursuance of these presents, shall be as binding upon said Companies, as fully and amply, to all intents and purposes, as if they had been duly executed and acknowledged by the regularly elected officers of the ZURICH AMERICAN INSURANCE COMPANY at its office in New York, New York., the regularly elected officers of the COLONIAL AMERICAN CASUALTY AND SURETY COMPANY at its office in Owings Mills, Maryland., and the regularly elected officers of the FIDELITY AND DEPOSIT COMPANY OF MARYLAND at its office in Owings Mills, Maryland., in their own proper persons.

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

IN WITNESS WHEREOF, the said Vice-President has hereunto subscribed his/her names and affixed the Corporate Seals of the said ZURICH AMERICAN INSURANCE COMPANY, COLONIAL AMERICAN CASUALTY AND SURETY COMPANY, and FIDELITY AND DEPOSIT COMPANY OF MARYLAND, this 11th day of May, A.D. 2015.

ATTEST:

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







Lie D. Bairf

Secretary Eric D. Barnes

State of Maryland

Vice President Gerald F. Haley

County of Baltimore On this 11th day of May, A.D. 2015, before the subscriber, a Notary Public of the State of Maryland, duly commissioned and qualified, GERALD F. HALEY, Vice President, and ERIC D. BARNES, Secretary, of the Companies, to me personally known to be the individuals and officers described in and who executed the preceding instrument, and acknowledged the execution of same, and being by me duly sworn, deposeth and saith, that he/she is the said officer of the Company aforesaid, and that the seals affixed to the preceding instrument are the Corporate Seals of said Companies, and that the said Corporate Seals and the signature as such officer were duly affixed and subscribed to the said instrument by the authority and direction of the said Corporations.

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

Maria D. Adamski, Notary Public

My Commission Expires: July 8, 2015

EXTRACT FROM BY-LAWS OF THE COMPANIES

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

CERTIFICATE

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

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

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

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

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

IN TESTIMONY WHEREOF, I have hereunto subscribed my name and affixed the corporate seals of the said Companies, this day of ______, 20_15_.







Thomas O. McClellan, Vice President

The o. millell

FIDELITY AND DEPOSIT COMPANY

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

Statement of Financial Condition As Of December 31, 2014

ASSETS

BondsStocks	\$	142,720,308
Bonds	********	21,816,223
Stocks	*****	2,077,768
		10,375,303
Cash and Short Term Investments		46,778,921
Other Accounts Receivable TOTAL ADMITTED ASSETS	\$	223,768,523
TOTAL ADMITTED ASSETS	:	
LIABILITIES, SURPLUS AND OTHER FUNDS Reserve for Taxes and Expenses Ceded Reinsurance Premiums Payable. Securities Lending Collateral Liability. TOTAL LIABILITIES.		4,009,064
TO TO THE STATE OF	5,000,000	
	163,472,717	
Surplus		168,472,716
Surplus as regards Policyholders TOTAL	\$	223,768,523
TOTAL	***************************************	

Securities carried at \$58,191,540 in the above statement are deposited with various states as required by law.

Securities carried on the basis prescribed by the National Association of Insurance Commissioners. On the basis of market quotations for all bonds and stocks owned, the Company's total admitted assets at December 31, 2014 would be \$227,936,393 and surplus as regards policyholders \$172,640,586.

I, DENNIS F. KERRIGAN, Corporate Secretary of the FIDELITY AND DEPOSIT COMPANY OF MARYLAND, do hereby certify that the foregoing statement is a correct exhibit of the assets and liabilities of the said Company on the 31st day of December, 2014.

State of Illinois
City of Schaumburg SS

Subscribed and sworn to, before me, a Notary Public of the State of Illinois, in the City of Schaumburg, this 15th day of March, 2015.

Notary Public

Zorporate Secretary

DARRYL JOINER
OFFICIAL SEAL
Notary Public - State of Illinois
My Commission Expires
February 24, 2018



CERTIFICATE OF LIABILITY INSURANCE

CENTE01

OP ID: SC

DATE (MM/DD/YYYY) 12/02/2015

THIS CERTIFICATE IS ISSUED AS A MATTER OF INFORMATION ONLY AND CONFERS NO RIGHTS UPON THE CERTIFICATE HOLDER. THIS CERTIFICATE DOES NOT AFFIRMATIVELY OR NEGATIVELY AMEND, EXTEND OR ALTER THE COVERAGE AFFORDED BY THE POLICIES BELOW. THIS CERTIFICATE OF INSURANCE DOES NOT CONSTITUTE A CONTRACT BETWEEN THE ISSUING INSURER(S), AUTHORIZED

RESENTATIVE OR PRODUCER, AND THE CERTIFICATE HOLDER. PORTANT: If the certificate holder is an ADDITIONAL INSURED, the policy(ies) must be endorsed. If SUBROGATION IS WAIVED, subject to the terms and conditions of the policy, certain policies may require an endorsement. A statement on this certificate does not confer rights to the

certificate holder in lieu of such endorsement(s).

certificat	te holder in lieu of such endorsement(s).	CONTACT	
PRODUCER Total Management Corp.		NAME: PHONE (A/C, No, Ext): 516-292-4141 FAX (A/C, No): 5	16-292-4170
3rd Floor 14 Front St	treet	E-MAIL ADDRESS: INSURER(S) AFFORDING COVERAGE	NAIC #
Hempstead, NY 11550		INSURER A : Hartford Insurance Group	
INSURED Centennial Elevator Industries Inc 24-35 47th Street Astoria, NY 11103	INSURER B : Navigators Insurance Group	42307	
		INSURER C: North River Ins Co	21105
	24-35 47th Street	INSURER D: Wesco Insurance Company	
	INSURER E : National Union Ins Co	19445	
		INSURER F : American Guarantee & Liab Ins	
		REVISION NUMBER:	

CERTIFICATE NUMBER: THIS IS TO CERTIFY THAT THE POLICIES OF INSURANCE LISTED BELOW HAVE BEEN ISSUED TO THE INSURED NAMED ABOVE FOR THE POLICY PERIOD COVERAGES INDICATED. NOTWITHSTANDING ANY REQUIREMENT, TERM OR CONDITION OF ANY CONTRACT OR OTHER DOCUMENT WITH RESPECT TO WHICH THIS CERTIFICATE MAY BE ISSUED OR MAY PERTAIN, THE INSURANCE AFFORDED BY THE POLICIES DESCRIBED HEREIN IS SUBJECT TO ALL THE TERMS, EXCLUSIONS AND CONDITIONS OF SUCH POLICIES, LIMITS SHOWN MAY HAVE BEEN REDUCED BY PAID CLAIMS.

CE!	RTIFICATE MAY BE ISSUED OR MAY CLUSIONS AND CONDITIONS OF SUCH	PER!/ POLIC	NIN, IES.	LIMITS SHOWN MAY HAVE BEEN		PAID CLAIMS.			
		IADDU	SUBR	POLICY NUMBER	POLICY EFF (MM/DD/YYYY)	POLICY EXP (MM/DD/YYYY)	LIMITS	3	
NSR LTR	TYPE OF INSURANCE	INSD	WVD	POLICY NOMBER	,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,		EACH DOCONTILETOR	\$	1,000,000
A	X COMMERCIAL GENERAL LIABILITY	_		40UENO 160063	12/01/2015	12/01/2016	DAMAGE TO RENTED PREMISES (Ea occurrence)	\$	300,000
	CLAIMS-MADE X OCCUR	X	Х	13UENOJ69063	12.01.201	-	MED EXP (Any one person)	\$	10,000
	X Contractual Liab						PERSONAL & ADV INJURY	\$	1,000,000
	X Waiver of Subro						GENERAL AGGREGATE	\$	4,000,000
Γ	GEN'L AGGREGATE LIMIT APPLIES PER:				-		PRODUCTS - COMP/OP AGG	\$	4,000,000
	POLICY X PRO- JECT LOC					}		\$	
	OTHER:				+		COMBINED SINGLE LIMIT (Ea accident)	\$	1,000,000
	UTOMOBILE LIABILITY				06/10/2015	06/10/2016	BODILY INJURY (Per person)	\$	
	X ANY AUTO	X	X	WPP1164358 06/10/2015	00/10/2010	00,10,2010	BODILY INJURY (Per accident)	\$	
	X ALL OWNED X SCHEDULED AUTOS						PROPERTY DAMAGE (Per accident)	\$	
	X HIRED AUTOS X NON-OWNED AUTOS						(1 et acoidotty	\$	
			-				FACH OCCURRENCE	\$	9,000,000
	X UMBRELLA LIAB X OCCUR				12/01/2015	12/01/2016	AGGREGATE	\$	9,000,000
В	EXCESS LIAB CLAIMS-MAD	E X	X	NY15EXC799378IV	12/01/2019			\$	
	DED RETENTION \$		<u> </u>				PER X OTH-		
	WORKERS COMPENSATION AND EMPLOYERS' LIABILITY Y/M			100 704000 F	04/01/2015	04/01/2016	E.L. EACH ACCIDENT	\$	1,000,000
С	ANY PROPRIETOR/PARTNER/EXECUTIVE	N/A		406-721920-5	04,01,201		E.L. DISEASE - EA EMPLOYER	\$	1,000,000
	OFFICER/MEMBER EXCLUDED? (Mandatory in NH)	-					E.L. DISEASE - POLICY LIMIT		1,000,000
	If yes, describe under DESCRIPTION OF OPERATIONS below	4	 	DE004227502	12/01/2015	12/01/2016			4,000,000
E	EXCESS LIABILITY			BE021237693	12/01/2015				5,000,000
F	EXCESS LIABILITY			AEC0117880-00	12,31,201				
				D 101. Additional Remarks Schedule, ma	. he etteched if m	re snace is requi	red)		

DESCRIPTION OF OPERATIONS / LOCATIONS / VEHICLES (ACORD 101, Additional Remarks Schedule, may be attached if more space is required)

RE: CO300ELV2 Project Name: Queens Supreme Court/Elevator Modernization & Upgrade 88-11 Sutphin Boulevard, Queens, New York 11435. City of New York including its officials and employees are included additional insureds as respect to General Liability when required by written contract prior to a loss.

CER	TIFIC	ATE	HOL	DER

NEWYC30

SHOULD ANY OF THE ABOVE DESCRIBED POLICIES BE CANCELLED BEFORE THE EXPIRATION DATE THEREOF, NOTICE WILL BE DELIVERED IN ACCORDANCE WITH THE POLICY PROVISIONS.

New York City Department of Design and Construction 30-30 Thomson Avenue, 1st Fl. Long Island City, NY 11101

AUTHORIZED REPRESENTATIVE

CANCELLATION

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NOTEPAD

INSURED'S NAME Centennial Elevator

CENTE01 OP ID: SC

PAGE 2 Date 12/02/2015

ADDITIONAL EXCESS LIABILITY LIMITS: EFFECTIVE: 12/01/2015-12/01/2016 NAVIGATORS INSURANCE COMPANY POLICY # NY15EXC768917IV LIMITS: OCC/AGG \$1,000,000

TOTAL MANAGEMENT CORP.

Insurance

14 FRONT STREET - 3rd FLOOR HEMPSTEAD, N.Y. 11550 TEL - (516) 292-4141 FAX - (516) 292-4170

CITY OF NEW YORK

CERTIFICATION BY INSURANCE BROKER OR AGENT

The undersigned insurance broker or agent represents to the City of New York that the attached

Certificate of Insurance is accurate in all material respects. Total Management Corp. [Name of broker or agent (typewritten)] 14 Front Street, 3rd Fl. Hempstead, NY 11550 [Address of broker or agent (typewritten)] KHorward@tmccompany.com [Email address of broker or agent (typewritten)] 516-292-4141/516-292-4170 [Phone number/Fax number of broker or agent (typewritten)] [Signature of authorized official, broker, or agent] Kristin Howard (Vice President) [Name and title of authorized official, broker, or agent (typewritten)] State of ... New York......)) ss.: County of ...Nassau......) Sworn to before me this 02 day of December 20 15

David B. Lande
Notary Public, State of New York
No. 02LA6015028
Qualified in Nassau County
Commission Expires Oct. 19, 20



CERTIFICATE OF INSURANCE COVERAGE UNDER THE NYS DISABILITY BENEFITS LAW

PART 1.10 be completed by Disability Benefits Carrier	or Licensed Insurance Agent of that Carrier
a. Legal Name and Address of Insured (Use street address only)	1b. Business Telephone Number of Insured
CENTENNIAL ELEVATOR INDUSTRIES INC	718-726-5900
	1c. NYS Unemployment Insurance Employer Registration
	Number of Insured
24-35 47TH STREET	2160106 1d. Federal Employer Identification Number of Insured
ASTORIA, NY 11103	or Social Security Number
	112379315
Name and Address of the Entity requesting Proof of Coverage (Entity being listed as the Certificate Holder)	3a. Name of Insurance Carrier
NEW YORK CITY DEPT OF DESIGN AND	ShelterPoint Life Insurance Company
	3b. Policy Number of Entity listed in box "1a":
CONSTRUCTION	DBL247852
30-30 THOMSON AVE, 1ST FLOOR	3c. Policy effective period:
LONG ISLAND CITY, NY, 11101	04/01/2015 to03/31/2017
4. Policy covers:	
a. All of the employer's employees eligible under t	he New York Disability Benefits Law
b. Only the following class or classes of the emplo	yer's employees:
Under the first transfer that I was a second to the second transfer transfer to the second transfer transfe	
Under penalty of perjury, I certify that I am an authorized representative above and that the named insured has NYS Disability Benefits insurance.	e or licensed agent of the insurance carrier referenced ce coverage as described above.
	Or A a M. 11-Ar
Date Signed 12/2/2015 By	Yandadd, Uddl
(Signature of insurance carrier's a	uthorized representative or NYS Licensed Insurance Agent of that insurance carrier)
Telephone Number 516-829-8100 Title	Chief Executive Officer
IMPORTANT: If box "4a" is checked, and this form is signed by the insurance ca of that carrier, this certificate is COMPLETE. Mail it directly to the	arrier's authorized representative or NYS Licensed Insurance Agent
If box "4b" is checked, this certificate is NOT COMPLETE for the	purposes of Section 220, Subd. 8 of the Disability Benefits Law.
	Board, DB Plans Acceptance Unit, 328 State Street, Schenectady, NY 12305.
PART 2. To be completed by NYS Worker's Compensation	
State of New ' Worker's Compensa	
According to information maintained by the NYS Worker's Compensation Board, ti	
Disability Benefits Law with respect to all of his/her employees.	ne above-named employer has complied with the NTS
Date Signed By (Signature of NYS	
Telephone Number Title	

lease Note: Only insurance carriers licensed to write NYS Disability Benefits insurance policies and NYS Licensed Insurance Agents of those insurance carriers are authorized to issue Form DB-120.1. Insurance brokers are NOT authorized to issue this form.

Performance Bond #2 (Pages 94 to 97): Use if the total contract price is more than \$5 Million.

PERFORMANCE BOND #2 (Page2)

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

The Surety (Sureties), for value received, hereby stipulates and agrees, upon written notice from the City that the City has determined that the Principal is in default of the Contract, to either (1) pay the full amount of the above penal sum in complete discharge and exoneration of this bond and of all the liabilities of the Surety relating to this bond, or (2) fully perform and complete the Work to be performed under the Contract, pursuant to the terms, conditions, and covenants thereof. The Surety (Sureties) further agrees, at its option, either to tender the penal sum or to commence and diligently perform the Work specified in the Contract, including physical site work, within twenty-five (25) business days after written notice thereof from the City and to complete all Work within the time set forth in the Contract or such other time as agreed to between the City and Surety in accordance with the Contract. The Surety and the City reserve all rights and defenses each may have against the other; provided, however, that the Surety expressly agrees that its reservation of rights shall not provide a basis for non-performance of its obligation to commence and to complete all Work as provided herein.

The Surety (Sureties), for value received, for itself and its successors and assigns, hereby stipulates and agrees that the obligation of said Surety (Sureties) and its bond shall be in no way impaired or affected by any extension of time, modification, omission, addition, or change in or to the said Contract or the Work to be performed thereunder, or by any payment thereunder before the time required therein, or by any waiver of any provisions thereof, or by any assignment, subletting or other transfer thereof or of any Work to be performed or any moneys due or to become due thereunder; and said Surety (Sureties) does hereby waive notice of any and all of such extensions, modifications, omissions, additions, changes, payments, waivers, assignments, subcontracts and transfers, and hereby expressly stipulates and agrees that any and all things done and omitted to be done by and in relation to assignees, subcontractors, and other transferees shall have the same effect as to said Surety (Sureties) as though done or omitted to be done by or in relation to said Principal.

<u>Performance Bond #2 (Pages 94 to 97)</u>: Use if the total contract price is more than \$5 Million.

PERFORMANCE BOND #2 (Page 3)

There should be executed an appropriate number counterparts of the Contract.	nber of counterpa	rts of the bond corres	sponding to the number of
If the Contractor (Principal) is a corporation, tauthorized officer, agent, or attorney-in-fact.	the bond should l	pe signed in its correc	t corporate name by a duly
If the Contractor (Principal) is a partnership, the	bond should be si	gned by each of the inc	lividuals who are partners.
Bond Premium Cost			
Bond Premium Rate			
		- and cy	
(Seal)		Surety	·
(0 t)	-		
	By:		
(Seal)	· ———	Surety	
(0-1)			
	Ву:		·
		Surety	
(Seal)			
	Ву:		·
		Surety	
(Seal)			
	Ву:		
. ,	<u> </u>	Surety	
(Seal)	· · · · · · · · · · · · · · · · · · ·		
	Ву:		
		Principal	(L.S.)
(Seal)			

Performance Bond #2 (Pages 94 to 97): Use if the total contract price is more than \$5 Million.

PERFORMANCE BOND #2 (Page 4)

ACKNOWLEDGMENT OF PRINCIPAL, IF A CORPORATION State of _____ County of _____ ss: On this ______ day of ______, 20_____ before me personally came ___ to me known, who, being by me duly sworn did depose and say that he/she resides at of the _; that he/she is the _____ corporation described in and which executed the foregoing instrument; and that he signed his name to the foregoing instrument by order of the directors of said corporation as the duly authorized and binding act thereof. Notary Public or Commissioner of Deeds ACKNOWLEDGMENT OF PRINCIPAL, IF A PARTNERSHIP State of ______ Ss: On this _____ day of _____, 20____ before me personally came ____ to me known, who, being by me duly sworn did depose and say that he/she resides at_____ that he/she is ______ partner of , a limited/general partnership existing under the laws of the State of _____ the partnership described in and which executed the foregoing instrument; and that he/she signed his/her name to the foregoing instrument as the duly authorized and binding act of said partnership. Notary Public or Commissioner of Deeds ACKNOWLEDGMENT OF PRINCIPAL, IF AN INDIVIDUAL _____County of ______ss: On this _____day of _____20 ____before me personally came____ to me known, who, being by me duly sworn did depose and say that he/she resides at____ , and that he/she is the individual whose name is subscribed to the within instrument and acknowledged to me that by his/her signature on the instrument, said individual executed the instrument. Notary Public or Commissioner of Deeds Each executed bond should be accompanied by: (a) appropriate acknowledgments of the respective parties; (b) appropriate duly certified copy of Power of Attorney or other certificate of authority where bond is executed by agent, officer or other representative of Principal or Surety; (c) a duly certified extract from By-Laws or resolutions of Surety under which Power of Attorney or other certificate of authority of its agent, officer or representative was issued, and (d) certified copy of latest published financial statement of assets and liabilities of Surety. * * * * * * * * Affix Acknowledgments and Justification of Sureties.

PAYMENT BOND (Page 1)
KNOW ALL PERSONS BY THESE PRESENTS, That we,
hereinafter referred to as the "Principal", and
hereinafter referred to as the "Surety" ("Sureties") are held and firmly bound to THE CITY OF NEW YORK, hereinafter referred to as the "City" or to its successors and assigns, in the penal sum of
(\$) Dollars, lawful money of the United States, for the payment of which said sum of money well and truly to be made, we, and each of us, bind ourselves, our heirs, executors, administrators, successors and assigns, jointly and severally, firmly by these presents.
WHEREAS, the Principal is about to enter, or has entered, into a Contract in writing with the City for
, and the city for
a copy of which Contract is annexed to and hereby made a part of this bond as though herein set forth in full;
NOW, THEREFORE, the conditions of this obligation are such that if the Principal, his or its representatives or assigns and other Subcontractors to whom Work under this Contract is sublet and his or their successors and assigns shall promptly pay or cause to be paid all lawful claims for
(a) Wages and compensation for labor performed and services rendered by all persons engaged in the prosecution of the Work under said Contract, and any amendment or extension thereof or addition thereto, whether such persons be agents servants or employees of the Principal or any such Subcontractor, including all persons so

PAYMENT BOND (Page 2)

engaged who perform the work of laborers or mechanics at or in the vicinity of the site of the Project regardless of any contractual relationship between the Principal or such Subcontractors, or his or their successors or assigns, on the one hand and such laborers or mechanics on the other, but not including office employees not regularly stationed at the site of the project; and

(b) Materials and supplies (whether incorporated in the permanent structure or not), as well as teams, fuels, oils, implements or machinery furnished, used or consumed by said Principal or any subcontractor at or in the vicinity of the site of the Project in the prosecution of the Work under said Contract and any amendment or extension thereof or addition thereto; then this obligation shall be void, otherwise to remain in full force and effect.

This bond is subject to the following additional conditions, limitations and agreements:

- (a) The Principal and Surety (Sureties) agree that this bond shall be for the benefit of any materialmen or laborer having a just claim, as well as the City itself.
- (b) All persons who have performed labor, rendered services or furnished materials and supplies, as aforesaid, shall have a direct right of action against the Principal and his, its or their successors and assigns, and the Surety (Sureties) herein, or against either or both or any of them and their successors and assigns. Such persons may sue in their own name, and may prosecute the suit to judgment and execution without the necessity of joining with any other persons as party plaintiff.
- (c) The Principal and Surety (Sureties) agree that neither of them will hold the City liable for any judgment for costs of otherwise, obtained by either or both of them against a laborer or materialman in a suit brought by either a laborer or materialman under this bond for moneys allegedly due for performing work or furnishing material.
- (d) The Surety (Sureties) or its successors and assigns shall not be liable for any compensation recoverable by an employee or laborer under the Workmen's Compensation Law.
- (e) In no event shall the Surety (Sureties), or its successors or assigns, be liable for a greater sum than the penalty of this bond or be subject to any suit, action or proceeding hereon that is instituted by any person, firm, or corporation hereunder later than two years after the complete performance of said Contract and final settlement thereof.

The Principal, for himself and his successors and assigns, and the Surety (Sureties), for itself and its successors and assigns, do hereby expressly waive any objection that might be interposed as to the right of the City to require a bond containing the foregoing provisions, and they do hereby further expressly waive any defense which they or either of them might interpose to an action brought hereon by any person, firm or corporation, including subcontractors, materialmen and third persons, for work, labor, services, supplies or material performed rendered, or furnished as aforesaid upon the ground that there is no law authorizing the City to require the foregoing provisions to be placed in this bond.

And the Surety (Sureties), for value received, for itself and its successors and assigns, hereby stipulates and agrees that the obligation of said Surety (Sureties), and its bonds shall be in no way impaired or affected by any extension of time, modification, omission, addition, or change in or of the said Contract or the work to be performed thereunder, or by any payment thereunder before the time required therein, or by any waiver of any provisions thereof, or by any assignment, subletting or other transfer thereof or of any part thereof, or of any Work to be performed, or any moneys due to become due thereunder and said Surety (Sureties) does hereby waive notice of any and all of such extensions, modifications, omissions, additions, changes, payments,waivers, assignments, subcontracts and transfers, and hereby expressly stipulates and agrees that any and all things done and omitted to be done by and in relation to assignees, Subcontractors, and other transferees shall have the same effect as to said Surety (Sureties) as though done or omitted to be done or in relation to said Principal.

PAYMENT BOND (Page 3)

IN WITNESS HEREOF, the Principal and such of them as are corporations have caus be signed by their proper officers, this	and the Surety (Sureties) have hereunto set their hands and seals, sed their corporate seals to be hereunto affixed and these presents to
	,
(Seal)	
	Principal (L.S.)
	Ву:
(Seal)	
(Scar)	Surety
	Ву:
(Seal)	•
(Seal)	Surety
	·
	Ву:
(G. 1)	
(Seal)	Company
	Surety
	Ву:
(G)	
(Seal)	
	Surety
	Ву:
If the Contractor (Principal) is a partnership, the b	ound should be signed by each of the individuals who are partners.
	e bond should be signed in its correct corporate name by a duly
There should be executed an appropriate number counterparts of the Contract.	er of counterparts of the bond corresponding to the number of
•	
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PAYMENT BOND (Page 4)

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LABOR LAW §220 PREVAILING WAGE SCHEDULE

Workers, Laborers and Mechanics employed on a public work project must receive not less than the prevailing rate of wage and benefits for the classification of work performed by each upon such public work. Pursuant to Labor Law §220 the Comptroller of the City of New York has promulgated this schedule solely for Workers, Laborers and Mechanics engaged by private contractors on New York City public work contracts.

This schedule is a compilation of separate determinations of the prevailing rate of wage and supplements made by the Comptroller for each trade classification listed herein pursuant to New York State Labor Law section 220 (5). The source of the wage and supplement rates, whether a collective bargaining agreement, survey data or other, is listed at the end of each classification.

Agency Chief Contracting Officers should contact the Bureau of Labor Law's Classification Unit with any questions concerning trade classifications, prevailing rates or prevailing practices with respect to procurement on New York City public works contracts. Contractors are advised to review the Comptroller's Prevailing Wage Schedule before bidding on public works contracts. Contractors with questions concerning trade classifications, prevailing rates or prevailing practices with respect to public works contracts in the procurement stage must contact the contracting agency responsible for the procurement.

Any error as to compensation under the prevailing wage law or other information as to trade classification, made by the contracting agency in the contract documents or in any other communication, will not preclude a finding against the contractor of prevailing wage violation.

Any questions concerning trade classifications, prevailing rates or prevailing practices on New York City public works contracts that have already been awarded may be directed to the Bureau of Labor Law's Classification Unit by calling (212) 669-7974. All callers must have the agency name and contract registration number available when calling with questions on public works contracts. Please direct all other compliance issues to: Bureau of Labor Law, Attn: Wasyl Kinach, P.E., Office of the Comptroller, 1 Centre Street, Room 1122, New York, N.Y. 10007; Fax (212) 669-4002.

The appropriate schedule of prevailing wages and benefits must be posted at all public work sites pursuant to Labor Law §220 (3-a) (a).

This schedule is applicable to work performed during the effective period, unless otherwise noted. Changes to this schedule are published on our web site www.comptroller.nyc.gov. Contractors must pay the wages and supplements in effect when the worker, laborer, mechanic performs the work. Preliminary schedules for future one-year periods appear in the City Record on or about June 1 each succeeding year. Final schedules appear on or about July 1 in the City Record and on our web site www.comptroller.nyc.gov.

The Comptroller's Office has attempted to include all overtime, shift and night differential, Holiday, Saturday, Sunday or other premium time work. However, this schedule does not set forth every prevailing practice with respect to such rates with which employers must comply. All such practices are nevertheless part of the employer's prevailing wage obligation and contained in the collective bargaining agreements of the prevailing wage unions. These collective bargaining agreements are available for inspection by appointment. Requests for appointments may be made by calling (212) 669-4443, Monday through Friday between the hours of 9 a.m. and 5 p.m.

Prevailing rates and ratios for apprentices are attached to this schedule in the Appendix. Pursuant to Labor Law §220 (3-e), only apprentices who are individually registered in a bona fide program to which the employer contractor is a participant, registered with the New York State Department of Labor, may be employed on a public work project. Workers who are not journey persons or not registered apprentices pursuant to Labor Law §220 (3-e) may not be substituted for apprentices and must be paid as journey persons.

Public Work construction, reconstruction, demolition, excavation, rehabilitation, repair, renovation, alteration, or improvement contracts awarded pursuant to a Project Labor Agreement ("PLA") in accordance with Labor Law section 222 may have different labor standards for shift, premium and overtime work. Please refer to the PLA's pre-negotiated labor agreements for wage and benefit rates applicable to work performed outside of the regular workday. More information is available at the Mayor's Office of Contract Services (MOCS) web page at http://www.nyc.gov/html/mocs/html/vendors/pla.shtml.

All the provisions of Labor Law section 220 remain applicable to PLA work including, but not limited to, the enforcement of prevailing wage requirements by the Comptroller; however, we will enforce shift, premium, overtime and other non-standard rates as they appear in a project's pre-negotiated labor agreement.

In order to meet their obligation to provide prevailing supplemental benefits to each covered employee, employers must either:

- 1) Provide bona-fide benefits which cost the employer no less than the prevailing supplemental benefits rate; or
- 2) Supplement the employee's hourly wage by an amount no less than the prevailing supplemental benefits rate; or
- Provide a combination of bona-fide benefits and wage supplements which cost the employer no less than the prevailing supplemental benefits rate in total.

Particular attention should be given to the supplemental benefits requirement. Although in most instances the payment or provision for supplemental benefits is for each hour worked, some classifications require the payment or provision of supplemental benefits for each hour paid. Consequently, some prevailing practices require benefits to be purchased at the overtime, shift differential, Holiday, Saturday, Sunday or other premium time rate.

Benefits are paid for <u>EACH HOUR WORKED</u> unless otherwise noted.

Wasyl Kinach, P.E.
Director of Classifications
Bureau of Labor Law

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ASBESTOS HANDLER

(Hazardous Material; Disturbs, removes, encapsulates, repairs, or encloses friable asbestos material)

Asbestos Handler

Effective Period: 7/1/2015 - 6/30/2016

Wage Rate per Hour: \$36.00

Supplemental Benefit Rate per Hour: \$15.95

Overtime

Time and one half the regular rate after an 8 hour day.
Time and one half the regular rate for Sunday.
Time and one half the regular hourly rate after 40 hours in any work week.

Overtime Holidays

Time and one half the regular rate for work on the following holiday(s).
New Year's Day
Good Friday
Memorial Day
Independence Day
Labor Day
Thanksgiving Day
Christmas Day
Easter

Paid Holidays

None

(Local #78 and Local #12A)

BLASTER

<u>Blaster</u>

Effective Period: 7/1/2015 - 6/30/2016

Wage Rate per Hour: \$46.89

Supplemental Benefit Rate per Hour: \$41.19

Blaster (Hydraulic)

Effective Period: 7/1/2015 - 6/30/2016

PUBLISH DATE: 7/1/2015 EFFECTIVE PERIOD: JULY 1, 2015 THROUGH JUNE 30, 2016 Page 5 of 86

Wage Rate per Hour: \$47.71

Supplemental Benefit Rate per Hour: \$41.19

Blaster - Trac Drill Hydraulic

Effective Period: 7/1/2015 - 6/30/2016

Wage Rate per Hour: \$42.25

Supplemental Benefit Rate per Hour: \$41.19

Blaster - Wagon: Air Trac: Quarry Bar: Drillrunners

Effective Period: 7/1/2015 - 6/30/2016

Wage Rate per Hour: \$41.46

Supplemental Benefit Rate per Hour: \$41.19

Blaster - Operators of Jack Hammers

Chippers: Spaders: Concrete Breakers: and all other pneumatic tools of like usage: Walk Behind Self Propelled .

Hydraulic Asphalt and Concrete Breakers: Hydro (Water) Demolition

Effective Period: 7/1/2015 - 6/30/2016

Wage Rate per Hour: \$40.42

Supplemental Benefit Rate per Hour: \$41.19

Blaster - Powder Carriers

Effective Period: 7/1/2015 - 6/30/2016

Wage Rate per Hour: \$36.53

Supplemental Benefit Rate per Hour: \$41.19

Blaster - Hydraulic Trac Drill Chuck Tender

Effective Period: 7/1/2015 - 6/30/2016

Wage Rate per Hour: \$35.25

Supplemental Benefit Rate per Hour: \$41.19

Blaster - Chuck Tender & Nipper

Effective Period: 7/1/2015 - 6/30/2016

Wage Rate per Hour: \$34.50

Supplemental Benefit Rate per Hour: \$41.19

Blaster - Magazine Keepers: (Watch Person)

Effective Period: 7/1/2015 - 6/30/2016

Wage Rate per Hour: \$20.68

Supplemental Benefit Rate per Hour: \$41.19

PUBLISH DATE: 7/1/2015 EFFECTIVE PERIOD: JULY 1, 2015 THROUGH JUNE 30, 2016 Page 6 of 86

Overtime Description

Magazine Keepers:

Time and one half for work performed in excess of forty (40) hours per week and for work performed on Saturdays, Sundays and Holidays.

All Other Employees:

Time and one-half for the first eight hours of work on Saturday and for Make-up Time. Double time for all hours over eight Monday through Friday (except make-up hours) and for all hours worked on Sunday and Holidays.

Overtime

Double time the regular rate after an 8 hour day. Time and one half the regular rate for Saturday. Double time the regular rate for Sunday.

Overtime Holidays

Double time the regular rate for work on the following holiday(s). **New Year's Day Memorial Day** Independence Day Labor Day Columbus Day **Presidential Election Day** Thanksgiving Day **Christmas Day**

Paid Holidays

None

Shift Rates

A single shift shall be 8 hours plus an unpaid lunch, starting at 8:00 A.M (or between 6:00 A.M. and 10:00 A.M. on weekdays). When two (2) shifts are employed, each shift shall be 8 hours plus ½ hour unpaid lunch. When three (3) shifts are employed, each shift will work seven and one-half (7 ½) hours, but will be paid for eight (8) hours, since only one-half (1/2) hour is allowed for mealtime. When two (2) or more shifts are employed, single time will be paid for each shift. The first 8 hours of any and all work performed Monday through Friday inclusive of any off-shift shall be at the single time rate.

(Local #29)

BOILERMAKER

Boilermaker

Effective Period: 7/1/2015 - 6/30/2016

Wage Rate per Hour: \$51.56

Supplemental Benefit Rate per Hour: \$41.69

Supplemental Note: For time and one half overtime - \$61.94 For double overtime - \$82.18

EFFECTIVE PERIOD: JULY 1, 2015 THROUGH JUNE 30, 2016 Page 7 of 86 **PUBLISH DATE: 7/1/2015**

Overtime Description

For Repair and Maintenance work:
Time and one half the regular rate after an 8 hour day.
Time and one half the regular rate for Saturday.
Double time the regular rate for Sunday.
For New Construction work:
Double time the regular rate after an 8 hour day.
Double time the regular time rate for Saturday.
Double time the regular rate for Sunday.

Overtime Holidays

Double time the regular rate for work on the following holiday(s).
New Year's Day
President's Day
Memorial Day
Independence Day
Columbus Day
Election Day
Veteran's Day
Thanksgiving Day
Christmas Day

Quadruple time the regular rate for work on the following holiday(s). Labor Day

Paid Holidays

Good Friday
Day after Thanksgiving
Day before Christmas
Day before New Year's Day

Shift Rates

When shifts are required, the first shift shall work eight (8) hours at the regular straight-time hourly rate. The second shift shall work seven and one-half (7 ½) hours and receive eight hours at the regular straight time hourly rate plus twenty-five cents (\$0.25) per hour. The third shift shall work seven (7) hours and receive eight hours at the regular straight time hourly rate plus fifty cents (\$0.50) per hour. A thirty (30) minute lunch period shall not be considered as time worked. Work in excess of the above shall be paid overtime at the appropriate new construction work or repair work overtime wage and supplemental benefit hourly rate.

(Local #5)

BRICKLAYER

Bricklayer

Effective Period: 7/1/2015 - 6/30/2016

Wage Rate per Hour: \$48.91

PUBLISH DATE: 7/1/2015 EFFECTIVE PERIOD: JULY 1, 2015 THROUGH JUNE 30, 2016 Page 8 of 86

Supplemental Benefit Rate per Hour: \$28.03

Overtime

Time and one half the regular rate after a 7 hour day.

Time and one half the regular rate for Saturday.

Double time the regular rate for Sunday.

Saturday may be used as a make-up day at straight time when a day is lost during that week to inclement weather.

Overtime Holidays

Double time the regular rate for work on the following holiday(s). New Year's Day **Memorial Day**

Independence Day

Labor Day

Thanksgiving Day

Christmas Day

Paid Holidays

None

Shift Rates

Overtime rates to be paid outside the regular scheduled work day.

(Bricklayer District Council)

CARPENTER - BUILDING COMMERCIAL

Building Commercial

Effective Period: 7/1/2015 - 6/30/2016

Wage Rate per Hour: \$50.50

Supplemental Benefit Rate per Hour: \$45.88

Overtime

Time and one half the regular rate after an 8 hour day.

Time and one half the regular rate for Saturday.

Double time the regular rate for Sunday.

Saturday may be used as a make-up day at straight time when a day is lost during that week to inclement weather.

Overtime Holidays

Double time the regular rate for work on the following holiday(s). New Year's Day Washington's Birthday Memorial Day

EFFECTIVE PERIOD: JULY 1, 2015 THROUGH JUNE 30, 2016 Page 9 of 86 **PUBLISH DATE: 7/1/2015**

Independence Day
Labor Day
Columbus Day
Presidential Election Day
Thanksgiving Day
Day after Thanksgiving
Christmas Day

Paid Holidays

None

Shift Rates

The second shift will receive one hour at the double time rate of pay for the last hour of the shift; eight hours pay for seven hours of work, nine hours pay for eight hours of work. There must be a first shift in order to work a second shift.

(Carpenters District Council)

CARPENTER - HEAVY CONSTRUCTION WORK

(Construction of Engineering Structures and Building Foundations)

Heavy Construction Work

Effective Period: 7/1/2015 - 6/30/2016

Wage Rate per Hour: \$50.50

Supplemental Benefit Rate per Hour: \$46.65

Overtime

Time and one half the regular rate after an 8 hour day.
Time and one half the regular rate for Saturday.
Double time the regular rate for Sunday.
Saturday may be used as a make-up day at straight time when a day is lost during that week to inclement weather.

Overtime Holidays

Double time the regular rate for work on the following holiday(s). New Year's Day
President's Day
Memorial Day
Independence Day
Labor Day
Columbus Day
Presidential Election Day
Thanksgiving Day
Christmas Day

PUBLISH DATE: 7/1/2015 EFFECTIVE PERIOD: JULY 1, 2015 THROUGH JUNE 30, 2016 Page 10 of 86

Paid Holidays

Shift Rates

Off shift work commencing between 5:00 P.M. and 11:00 P.M. shall work eight and one half hours allowing for one half hour for lunch. The wage rate shall be 113% of the straight time hourly wage rate.

(Carpenters District Council)

CARPENTER - SIDEWALK SHED, SCAFFOLD AND HOIST

Carpenter - Hod Hoist

(Assisted by Mason Tender)

Effective Period: 7/1/2015 - 6/30/2016

Wage Rate per Hour: \$49.60

Supplemental Benefit Rate per Hour: \$43.00

Overtime

Time and one half the regular rate after an 8 hour day.

Time and one half the regular rate for Saturday.

Double time the regular rate for Sunday.

Saturday may be used as a make-up day at straight time when a day is lost during that week to inclement weather.

Overtime Holidays

Double time the regular rate for work on the following holiday(s).

New Year's Day President's Day **Memorial Day** Independence Day **Labor Day** Columbus Day **Presidential Election Day**

Thanksgiving Day

Day after Thanksgiving **Christmas Day**

Paid Holidays

None

Shift Rates

The second shift will receive one hour at the double time rate of pay for the last hour of the shift; eight hours pay for seven hours of work, nine hours pay for eight hours of work. There must be a first shift in order to work a second shift.

EFFECTIVE PERIOD: JULY 1, 2015 THROUGH JUNE 30, 2016 Page 11 of 86 PUBLISH DATE: 7/1/2015

(Carpenters District Council)

CEMENT & CONCRETE WORKER

Cement & Concrete Worker

Effective Period: 7/1/2015 - 6/30/2016

Wage Rate per Hour: \$42.48

Supplemental Benefit Rate per Hour: \$26.57

Supplemental Note: \$29.32 on Saturdays; \$32.07 on Sundays & Holidays

Overtime Description

Time and one half the regular rate after 7 hour day (time and one half the regular rate after an 8 hour day when working with Dockbuilders on pile cap forms and for work below street level to the top of the foundation wall, not to exceed 2 feet or 3 feet above the sidewalk-brick shelf, when working on the foundation and structure.)

Overtime

Time and one half the regular rate for Saturday. Double time the regular rate for Sunday.

Overtime Holidays

Double time the regular rate for work on the following holiday(s). New Year's Day
President's Day
Good Friday
Memorial Day
Independence Day
Labor Day
Columbus Day
Presidential Election Day
Thanksgiving Day
Christmas Day

Paid Holidays

1/2 day before Christmas Day 1/2 day before New Year's Day

Shift Rates

On shift work extending over a twenty-four hour period, all shifts are paid at straight time.

(Cement Concrete Workers District Council)

CEMENT MASON

Cement Mason

Effective Period: 7/1/2015 - 6/30/2016

Wage Rate per Hour: \$38.88

Supplemental Benefit Rate per Hour: \$39.80

Supplemental Note: For time and one half overtime - \$49.05; For double overtime - \$58.30

Overtime Description

Time and one-half the regular rate after an 8 hour day, double time the regular rate after 10 hours. Time and onehalf the regular rate on Saturday, double time the regular rate after 10 hours. Double time the regular rate on Sunday.

Overtime Holidays

Double time the regular rate for work on the following holiday(s).

New Year's Day President's Day **Good Friday**

Memorial Day

Independence Day

Labor Day Columbus Day

Presidential Election Day

Thanksgiving Day

Christmas Day

Paid Holidays

Any worker who reports to work on Christmas Eve or New Year's Eve pursuant to his employer's instruction shall be entitled to three (3) hours afternoon pay without working.

Shift Rates

For an off shift day, (work at times other than the regular 7:00 A.M. to 3:30 P.M. work day) a cement mason shall be paid at the regular hourly rate plus a 25% per hour differential. Four Days a week at Ten (10)hour day.

(Local #780)

CORE DRILLER

Core Driller

Effective Period: 7/1/2015 - 6/30/2016

Wage Rate per Hour: \$36.82

Supplemental Benefit Rate per Hour: \$22.69

EFFECTIVE PERIOD: JULY 1, 2015 THROUGH JUNE 30, 2016 Page 13 of 86 PUBLISH DATE: 7/1/2015

Core Driller Helper

Effective Period: 7/1/2015 - 6/30/2016

Wage Rate per Hour: \$29.44

Supplemental Benefit Rate per Hour: \$22.69

Core Driller Helper(Third year in the industry)

Effective Period: 7/1/2015 - 6/30/2016

Wage Rate per Hour: \$26.50

Supplemental Benefit Rate per Hour: \$22.69

Core Driller Helper (Second year in the industry)

Effective Period: 7/1/2015 - 6/30/2016

Wage Rate per Hour: \$23.55

Supplemental Benefit Rate per Hour: \$22.69

Core Driller Helper (First year in the industry)

Effective Period: 7/1/2015 - 6/30/2016

Wage Rate per Hour: \$20.61

Supplemental Benefit Rate per Hour: \$22.69

Overtime Description

Time and one half the regular rate for work on a holiday plus Holiday pay when worked.

Overtime

Time and one half the regular rate after an 8 hour day.
Time and one half the regular rate for Saturday.
Double time the regular rate for Sunday.
Time and one half the regular rate for work on the following holiday(s).

Paid Holidays

New Year's Day Memorial Day Independence Day Labor Day Thanksgiving Day Christmas Day

Shift Rates

The shift day shall be the continuous eight and one-half (8½) hours from 6:00 A.M. to 2:30 P.M. and from 2:30 P.M. to 11:00 P.M., including one-half (½) hour of employees regular rate of pay for lunch. When two (2) or more shifts are employed, single time shall be paid for each shift, but those employees employed on a shift other than from 8:00 A.M. to 5:00 P.M. shall, in addition, receive seventy-five cents (\$0.75) per hour differential for each hour worked. When three (3) shifts are needed, each shift shall work seven and one-half (7½) hours paid for eight (8) hours of labor and be permitted one-half (7½) hour for mealtime.

PUBLISH DATE: 7/1/2015 EFFECTIVE PERIOD: JULY 1, 2015 THROUGH JUNE 30, 2016 Page 14 of 86

(Carpenters District Council)

DERRICKPERSON AND RIGGER

Derrick Person & Rigger

Effective Period: 7/1/2015 - 6/30/2016

Wage Rate per Hour: \$44.84

Supplemental Benefit Rate per Hour: \$49.28

Supplemental Note: The above supplemental rate applies for work performed in Manhattan, Bronx, Brooklyn and

Queens. \$50.70 - For work performed in Staten Island.

Overtime Description

The first two hours of overtime on weekdays and the first seven hours of work on Saturdays are paid at time and one half for wages and supplemental benefits. All additional overtimes is paid at double time for wages and supplemental benefits. Deduct \$1.42 from the Staten Island hourly benefits rate before computing overtime.

Overtime

Double time the regular rate for Sunday.

Overtime Holidays

Double time the regular rate for work on the following holiday(s).

New Year's Dav Washington's Birthday **Good Friday Memorial Day** Independence Day **Labor Day** Thanksgiving Day **Christmas Day**

Paid Holidays

1/2 day on Christmas Eve if work is performed in the A.M.

(Local #197)

DIVER

Diver (Marine)

Effective Period: 7/1/2015 - 6/30/2016

Wage Rate per Hour: \$63.82

EFFECTIVE PERIOD: JULY 1, 2015 THROUGH JUNE 30, 2016 Page 15 of 86 **PUBLISH DATE: 7/1/2015**

Supplemental Benefit Rate per Hour: \$46.65

Diver Tender (Marine)

Effective Period: 7/1/2015 - 6/30/2016

Wage Rate per Hour: \$45.47

Supplemental Benefit Rate per Hour: \$46.65

Overtime

Time and one half the regular rate after an 8 hour day.
Time and one half the regular rate for Saturday.
Double time the regular rate for Sunday.
Saturday may be used as a make-up day at straight time when a day is lost during that week to inclement weather.

Overtime Holidays

Double time the regular rate for work on the following holiday(s). New Year's Day
President's Day
Memorial Day
Independence Day
Labor Day
Columbus Day
Presidential Election Day
Thanksgiving Day
Christmas Day

Paid Holidays

None

Shift Rates

When three shifts are utilized each shift shall work seven and one half-hours (7 1/2 hours) and paid for 8 hours, allowing for one half hour for lunch.

(Carpenters District Council)

DOCKBUILDER - PILE DRIVER

<u> Dockbuilder - Pile Driver</u>

Effective Period: 7/1/2015 - 6/30/2016

Wage Rate per Hour: \$50.50

Supplemental Benefit Rate per Hour: \$46.65

Overtime

Time and one half the regular rate after an 8 hour day.

PUBLISH DATE: 7/1/2015 EFFECTIVE PERIOD: JULY 1, 2015 THROUGH JUNE 30, 2016 Page 16 of 86

Time and one half the regular rate for Saturday.

Double time the regular rate for Sunday.

Saturday may be used as a make-up day at straight time when a day is lost during that week to inclement weather.

Overtime Holidays

Double time the regular rate for work on the following holiday(s).

New Year's Day President's Day Memorial Day Independence Day **Labor Day Columbus Day Presidential Election Day** Thanksgiving Day **Christmas Day**

Paid Holidays

None

Shift Rates

Off shift work commencing between 5:00 P.M. and 11:00 P.M. shall work eight and one half hours allowing for one half hour for lunch. The wage rate shall be 113% of the straight time hourly wage rate.

(Carpenters District Council)

DRIVER: TRUCK (TEAMSTER)

Driver - Dump Truck

Effective Period: 7/1/2015 - 6/30/2016

Wage Rate per Hour: \$39.53

Supplemental Benefit Rate per Hour: \$41.59

Supplemental Note: Over 40 hours worked: time and one half rate \$16.94, double time rate \$22.58

Driver - Tractor Trailer

Effective Period: 7/1/2015 - 6/30/2016

Wage Rate per Hour: \$39.50

Supplemental Benefit Rate per Hour: \$43.35

Supplemental Note: For over 40 hours worked: at time and one half - \$16.65; at double time - \$22.20

Driver - Euclid & Turnapull Operator

Effective Period: 7/1/2015 - 6/30/2016

Wage Rate per Hour: \$40.06

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Supplemental Benefit Rate per Hour: \$43.35

Supplemental Note: Over 40 hours worked: time and one half rate \$16.65 double time rate \$22.20

Overtime Description

For Paid Holidays: Holiday pay for all holidays shall be prorated based two hours per day for each day worked in the holiday week, not to exceed 8 hours of holiday pay. For Thanksgiving week, the prorated share shall be 5 1/3 hours of holiday pay for each day worked in Thanksgiving week.

Overtime

Time and one half the regular rate after an 8 hour day. Time and one half the regular rate for Saturday. Double time the regular rate for Sunday.

Overtime Holidays

Double time the regular rate for work on the following holiday(s).

New Year's Day

President's Day

Memorial Day

Independence Day

Labor Day

Columbus Day

Veteran's Day

Thanksgiving Day

Day after Thanksgiving

Christmas Day

Paid Holidays

New Year's Day
President's Day
Memorial Day
Independence Day
Labor Day
Columbus Day
Veteran's Day
Thanksgiving Day
Day after Thanksgiving
Christmas Day

Shift Rates

Off single shift work commencing between 6:00 P.M. and 5:00 A.M. shall work eight and one half hours allowing for one half hour for lunch and receive 9 hours pay for 8 hours of work.

Driver Redi-Mix (Sand & Gravel)

Effective Period: 7/1/2015 - 6/30/2016

Wage Rate per Hour: \$36.30

Supplemental Benefit Rate per Hour: \$40.02

Supplemental Note: Over 40 hours worked: time and one half rate \$13.90, double time rate \$18.53

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Overtime Description

For Paid Holidays: Employees working two (2) days in the calendar week in which the holiday falls are to paid for these holidays, provided they shape each remaining workday during that calendar week.

Overtime

Time and one half the regular rate after an 8 hour day. Time and one half the regular rate for Saturday. Double time the regular rate for Sunday.

Overtime Holidays

Double time the regular rate for work on the following holiday(s). President's Day **Columbus Day** Veteran's Day

Triple time the regular rate for work on the following holiday(s). New Year's Day **Memorial Day** Independence Day **Labor Day** Thanksgiving Day **Christmas Day**

Paid Holidays

New Year's Day President's Day Memorial Day Independence Day **Labor Day** Columbus Day **Election Day** Thanksgiving Day **Christmas Day**

(Local #282)

ELECTRICIAN

(Including all low voltage cabling carrying data; video; and voice in combination with data and or video.)

Electrician "A" (Regular Day)

Effective Period: 7/1/2015 - 6/30/2016

Wage Rate per Hour: \$54.00

Supplemental Benefit Rate per Hour: \$50.03

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Electrician "A" (Regular Day Overtime)

Effective Period: 7/1/2015 - 6/30/2016

Wage Rate per Hour: \$81.00

Supplemental Benefit Rate per Hour: \$53.41

Electrician "A" (Day Shift)

Effective Period: 7/1/2015 - 6/30/2016

Wage Rate per Hour: \$54.00

Supplemental Benefit Rate per Hour: \$50.03

Electrician "A" (Day Shift Overtime After 8 hours)

Effective Period: 7/1/2015 - 6/30/2016

Wage Rate per Hour: \$81.00

Supplemental Benefit Rate per Hour: \$53.41

Electrician "A" (Swing Shift)

Effective Period: 7/1/2015 - 6/30/2016

Wage Rate per Hour: \$63.36

Supplemental Benefit Rate per Hour: \$56.94

Electrician "A" (Swing Shift Overtime After 7.5 hours)

Effective Period: 7/1/2015 - 6/30/2016

Wage Rate per Hour: \$95.04

Supplemental Benefit Rate per Hour: \$60.91

Electrician "A" (Graveyard Shift)

Effective Period: 7/1/2015 - 6/30/2016

Wage Rate per Hour: \$70.97

Supplemental Benefit Rate per Hour: \$62.78

Electrician "A" (Graveyard Shift Overtime After 7 hours)

Effective Period: 7/1/2015 - 6/30/2016

Wage Rate per Hour: \$106.46

Supplemental Benefit Rate per Hour: \$67.23

Overtime

Time and one half the regular rate after a 7 hour day. Time and one half the regular rate for Saturday. Time and one half the regular rate for Sunday.

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Overtime Holidays

Time and one half the regular rate for work on a holiday. New Year's Day Martin Luther King Jr. Day President's Day **Memorial Dav** Independence Day Labor Day Columbus Day Veteran's Day Thanksgiving Day Day after Thanksgiving **Christmas Day**

Paid Holidays

None

Shift Rates

When so elected by the Employer, one or more shifts of at least five days duration may be scheduled as follows: Day Shift: 8:00 am to 4:30 pm, Swing Shift 4:30 pm to 12:30 am, Graveyard Shift: 12:30 am to 8:00 am.

For multiple shifts of temporary light and/or power, the temporary light and/or power employee shall be paid for 8 hours at the straight time rate. For three or less workers performing 8 hours temporary light and/or power the supplemental benefit rate is \$24.39.

Electrician "M" (First 8 hours)

"M" rated work shall be defined as jobbing: electrical work of limited duration and scope, also consisting of repairs and/or replacement of electrical and tele-data equipment. Includes all work necessary to retrofit, service, maintain and repair all kinds of lighting fixtures and local lighting controls and washing and cleaning of foregoing fixtures.

Effective Period: 7/1/2015 - 6/30/2016

Wage Rate per Hour; \$27.50

Supplemental Benefit Rate per Hour: \$20.82

First and Second Year "M" Wage Rate Per Hour: \$23.00 First and Second Year "M" Supplemental Rate: \$18.56

Electrician "M" (Overtime After First 8 hours)

"M" rated work shall be defined as jobbing: electrical work of limited duration and scope, also consisting of repairs and/or replacement of electrical and tele-data equipment. Includes all work necessary to retrofit, service, maintain and repair all kinds of lighting fixtures and local lighting controls and washing and cleaning of foregoing fixtures.

Effective Period: 7/1/2015 - 6/30/2016

Wage Rate per Hour: \$41.25

Supplemental Benefit Rate per Hour: \$22.54

First and Second Year "M" Wage Rate Per Hour: \$34.50

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First and Second Year "M" Supplemental Rate: \$20.00

Overtime

Time and one half the regular rate after an 8 hour day. Time and one half the regular rate for Saturday. Time and one half the regular rate for Sunday.

Overtime Holidays

Time and one half the regular rate for work on the following holiday(s). New Year's Day
Martin Luther King Jr. Day
President's Day
Memorial Day
Independence Day
Labor Day
Columbus Day
Veteran's Day
Thanksgiving Day
Day after Thanksgiving
Christmas Day

Paid Holidays

None

(Local #3)

ELECTRICIAN - ALARM TECHNICIAN

(Scope of Work - Inspect, test, repair, and replace defective, malfunctioning, or broken devices, components and controls of Fire, Burglar and Security Systems)

Alarm Technician

Effective Period: 7/1/2015 - 3/9/2016

Wage Rate per Hour: \$31.40

Supplemental Benefit Rate per Hour: \$14.76

Supplemental Note: \$13.26 only after 8 hours worked in a day

Effective Period: 3/10/2016 - 6/30/2016

Wage Rate per Hour: \$32.00

Supplemental Benefit Rate per Hour: \$15.47

Supplemental Note: \$13.97 only after 8 hours worked in a day

Overtime Description

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Time and one half the regular rate for work on the following holidays: Columbus Day, Veterans Day, Day after Thanksqiving.

Double time the regular rate for work on the following holidays: New Year's day, Martin Luther King Jr. Day,

President's Day, Memorial Day, Independence Day, Labor Day, Thanksgiving Day, Christmas Day.

Overtime

Time and one half the regular rate after an 8 hour day. Time and one half the regular rate for Saturday. Double time the regular rate for Sunday.

Paid Holidays

New Year's Day Martin Luther King Jr. Day President's Day **Memorial Day** Independence Day Labor Day **Columbus Day** Veteran's Day Thanksgiving Day Day after Thanksgiving **Christmas Day**

Shift Rates

Night Differential is based upon a ten percent (10%) differential between the hours of 4:00 P.M. and 12:30 A.M. and a fifteen percent (15%) differential for the hours 12:00 A.M. to 8:00 A.M.

Vacation

At least 1 year of employment.....ten (10) days 5 years or more of employment......fifteen (15) days 10 years of employment......twenty (20) days

Plus one Personal Day per year

One day per Year. Up to 4 vacation days may be used as sick days.

(Local #3)

ELECTRICIAN-STREET LIGHTING WORKER

Electrician - Electro Pole Electrician

Effective Period: 7/1/2015 - 6/30/2016

Wage Rate per Hour: \$54.00

Supplemental Benefit Rate per Hour: \$51.86

Electrician - Electro Pole Foundation Installer

EFFECTIVE PERIOD: JULY 1, 2015 THROUGH JUNE 30, 2016 Page 23 of 86 **PUBLISH DATE: 7/1/2015**

Effective Period: 7/1/2015 - 6/30/2016

Wage Rate per Hour: \$40.93

Supplemental Benefit Rate per Hour: \$39.46

Electrician - Electro Pole Maintainer

Effective Period: 7/1/2015 - 6/30/2016

Wage Rate per Hour: \$35.05

Supplemental Benefit Rate per Hour: \$35.51

Overtime Description

Electrician - Electro Pole Electrician: Time and one half the regular rate after a 7 hour day and after 5 consecutive days worked per week.

Electrician - Electro Pole Foundation Installer: Time and one half the regular rate after 8 hours within a 24 hour period and Saturday and Sunday.

Electrician - Electro Pole Maintainer: Time and one half the regular rate after a 7 hour day and after 5 consecutive days worked per week. Saturdays and Sundays may be used as a make-up day at straight time when a day is lost during the week to inclement weather.

Overtime Holidays

Time and one half the regular rate for work on the following holiday(s). New Year's Day Martin Luther King Jr. Day President's Day Memorial Day Independence Day Labor Day Columbus Day Veteran's Day Thanksgiving Day Day after Thanksgiving

Paid Holidays

Christmas Day

None

(Local #3)

ELEVATOR CONSTRUCTOR

Elevator Constructor

Effective Period: 7/1/2015 - 3/16/2016

Wage Rate per Hour: \$59.55

Supplemental Benefit Rate per Hour: \$31.07

PUBLISH DATE: 7/1/2015 EFFECTIVE PERIOD: JULY 1, 2015 THROUGH JUNE 30, 2016 Page 24 of 86

Effective Period: 3/17/2016 - 6/30/2016

Wage Rate per Hour: \$60.96

Supplemental Benefit Rate per Hour: \$32.67

Overtime Description

For New Construction: work performed after 7 or 8 hour day, Saturday, Sunday or between 4:30pm and 7:00am shall be paid at double time rate.

Existing buildings: work performed after an 8 hour day, Saturday, Sunday or between 5:30pm and 7:00 am shall be paid time and one half.

Overtime

Double time the regular rate for work on the following holiday(s).

Paid Holidays

New Year's Day President's Day Good Friday Memorial Day Independence Day **Labor Day Columbus Day** Veteran's Day Thanksgiving Day Day after Thanksgiving **Christmas Day**

Vacation

Employer contributes 8% of regular basic hourly rate as vacation pay for employees with more than 15 years of service, and 6% for employees with 5 to 15 years of service, and 4% for employees with less than 5 years of service.

(Local #1)

ELEVATOR REPAIR & MAINTENANCE

Elevator Service/Modernization Mechanic

Effective Period: 7/1/2015 - 3/16/2016

Wage Rate per Hour: \$46.92

Supplemental Benefit Rate per Hour: \$30.91

Effective Period: 3/17/2016 - 6/30/2016

Wage Rate per Hour: \$47.91

Supplemental Benefit Rate per Hour: \$32.51

Overtime Description

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For Scheduled Service Work: Double time - work scheduled in advance by two or more workers performed on Sundays, Holidays, and between midnight and 7:00am.

Overtime

Time and one half the regular rate after an 8 hour day. Time and one half the regular rate for Saturday. Time and one half the regular rate for Sunday. Time and one half the regular rate for work on a holiday plus the day's pay.

Paid Holidays

New Year's Day
President's Day
Good Friday
Memorial Day
Independence Day
Labor Day
Columbus Day
Veteran's Day
Thanksgiving Day
Day after Thanksgiving
Christmas Day

Shift Rates

Afternoon shift - regularly hourly rate plus a (15%) fifteen percent differential. Graveyard shift - time and one half the regular rate.

Vacation

Employer contributes 8% of regular basic hourly rate as vacation pay for employees with more than 15 years of service, and 6% for employees with 5 to 15 years of service, and 4% for employees with less than 5 years of service.

(Local #1)

ENGINEER

Engineer - Heavy Construction Operating Engineer I

Cherrypickers 20 tons and over and Loaders (rubber tired and/or tractor type with a manufacturer's minimum rated capacity of six cubic yards and over).

Effective Period: 7/1/2015 - 6/30/2016

Wage Rate per Hour: \$64.31

Supplemental Benefit Rate per Hour: \$34.25 Supplemental Note: \$61.60 on overtime

Shift Wage Rate: \$102.90

Engineer - Heavy Construction Operating Engineer II

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Backhoes, Basin Machines, Groover, Mechanical Sweepers, Bobcat, Boom Truck, Barrier Transport (Barrier Mover) & machines of similar nature. Operation of Churn Drills and machines of a similar nature, Stetco Silent Hoist and machines of similar nature, Vac-Alls, Meyers Machines, John Beam and machines of a similar nature, Ross Carriers and Travel Lifts and machines of a similar nature, Bulldozers, Scrapers and Turn-a-Pulls: Tugger Hoists (Used exclusively for handling excavated material); Tractors with attachments, Hyster and Roustabout Cranes, Cherrypickers. Austin Western, Grove and machines of a similar nature, Scoopmobiles, Monorails, Conveyors, Trenchers: Loaders-Rubber Tired and Tractor: Barber Greene and Eimco Loaders and Eimco Backhoes; Mighty Midget and similar breakers and Tampers, Curb and Gutter Pavers and Motor Patrol, Motor Graders and all machines of a similar nature. Locomotives 10 Tons or under. Mini-Max, Break-Tech and machines of a similar nature; Milling machines, robotic and demolition machines and machines of a similar nature, shot blaster, skid steer machines and machines of a similar nature including bobcat, pile rig rubber-tired excavator (37,000 lbs. and under), 2 man auger.

Effective Period: 7/1/2015 - 6/30/2016

Wage Rate per Hour: \$62.40

Supplemental Benefit Rate per Hour: \$34.25 Supplemental Note: \$61.60 on overtime

Shift Wage Rate: \$99.84

Engineer - Heavy Construction Operating Engineer III

Minor Equipment such as Tractors, Post Hole Diggers, Ditch Witch (Walk Behind), Road Finishing Machines, Rollers five tons and under, Tugger Hoists, Dual Purpose Trucks, Fork Lifts, and Dempsey Dumpers, Fireperson.

Effective Period: 7/1/2015 - 6/30/2016

Wage Rate per Hour: \$59.20

Supplemental Benefit Rate per Hour: \$34.25 Supplemental Note: \$61.60 on overtime

Shift Wage Rate: \$94.72

Engineer - Heavy Construction Maintenance Engineer I

Installing, Repairing, Maintaining, Dismantling and Manning of all equipment including Steel Cutting, Bending and Heat Sealing Machines, Mechanical Heaters, Grout Pumps, Bentonite Pumps & Plants, Screening Machines, Fusion Coupling Machines, Tunnel Boring Machines Moles and Machines of a similar nature, Power Packs, Mechanical Hydraulic Jacks; all drill rigs including but not limited to Churn, Rotary Caisson, Raised Bore & Drills of a similar nature; Personnel, Inspection & Safety Boats or any boats used to perform functions of same, Mine Hoists, Whirlies, all Climbing Cranes, all Tower Cranes, including but not limited to Truck Mounted and Crawler Type and machines of similar nature; Maintaining Hydraulic Drills and machines of a similar nature; Well Point System-Installation and dismantling; Burning, Welding, all Pumps regardless of size and/or motor power, except River Cofferdam Pumps and Wells Point Pumps; Motorized Buggies (three or more); equipment used in the cleaning and televising of sewers, but not limited to jet-rodder/vacuum truck, vacall/vactor, closed circuit television inspection equipment; high powered water pumps, jet pumps; screed machines and concrete finishing machines of a similar nature; vermeers.

Effective Period: 7/1/2015 - 6/30/2016

Wage Rate per Hour: \$62.11

Supplemental Benefit Rate per Hour: \$34.25 Supplemental Note: \$61.60 on overtime

Shift Wage Rate: \$99.38

Engineer - Heavy Construction Maintenance Engineer II

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On Base Mounted Tower Cranes

Effective Period: 7/1/2015 - 6/30/2016

Wage Rate per Hour: \$81.54

Supplemental Benefit Rate per Hour: \$34.25 Supplemental Note: \$61.60 on overtime

Shift Wage Rate: \$130.46

Engineer - Heavy Construction Maintenance Engineer III

On Generators, Light Towers

Effective Period: 7/1/2015 - 6/30/2016

Wage Rate per Hour: \$41.04

Supplemental Benefit Rate per Hour: \$34.25

Supplemental Note: \$61.60 on overtime

Shift Wage Rate: \$65.66

Engineer - Heavy Construction Maintenance Engineer IV

On Pumps and Mixers including mud sucking

Effective Period: 7/1/2015 - 6/30/2016

Wage Rate per Hour: \$42.11

Supplemental Benefit Rate per Hour: \$34.25 Supplemental Note: \$61.60 on overtime

Shift Wage Rate: \$67.38

Engineer - Heavy Construction Oilers I

Gradalls, Cold Planer Grader, Concrete Pumps, Driving Truck Cranes, Driving and Operating Fuel and Grease Trucks.

Effective Period: 7/1/2015 - 6/30/2016

Wage Rate per Hour: \$56.02

Supplemental Benefit Rate per Hour: \$34.25 Supplemental Note: \$61.60 on overtime

Shift Wage Rate: \$89.63

Engineer - Heavy Construction Oilers II

All gasoline, electric, diesel or air operated Shovels, Draglines, Backhoes, Keystones, Pavers, Gunite Machines, Battery of Compressors, Crawler Cranes, two-person Trenching Machines.

Effective Period: 7/1/2015 - 6/30/2016

Wage Rate per Hour: \$38.79

Supplemental Benefit Rate per Hour: \$34.25 Supplemental Note: \$61.60 on overtime

Shift Wage Rate: \$62.06

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Engineer - Steel Erection Maintenance Engineers

Derrick, Travelers, Tower, Crawler Tower and Climbing Cranes

Effective Period: 7/1/2015 - 6/30/2016

Wage Rate per Hour: \$59.77

Supplemental Benefit Rate per Hour: \$34.25 Supplemental Note: \$61.60 on overtime

Shift Wage Rate: \$95.63

Engineer - Steel Erection Oiler I

On a Truck Crane

Effective Period: 7/1/2015 - 6/30/2016

Wage Rate per Hour: \$55.95

Supplemental Benefit Rate per Hour: \$34.25 Supplemental Note: \$61.60 on overtime

Shift Wage Rate: \$89.52

Engineer - Steel Erection Oiler II

On a Crawler Crane

Effective Period: 7/1/2015 - 6/30/2016

Wage Rate per Hour: \$42.64

Supplemental Benefit Rate per Hour: \$34.25

Supplemental Note: \$61.60 on overtime

Shift Wage Rate: \$68.22

Overtime Description

On jobs of more than one shift, if the next shift employee fails to report for work through any cause over which the employer has no control, the employee on duty who works the next shift continues to work at the single time rate.

Overtime

Double time the regular rate after an 8 hour day. Double time the regular time rate for Saturday. Double time the regular rate for Sunday. Double time the regular rate for work on the following holiday(s).

Paid Holidays

New Year's Day Lincoln's Birthday President's Day **Memorial Day** Independence Day Labor Day Columbus Day Veteran's Day

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Thanksgiving Day
Day after Thanksgiving
Christmas Day
Employees must work at least one day in the payroll week in which the holiday occurs to receive the paid holiday

Engineer - Building Work Maintenance Engineers I

Installing, repairing, maintaining, dismantling (of all equipment including: Steel Cutting and Bending Machines, Mechanical Heaters, Mine Hoists, Climbing Cranes, Tower Cranes, Linden Peine, Lorain, Liebherr, Mannes, or machines of a similar nature, Well Point Systems, Deep Well Pumps, Concrete Mixers with loading Device, Concrete Plants, Motor Generators when used for temporary power and lights), skid steer machines of a similar nature including bobcat.

Effective Period: 7/1/2015 - 6/30/2016

Wage Rate per Hour: \$56.88

Supplemental Benefit Rate per Hour: \$34.25 Supplemental Note: \$61.60 on overtime

Engineer - Building Work Maintenance Engineers II

On Pumps, Generators, Mixers and Heaters

Effective Period: 7/1/2015 - 6/30/2016

Wage Rate per Hour: \$44.22

Supplemental Benefit Rate per Hour: \$34.25 Supplemental Note: \$61.60 on overtime

Engineer - Building Work Oilers I

All gasoline, electric, diesel or air operated Gradealls: Concrete Pumps, Overhead Cranes in Power Houses: Their duties shall be to assist the Engineer in oiling, greasing and repairing of all machines; Driving Truck Cranes: Driving and Operating Fuel and Grease Trucks, Cherrypickers (hydraulic cranes) over 70,000 GVW, and machines of a similar nature.

Effective Period: 7/1/2015 - 6/30/2016

Wage Rate per Hour: \$54.08

Supplemental Benefit Rate per Hour: \$34.25 Supplemental Note: \$61.60 on overtime

Engineer - Building Work Oilers II

Oilers on Crawler Cranes, Backhoes, Trenching Machines, Gunite Machines, Compressors (three or more in Battery).

Effective Period: 7/1/2015 - 6/30/2016

Wage Rate per Hour: \$40.21

Supplemental Benefit Rate per Hour: \$34.25 Supplemental Note: \$61.60 on overtime

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Overtime Description

On jobs of more than one shift, if an Employee fails to report for work through any cause over which the Employer has no control, the Employee on duty will continue to work at the rate of single time.

Overtime

Double time the regular rate after an 8 hour day. Double time the regular time rate for Saturday. Double time the regular rate for Sunday. Double time the regular rate for work on the following holiday(s).

Paid Holidays

New Year's Day Lincoln's Birthday President's Day Memorial Day Independence Day Labor Day Columbus Day Veteran's Day Thanksgiving Day Christmas Day

Employees must work at least one day in the payroll week in which the holiday occurs to receive the paid holiday

Shift Rates

Off Shift: double time the regular hourly rate.

(Local #15)

ENGINEER - CITY SURVEYOR AND CONSULTANT

Party Chief

Effective Period: 7/1/2015 - 6/30/2016

Wage Rate per Hour: \$37.04

Supplemental Benefit Rate per Hour: \$18.60

Supplemental Note: Overtime Benefit Rate - \$25.45 per hour (time & one half) \$32.30 per hour (double time).

Instrument Person

Effective Period: 7/1/2015 - 6/30/2016

Wage Rate per Hour: \$30.59

Supplemental Benefit Rate per Hour: \$18.60

Supplemental Note: Overtime Benefit Rate - \$25.45 per hour (time & one half) \$32.30 per hour (double time).

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Effective Period: 7/1/2015 - 6/30/2016

Wage Rate per Hour: \$26.52

Supplemental Benefit Rate per Hour: \$18.60

Supplemental Note: Overtime Benefit Rate - \$25.45 per hour (time & one half) \$32.30 per hour (double time).

Overtime Description

Time and one half the regular rate after an 8 hour day, Time and one half the regular rate for Saturday for the first eight hours worked, Double time the regular time rate for Saturday for work performed in excess of eight hours, Double time the regular rate for Sunday and Double time the regular rate for work on a holiday.

Paid Holidays

New Year's Day
Lincoln's Birthday
President's Day
Memorial Day
Independence Day
Labor Day
Columbus Day
Veteran's Day
Thanksgiving Day
Day after Thanksgiving
Christmas Day

Employees must work at least one day in the payroll week in which the holiday occurs to receive the paid holiday

(Operating Engineer Local #15-D)

ENGINEER - FIELD (BUILDING CONSTRUCTION)

(Construction of Building Projects, Concrete Superstructures, etc.)

Field Engineer - BC Party Chief

Effective Period: 7/1/2015 - 6/30/2016

Wage Rate per Hour: \$60.77

Supplemental Benefit Rate per Hour: \$32.40

Supplemental Note: Overtime Benefit Rate - \$45.28 per hour (time & one half) \$58.15 per hour (double time).

Field Engineer - BC Instrument Person

Effective Period: 7/1/2015 - 6/30/2016

Wage Rate per Hour: \$47.20

Supplemental Benefit Rate per Hour: \$32.40

Supplemental Note: Overtime Benefit Rate - \$45.28 per hour (time & one half) \$58.15 per hour (double time).

Field Engineer - BC Rodperson

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Effective Period: 7/1/2015 - 6/30/2016

Wage Rate per Hour: \$30.49

Supplemental Benefit Rate per Hour: \$32.40

Supplemental Note: Overtime Benefit Rate - \$45.28 per hour (time & one half) \$58.15 per hour (double time).

Overtime Description

Time and one half the regular rate after a 7 hour work and time and one half the regular rate for Saturday for the first seven hours worked, Double time the regular time rate for Saturday for work performed in excess of seven hours, Double time the regular rate for Sunday and Double time the regular rate for work on a holiday.

Paid Holidays

New Year's Day President's Day **Good Friday Memorial Day** Independence Day **Labor Day** Columbus Day Veteran's Day Thanksgiving Day **Christmas Day**

Employees must work at least one day in the payroll week in which the holiday occurs to receive the paid holiday

(Operating Engineer Local #15-D)

ENGINEER - FIELD (HEAVY CONSTRUCTION)

(Construction of Roads, Tunnels, Bridges, Sewers, Building Foundations, **Engineering Structures etc.)**

Field Engineer - HC Party Chief

Effective Period: 7/1/2015 - 6/30/2016

Wage Rate per Hour: \$66.43

Supplemental Benefit Rate per Hour: \$32.40

Supplemental Note: Overtime benefit rate - \$45.28 per hour (time & one half), \$58.15 per hour (double time).

Field Engineer - HC Instrument Person

Effective Period: 7/1/2015 - 6/30/2016

Wage Rate per Hour: \$48.82

Supplemental Benefit Rate per Hour: \$32.40

Supplemental Note: Overtime benefit rate - \$45.28 per hour (time & one half), \$58.15 per hour (double time).

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Field Engineer - HC Rodperson

Effective Period: 7/1/2015 - 6/30/2016

Wage Rate per Hour: \$40.99

Supplemental Benefit Rate per Hour: \$32.40

Supplemental Note: Overtime benefit rate - \$45.28 per hour (time & one half), \$58.15 per hour (double time).

Overtime Description

Time and one half the regular rate after an 8 hour day, Time and one half the regular rate for Saturday for the first eight hours worked, Double time the regular time rate for Saturday for work performed in excess of eight hours, Double time the regular rate for Sunday and Double time the regular rate for work on a holiday.

Paid Holidays

New Year's Day
Lincoln's Birthday
President's Day
Memorial Day
Independence Day
Labor Day
Columbus Day
Veteran's Day
Thanksgiving Day
Christmas Day

Employees must work at least one day in the payroll week in which the holiday occurs to receive the paid holiday

(Operating Engineer Local #15-D)

ENGINEER - FIELD (STEEL ERECTION)

Field Engineer - Steel Erection Party Chief

Effective Period: 7/1/2015 - 6/30/2016

Wage Rate per Hour: \$62.26

Supplemental Benefit Rate per Hour: \$32.40

Supplemental Note: Overtime benefit rate - \$45.28 per hour (time & one half), \$58.15 per hour (double time).

Field Engineer - Steel Erection Instrument Person

Effective Period: 7/1/2015 - 6/30/2016

Wage Rate per Hour: \$48.57

Supplemental Benefit Rate per Hour: \$32.40

Supplemental Note: Overtime benefit rate - \$45.28 per hour (time & one half), \$58.15 per hour (double time).

Field Engineer - Steel Erection Rodperson

Effective Period: 7/1/2015 - 6/30/2016

PUBLISH DATE: 7/1/2015 EFFECTIVE PERIOD: JULY 1, 2015 THROUGH JUNE 30, 2016 Page 34 of 86

Wage Rate per Hour: \$32.61

Supplemental Benefit Rate per Hour: \$32.40

Supplemental Note: Overtime benefit rate - \$45.28 per hour (time & one half), \$58.15 per hour (double time).

Overtime Description

Time and one half the regular rate for Saturday for the first eight hours worked. Double time the regular rate for Saturday for work performed in excess of eight hours.

Overtime

Time and one half the regular rate after an 8 hour day. Double time the regular rate for Sunday. Double time the regular rate for work on the following holiday(s).

Paid Holidays

New Year's Day Lincoln's Birthday President's Day **Memorial Day** Independence Day Labor Day Columbus Day Veteran's Day Thanksgiving Day **Christmas Day**

Employees must work at least one day in the payroll week in which the holiday occurs to receive the paid holiday

(Operating Engineer Local #15-D)

ENGINEER - OPERATING

Operating Engineer - Road & Heavy Construction I

Back Filling Machines, Cranes, Mucking Machines and Dual Drum Paver.

Effective Period: 7/1/2015 - 6/30/2016

Wage Rate per Hour: \$71.75

Supplemental Benefit Rate per Hour: \$30.40 Supplemental Note: \$55.10 overtime hours

Shift Wage Rate: \$114.80

Operating Engineer - Road & Heavy Construction II

Backhoes, Power Shovels, Hydraulic Clam Shells, Steel Erection, Moles and machines of a similar nature.

Effective Period: 7/1/2015 - 6/30/2016

Wage Rate per Hour: \$74.29

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Supplemental Benefit Rate per Hour: \$30.40 Supplemental Note: \$55.10 overtime hours

Shift Wage Rate: \$118.86

Operating Engineer - Road & Heavy Construction III

Mine Hoists, Cranes, etc. (Used as Mine Hoists)

Effective Period: 7/1/2015 - 6/30/2016

Wage Rate per Hour: \$76.67

Supplemental Benefit Rate per Hour: \$30.40 Supplemental Note: \$55.10 overtime hours

Shift Wage Rate: \$122.67

Operating Engineer - Road & Heavy Construction IV

Gradealls, Keystones, Cranes on land or water (with digging buckets), Bridge Cranes, Vermeer Cutter and machines of a similar nature, Trenching Machines.

Effective Period: 7/1/2015 - 6/30/2016

Wage Rate per Hour: \$74.84

Supplemental Benefit Rate per Hour: \$30.40 Supplemental Note: \$55.10 overtime hours

Shift Wage Rate: \$119.74

Operating Engineer - Road & Heavy Construction V

Pile Drivers & Rigs (employing Dock Builder foreperson): Derrick Boats, Tunnel Shovels.

Effective Period: 7/1/2015 - 6/30/2016

Wage Rate per Hour: \$73.36

Supplemental Benefit Rate per Hour: \$30.40 Supplemental Note: \$55.10 overtime hours

Shift Wage Rate: \$117.38

Operating Engineer - Road & Heavy Construction VI

Mixers (Concrete with loading attachment), Concrete Pavers, Cableways, Land Derricks, Power Houses (Low Air Pressure Units).

Effective Period: 7/1/2015 - 6/30/2016

Wage Rate per Hour: \$69.69

Supplemental Benefit Rate per Hour: \$30.40 Supplemental Note: \$55.10 overtime hours

Shift Wage Rate: \$111.50

Operating Engineer - Road & Heavy Construction VII

Barrier Movers , Barrier Transport and Machines of a Similar Nature.

PUBLISH DATE: 7/1/2015 EFFECTIVE PERIOD: JULY 1, 2015 THROUGH JUNE 30, 2016 Page 36 of 86

Effective Period: 7/1/2015 - 6/30/2016

Wage Rate per Hour: \$56.25

Supplemental Benefit Rate per Hour: \$30.40 Supplemental Note: \$55.10 overtime hours

Shift Wage Rate: \$90.00

Operating Engineer - Road & Heavy Construction VIII

Utility Compressors

Effective Period: 7/1/2015 - 6/30/2016

Wage Rate per Hour: \$43.63

Supplemental Benefit Rate per Hour: \$30.40 Supplemental Note: \$55.10 overtime hours

Shift Wage Rate: \$55.03

Operating Engineer - Road & Heavy Construction IX

Horizontal Boring Rig

Effective Period: 7/1/2015 - 6/30/2016

Wage Rate per Hour: \$66.26

Supplemental Benefit Rate per Hour: \$30.40 Supplemental Note: \$55.10 overtime hours

Shift Wage Rate: \$106.02

Operating Engineer - Road & Heavy Construction X

Elevators (manually operated as personnel hoist).

Effective Period: 7/1/2015 - 6/30/2016

Wage Rate per Hour: \$60.89

Supplemental Benefit Rate per Hour: \$30.40 Supplemental Note: \$55.10 overtime hours

Shift Wage Rate: \$97.42

Operating Engineer - Road & Heavy Construction XI

Compressors (Portable 3 or more in battery), Driving of Truck Mounted Compressors, Well-point Pumps, Tugger Machines Well Point Pumps, Churn Drill.

Effective Period: 7/1/2015 - 6/30/2016

Wage Rate per Hour: \$47.28

Supplemental Benefit Rate per Hour: \$30.40 Supplemental Note: \$55.10 overtime hours

Shift Wage Rate: \$75.65

Operating Engineer - Road & Heavy Construction XII

All Drills and Machines of a similar nature.

PUBLISH DATE: 7/1/2015 EFFECTIVE PERIOD: JULY 1, 2015 THROUGH JUNE 30, 2016 Page 37 of 86

Effective Period: 7/1/2015 - 6/30/2016

Wage Rate per Hour: \$70.42

Supplemental Benefit Rate per Hour: \$30.40 Supplemental Note: \$55.10 overtime hours

Shift Wage Rate: \$112.67

Operating Engineer - Road & Heavy Construction XIII

Concrete Pumps, Concrete Plant, Stone Crushers, Double Drum Hoist, Power Houses (other than above).

Effective Period: 7/1/2015 - 6/30/2016

Wage Rate per Hour: \$68.19

Supplemental Benefit Rate per Hour: \$30.40 Supplemental Note: \$55.10 overtime hours

Shift Wage Rate: \$109.10

Operating Engineer - Road & Heavy Construction XIV

Concrete Mixer

Effective Period: 7/1/2015 - 6/30/2016

Wage Rate per Hour: \$65.20

Supplemental Benefit Rate per Hour: \$30.40 Supplemental Note: \$55.10 overtime hours

Shift Wage Rate: \$104.32

Operating Engineer - Road & Heavy Construction XV

Compressors (Portable Single or two in Battery, not over 100 feet apart), Pumps (River Cofferdam) and Welding Machines, Push Button Machines, All Engines Irrespective of Power (Power-Pac) used to drive auxiliary equipment, Air, Hydraulic, etc.

Effective Period: 7/1/2015 - 6/30/2016

Wage Rate per Hour: \$43.91

Supplemental Benefit Rate per Hour: \$30.40 Supplemental Note: \$55.10 overtime hours

Shift Wage Rate: \$70.26

Operating Engineer - Road & Heavy Construction XVI

Concrete Breaking Machines, Hoists (Single Drum), Load Masters, Locomotives (over ten tons) and Dinkies over ten tons, Hydraulic Crane-Second Engineer.

Effective Period: 7/1/2015 - 6/30/2016

Wage Rate per Hour: \$62.25

Supplemental Benefit Rate per Hour: \$30.40 Supplemental Note: \$55.10 overtime hours

Shift Wage Rate: \$99.60

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Operating Engineer - Road & Heavy Construction XVII

On-Site concrete plant engineer, On-site Asphalt Plant Engineer, and Vibratory console.

Effective Period: 7/1/2015 - 6/30/2016

Wage Rate per Hour: \$62.74

Supplemental Benefit Rate per Hour: \$30.40 Supplemental Note: \$55.10 overtime hours

Shift Wage Rate: \$100.38

Operating Engineer - Road & Heavy Construction XVIII

Tower Crane

Effective Period: 7/1/2015 - 6/30/2016

Wage Rate per Hour: \$90.09

Supplemental Benefit Rate per Hour: \$30.40 Supplemental Note: \$55.10 overtime hours

Shift Wage Rate: \$144.14

Operating Engineer - Paving I

Asphalt Spreaders, Autogrades (C.M.I.), Roto/Mil

Effective Period: 7/1/2015 - 6/30/2016

Wage Rate per Hour: \$69.69

Supplemental Benefit Rate per Hour: \$30.40 Supplemental Note: \$55.10 overtime hours

Shift Wage Rate: \$111.50

Operating Engineer - Paving II

Asphalt Roller

Effective Period: 7/1/2015 - 6/30/2016

Wage Rate per Hour: \$67.87

Supplemental Benefit Rate per Hour: \$30.40 Supplemental Note: \$55.10 overtime hours

Shift Wage Rate: \$108.59

Operating Engineer - Paving III

Asphalt Plants

Effective Period: 7/1/2015 - 6/30/2016

Wage Rate per Hour: \$57.40

Supplemental Benefit Rate per Hour: \$30.40 Supplemental Note: \$55.10 overtime hours

Shift Wage Rate: \$91.84

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Operating Engineer - Concrete I

Cranes

Effective Period: 7/1/2015 - 6/30/2016

Wage Rate per Hour: \$74.51

Supplemental Benefit Rate per Hour: \$30.40 Supplemental Note: \$55.10 overtime hours

Operating Engineer - Concrete II

Compressors

Effective Period: 7/1/2015 - 6/30/2016

Wage Rate per Hour: \$44.25

Supplemental Benefit Rate per Hour: \$30.40 Supplemental Note: \$55.10 overtime hours

Operating Engineer - Concrete III

Micro-traps (Negative Air Machines), Vac-All Remediation System.

Effective Period: 7/1/2015 - 6/30/2016

Wage Rate per Hour: \$59.51

Supplemental Benefit Rate per Hour: \$30.40 Supplemental Note: \$55.10 overtime hours

Operating Engineer - Steel Erection I

Three Drum Derricks

Effective Period: 7/1/2015 - 6/30/2016

Wage Rate per Hour: \$77.40

Supplemental Benefit Rate per Hour: \$30.40 Supplemental Note: \$55.10 overtime hours

Shift Wage Rate: \$123.84

Operating Engineer - Steel Erection II

Cranes, 2 Drum Derricks, Hydraulic Cranes, Fork Lifts and Boom Trucks.

Effective Period: 7/1/2015 - 6/30/2016

Wage Rate per Hour: \$74.37

Supplemental Benefit Rate per Hour: \$30.40 Supplemental Note: \$55.10 overtime hours

Shift Wage Rate: \$118.99

Operating Engineer - Steel Erection III

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Compressors, Welding Machines.

Effective Period: 7/1/2015 - 6/30/2016

Wage Rate per Hour: \$44.09

Supplemental Benefit Rate per Hour: \$30.40 Supplemental Note: \$55.10 overtime hours

Shift Wage Rate: \$70.54

Operating Engineer - Steel Erection IV

Compressors - Not Combined with Welding Machine.

Effective Period: 7/1/2015 - 6/30/2016

Wage Rate per Hour: \$41.98

Supplemental Benefit Rate per Hour: \$30.40 Supplemental Note: \$55.10 overtime hours

Shift Wage Rate: \$67.17

Operating Engineer - Building Work I

Forklifts, Plaster (Platform machine), Plaster Bucket, Concrete Pump and all other equipment used for hoisting material.

Effective Period: 7/1/2015 - 6/30/2016

Wage Rate per Hour: \$61.27

Supplemental Benefit Rate per Hour: \$30.40 Supplemental Note: \$55.10 overtime hours

Operating Engineer - Building Work II

Compressors, Welding Machines (Cutting Concrete-Tank Work), Paint Spraying, Sandblasting, Pumps (with the exclusion of Concrete Pumps), All Engines irrespective of Power (Power-Pac) used to drive Auxiliary Equipment, Air, Hydraulic, Jacking System, etc.

Effective Period: 7/1/2015 - 6/30/2016

Wage Rate per Hour: \$45.85

Supplemental Benefit Rate per Hour: \$30.40 Supplemental Note: \$55.10 overtime hours

Operating Engineer - Building Work III

Double Drum

Effective Period: 7/1/2015 - 6/30/2016

Wage Rate per Hour: \$69.76

Supplemental Benefit Rate per Hour: \$30.40 Supplemental Note: \$55.10 overtime hours

Operating Engineer - Building Work IV

Stone Derrick, Cranes, Hydraulic Cranes Boom Trucks.

Effective Period: 7/1/2015 - 6/30/2016

Wage Rate per Hour: \$73.91

Supplemental Benefit Rate per Hour: \$30.40 Supplemental Note: \$55.10 overtime hours

Operating Engineer - Building Work V

Dismantling and Erection of Cranes, Relief Engineer.

Effective Period: 7/1/2015 - 6/30/2016

Wage Rate per Hour: \$68.09

Supplemental Benefit Rate per Hour: \$30.40 Supplemental Note: \$55.10 overtime hours

Operating Engineer - Building Work VI

4 Pole Hoist, Single Drum Hoists.

Effective Period: 7/1/2015 - 6/30/2016

Wage Rate per Hour: \$67.37

Supplemental Benefit Rate per Hour: \$30.40 Supplemental Note: \$55.10 overtime hours

Operating Engineer - Building Work VII

Rack & Pinion and House Cars

Effective Period: 7/1/2015 - 6/30/2016

Wage Rate per Hour: \$53.54

Supplemental Benefit Rate per Hour: \$30.40 Supplemental Note: \$55.10 overtime hours

For New House Car projects Wage Rate per Hour \$42.70

Overtime Description

On jobs of more than one shift, if an Employee fails to report for work through any cause over which the Employer has no control, the Employee on duty will continue to work at the rate of single time.

For House Cars and Rack & Pinion only: Overtime paid at time and one-half for all hours in excess of eight hours in a day, Saturday, Sunday and Holidays worked.

Overtime

Double time the regular rate after an 8 hour day.

Double time the regular time rate for Saturday.

Double time the regular rate for Sunday.

Double time the regular rate for work on the following holiday(s).

Paid Holidays

New Year's Day

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Lincoln's Birthday President's Day **Memorial Day** Independence Day **Labor Day** Columbus Day Veteran's Day Thanksgiving Day Day after Thanksgiving

Employees must work at least one day in the payroll week in which the holiday occurs to receive the paid holiday

Shift Rates

For Steel Erection Only: Shifts may be worked at the single time rate at other than the regular working hours (8:00 A.M. to 4:30 P.M.) on the following work ONLY: Heavy construction jobs on work below the street level, over railroad tracks and on building jobs.

(Operating Engineer Local #14)

FLOOR COVERER

(Interior vinyl composition tile, sheath vinyl linoleum and wood parquet tile including site preparation and synthetic turf not including site preparation)

Floor Coverer

Effective Period: 7/1/2015 - 6/30/2016

Wage Rate per Hour: \$50.50

Supplemental Benefit Rate per Hour: \$45.88

Overtime

Time and one half the regular rate after an 8 hour day. Time and one half the regular rate for Saturday. Double time the regular rate for Sunday.

Overtime Holidays

Double time the regular rate for work on the following holiday(s). New Year's Day President's Day Memorial Day Independence Day Labor Day **Columbus Day Presidential Election Day** Thanksgiving Day Day after Thanksgiving Christmas Day

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Paid Holidays

1/2 day on Christmas Eve if work is performed in the A.M. 1/2 day on New Year's Eve if work is performed in the A.M.

Shift Rates

Two shifts may be utilized with the first shift working 8:00 A.M. to the end of the shift at the straight time of pay. The second shift will receive one hour at double time rate for the last hour of the shift. (eight for seven, nine for eight).

(Carpenters District Council)

GLAZIER

(New Construction, Remodeling, and Alteration)

Glazier

Effective Period: 7/1/2015 - 10/31/2015

Wage Rate per Hour: \$43.35

Supplemental Benefit Rate per Hour: \$36.59

Supplemental Note: Supplemental Benefit Overtime Rate: \$45.34

Effective Period: 11/1/2015 - 6/30/2016

Wage Rate per Hour: \$43.95

Supplemental Benefit Rate per Hour: \$36.84

Supplemental Note: Supplemental Benefit Overtime Rate: \$45.59

Overtime Description

An optional 8th hour can be worked at straight time rate. If 9th hour is worked, then both hours or more (8th & 9th or more) will be at the double time rate of pay.

Overtime

Double time the regular rate after a 7 hour day. Double time the regular time rate for Saturday. Double time the regular rate for Sunday.

Overtime Holidays

Double time the regular rate for work on the following holiday(s). New Year's Day
President's Day
Memorial Day
Independence Day
Labor Day
Thanksgiving Day
Day after Thanksgiving

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Christmas Day

Paid Holidays

None

Shift Rates

Shifts shall be any 7 hours beyond 4:00 P.M. for which the glazier shall receive 8 hours pay for 7 hours worked.

(Local #1281)

GLAZIER - REPAIR & MAINTENANCE

(For the Installation of Glass - All repair and maintenance work on a particular building, whenever performed, where the total cumulative contract value is under \$105,000. Except where enumerated (i.e. plate glass windows) does not apply to non-residential buildings.)

<u>Craft Jurisdiction for repair, maintenance and fabrication</u>

Plate glass replacement, Residential glass replacement, Residential mirrors and shower doors, Storm windows and storm doors, Residential replacement windows, Herculite door repairs, Door closer repairs, Retrofit apartment house (non commercial buildings), Glass tinting.

Effective Period: 7/1/2015 - 6/30/2016

Wage Rate per Hour: \$23.68

Supplemental Benefit Rate per Hour: \$19.54

Overtime

Time and one half the regular rate after an 8 hour day.

Double time the regular rate for Sunday.

Time and one half the regular hourly rate after 40 hours in any work week.

Paid Holidays

New Year's Day President's Day Memorial Day Independence Day Labor Day Thanksgiving Day Day after Thanksgiving Christmas Day

(Local #1281)

HEAT AND FROST INSULATOR

Heat & Frost Insulator

Effective Period: 7/1/2015 - 6/30/2016

Wage Rate per Hour: \$57.38

Supplemental Benefit Rate per Hour: \$37.41

Overtime Description

Double time shall be paid for supplemental benefits during overtime work. 8th hour paid at time and one half.

Overtime

Double time the regular rate after an 8 hour day. Double time the regular time rate for Saturday. Double time the regular rate for Sunday.

Overtime Holidays

Double time the regular rate for work on the following holiday(s).
New Year's Day
Martin Luther King Jr. Day
President's Day
Memorial Day
Independence Day
Columbus Day
Veteran's Day
Thanksgiving Day
Day after Thanksgiving
Christmas Day

Triple time the regular rate for work on the following holiday(s). Labor Day

Paid Holidays

None

Shift Rates

The first shift shall work seven hours at the regular straight time rate. The second and third shift shall work seven hours the regular straight time hourly rate plus a fourteen percent wage and benefit premium. Off hour work in occupied or retail buildings may be worked on weekdays with an increment of \$1.00 per hour and eight hours pay for seven (7) hours worked. Double time will apply for over seven (7) hours worked on weekdays, weekends or holidays.

(Local #12)

HOUSE WRECKER (TOTAL DEMOLITION)

House Wrecker - Tier A

On all work sites the first, second, eleventh and every third House Wrecker thereafter will be Tier A House Wreckers (i.e. 1st, 2nd, 11th, 14th etc). Other House Wreckers may be Tier B House Wreckers.

Effective Period: 7/1/2015 - 6/30/2016

Wage Rate per Hour: \$35.52

Supplemental Benefit Rate per Hour: \$26.86

House Wrecker - Tier B

Effective Period: 7/1/2015 - 6/30/2016

Wage Rate per Hour: \$24.90

Supplemental Benefit Rate per Hour: \$19.88

Overtime

Time and one half the regular rate after an 8 hour day. Time and one half the regular rate for Saturday. Double time the regular rate for Sunday.

Overtime Holidays

Double time the regular rate for work on the following holiday(s).
New Year's Day
President's Day
Memorial Day
Independence Day
Labor Day
Thanksgiving Day
Christmas Day

Paid Holidays

None

(Mason Tenders District Council)

IRON WORKER - ORNAMENTAL

<u> Iron Worker - Ornamental</u>

Effective Period: 7/1/2015 - 6/30/2016

Wage Rate per Hour: \$43.20

Supplemental Benefit Rate per Hour: \$47.67

Supplemental Note: Supplemental benefits are to be paid at the applicable overtime rate when overtime is in

effect.

Overtime Description

Time and one half the regular rate after a 7 hour day for a maximum of two hours on any regular work day (the 8th and 9th hour) and double time shall be paid for all work on a regular work day thereafter, time and one half the regular rate for Saturday for the first seven hours of work and double time shall be paid for all work on a Saturday thereafter.

Overtime

Double time the regular rate for Sunday.

Overtime Holidays

Double time the regular rate for work on the following holiday(s).

New Year's Day

President's Day

Memorial Day

Independence Day

Labor Day

Thanksgiving Day

Christmas Day

Paid Holidays

None

Shift Rates

For off shift work - 8 hours pay for 7 hours of work. When two or three shifts are employed on a job, Monday through Friday, the workday for each shift shall be seven hours and paid for ten and one-half hours at the single time rate. When two or three shifts are worked on Saturday, Sunday or holidays, each shift shall be seven hours and paid fifteen and three-quarters hours.

(Local #580)

IRON WORKER - STRUCTURAL

<u> Iron Worker - Structural</u>

Effective Period: 7/1/2015 - 6/30/2016

Wage Rate per Hour: \$48.75

Supplemental Benefit Rate per Hour: \$67.34

Supplemental Note: Supplemental benefits are to be paid at the applicable overtime rate when overtime is in

effect.

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Overtime Description

Monday through Friday- the first eight hours are paid at straight time, the 9th and 10th hours are paid at time and one-half the regular rate, all additional weekday overtime is paid at double the regular rate. Saturdays- the first eight hours are paid at time and one-half the regular rate, double time thereafter. Sunday-all shifts are paid at double time.

Overtime

Time and one half the regular rate after an 8 hour day. Time and one half the regular rate for Saturday. Double time the regular rate for Sunday.

Overtime Holidays

Double time the regular rate for work on the following holiday(s).

New Year's Day
Good Friday
Memorial Day
Independence Day
Labor Day
Thanksgiving Day
Christmas Day

Paid Holidays

1/2 day on Christmas Eve if work is performed in the A.M. 1/2 day on New Year's Eve if work is performed in the A.M.

Shift Rates

Monday through Friday - First Shift: First eight hours are paid at straight time, the 9th & 10th hours are paid at time and a half, double time paid thereafter. Second and third Shifts: First eight hours are paid at time and one-half, double time thereafter. Saturdays: All shifts, first eight hours paid at time and one-half, double time thereafter: Sunday all shifts are paid at double time.

(Local #40 & #361)

LABORER

(Foundation, Concrete, Excavating, Street Pipe Layer and Common)

<u>Laborer</u>

Excavation and foundation work for buildings, heavy construction, engineering work, and hazardous waste removal in connection with the above work. Landscaping tasks in connection with heavy construction work, engineering work and building projects. Projects include, but are not limited to pollution plants, sewers, parks, subways, bridges, highways, etc.

Effective Period: 7/1/2015 - 6/30/2016

Wage Rate per Hour: \$40.50

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Supplemental Benefit Rate per Hour: \$36.53

Overtime

Time and one half the regular rate after an 8 hour day. Time and one half the regular rate for Saturday. Double time the regular rate for Sunday.

Overtime Holidays

Double time the regular rate for work on the following holiday(s).
New Year's Day
Memorial Day
Independence Day
Labor Day
Columbus Day
Presidential Election Day
Thanksgiving Day
Christmas Day

Paid Holidays

Labor Day Thanksgiving Day

Shift Rates

When two shifts are employed, single time rate shall be paid for each shift. When three shifts are found necessary, each shift shall work seven and one half hours (7 $\frac{1}{2}$), but shall be paid for eight (8) hours of labor, and be permitted one half hour for lunch.

(Local #731)

LANDSCAPING

(Landscaping tasks, as well as tree pruning, tree removing, spraying and maintenance in connection with the planting of street trees and the planting of trees in city parks but not when such activities are performed as part of, or in connection with, other construction or reconstruction projects.)

Landscaper (Above 6 years experience)

Effective Period: 7/1/2015 - 6/30/2016

Wage Rate per Hour: \$27.00

Supplemental Benefit Rate per Hour: \$14.55

Landscaper (3 - 6 years experience)

Effective Period: 7/1/2015 - 6/30/2016

Wage Rate per Hour: \$26.00

Supplemental Benefit Rate per Hour: \$14.55

Landscaper (up to 3 years experience)

Effective Period: 7/1/2015 - 6/30/2016

Wage Rate per Hour: \$23.50

Supplemental Benefit Rate per Hour: \$14.55

Groundperson

Effective Period: 7/1/2015 - 6/30/2016

Wage Rate per Hour: \$23.50

Supplemental Benefit Rate per Hour: \$14.55

Tree Remover / Pruner

Effective Period: 7/1/2015 - 6/30/2016

Wage Rate per Hour: \$32.00

Supplemental Benefit Rate per Hour: \$14.55

Landscaper Sprayer (Pesticide Applicator)

Effective Period: 7/1/2015 - 6/30/2016

Wage Rate per Hour: \$22.00

Supplemental Benefit Rate per Hour: \$14.55

Watering - Plant Maintainer

Effective Period: 7/1/2015 - 6/30/2016

Wage Rate per Hour: \$17.00

Supplemental Benefit Rate per Hour: \$14.55

Overtime Description

For all overtime work performed, supplemental benefits shall include an additional seventy-five (\$0.75) cents per hour.

Overtime

Time and one half the regular rate after an 8 hour day.
Time and one half the regular rate for Saturday.
Double time the regular rate for Sunday.
Time and one half the regular rate for work on a holiday plus the day's pay.

Paid Holidays

New Year's Day Memorial Day Independence Day Labor Day Thanksgiving Day

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Christmas Day

Shift Rates

Work performed on a 4pm to 12am shift has a 15% differential. Work performed on a 12am to 8am shift has a 20% differential.

(Local #175)

MARBLE MECHANIC

Marble Setter

Effective Period: 7/1/2015 - 12/31/2015

Wage Rate per Hour: \$51.53

Supplemental Benefit Rate per Hour: \$35.73

Effective Period: 1/1/2016 - 6/30/2016

Wage Rate per Hour: \$51.89

Supplemental Benefit Rate per Hour: \$36.62

Marble Finisher

Effective Period: 7/1/2015 - 12/31/2015

Wage Rate per Hour: \$40.53

Supplemental Benefit Rate per Hour: \$34.52

Effective Period: 1/1/2016 - 6/30/2016

Wage Rate per Hour: \$40.80

Supplemental Benefit Rate per Hour: \$35.15

Marble Polisher

Effective Period: 7/1/2015 - 12/31/2015

Wage Rate per Hour: \$36.65

Supplemental Benefit Rate per Hour: \$26.63

Effective Period: 1/1/2016 - 6/30/2016

Wage Rate per Hour: \$37.02

Supplemental Benefit Rate per Hour: \$27.01

Overtime Description

Supplemental Benefit contributions are to be made at the applicable overtime rates. Time and one half the regular rate after a 7 hour day or time and one half the regular rate after an 8 hour day - chosen by Employer at the start of the project and then would last for the full duration of the project.

Overtime

Time and one half the regular rate for Saturday. Double time the regular rate for Sunday.

Overtime Holidays

Double time the regular rate for work on the following holiday(s).

New Year's Day

President's Day

Good Friday

Memorial Day

Independence Day

Labor Day

Columbus Day

Veteran's Day

Thanksgiving Day

Day after Thanksgiving

Paid Holidays

Christmas Day

None

(Local #7)

MASON TENDER

Mason Tender

Effective Period: 7/1/2015 - 6/30/2016

Wage Rate per Hour: \$36.67

Supplemental Benefit Rate per Hour: \$28.02

Overtime

Time and one half the regular rate after an 8 hour day.

Time and one half the regular rate for Saturday.

Double time the regular rate for Sunday.

Saturday may be used as a make-up day at straight time when a day is lost during that week to inclement weather.

Overtime Holidays

Double time the regular rate for work on the following holiday(s).

New Year's Day President's Day

Memorial Day

Independence Day

Labor Day

Thanksgiving Day

Christmas Day

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Paid Holidays

None

Shift Rates

The Employer may work two (2) shifts with the first shift at the straight time wage rate and the second shift receiving eight (8) hours paid for seven (7) hours work at the straight time wage rate.

(Local #79)

MASON TENDER (INTERIOR DEMOLITION WORKER)

(The erection, building, moving, servicing and dismantling of enclosures, scaffolding, barricades, protection and site safety structures etc., on Interior Demolition jobs.)

Mason Tender Tier A

Effective Period: 7/1/2015 - 6/30/2016

Wage Rate per Hour: \$35.46

Supplemental Benefit Rate per Hour: \$22.13

Mason Tender Tier B

On Interior Demolition job sites 33 1/3 % of the employees shall be classified as Tier A Interior Demolition Workers and 66 2/3 % shall be classified as Tier B Interior Demolition Workers; provided that the employer may employ more than 33 1/3 % Tier A Interior Demolition Workers on the job site. Where the number of employees on a job site is not divisible by 3, the first additional employee (above the number of employees divisible by three) shall be a Tier B Interior Demolition Worker, and the second additional employee shall be a Tier A Interior Demolition Worker.

Effective Period: 7/1/2015 - 6/30/2016

Wage Rate per Hour: \$24.65

Supplemental Benefit Rate per Hour: \$16.45

Overtime

Time and one half the regular rate after an 8 hour day. Time and one half the regular rate for Sunday.

Overtime Holidays

Double time the regular rate for work on the following holiday(s). New Year's Day President's Day Memorial Day Independence Day

Labor Day Thanksgiving Day Christmas Day

Paid Holidays

None

(Local #79)

METALLIC LATHER

Metallic Lather

Effective Period: 7/1/2015 - 6/30/2016

Wage Rate per Hour: \$43.63

Supplemental Benefit Rate per Hour: \$41.57

Supplemental Note: Supplemental benefits for overtime are paid at the appropriate overtime rate.

Overtime Description

Overtime would be time and one half the regular rate after a seven (7) or eight (8) hours workday, which would be set at the start of the job.

Overtime

Time and one half the regular rate for Saturday. Double time the regular rate for Sunday.

Overtime Holidays

Double time the regular rate for work on the following holiday(s).

New Year's Day

Washington's Birthday

Good Friday

Memorial Day

Independence Day

Labor Day

Columbus Day

Presidential Election Day

Thanksgiving Day

Christmas Day

Paid Holidays

1/2 day on Christmas Eve if work is performed in the A.M. 1/2 day on New Year's Eve if work is performed in the A.M.

Shift Rates

There shall be either two (2) or three (3) shifts, each shift shall be eight (8) hours with nine (9) hours pay, including one half (½) hour for lunch. Off-Hour Start shall commence after 3:30 P.M. and shall conclude by 6:00

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A.M. The first consecutive seven (7) hours shall be at straight time with a differential of twelve dollars (\$12.00) per hour. Fringes shall be paid at the straight time rate.

(Local #46)

MILLWRIGHT

Millwright

Effective Period: 7/1/2015 - 6/30/2016

Wage Rate per Hour: \$49.50

Supplemental Benefit Rate per Hour: \$52.01

Overtime

Time and one half the regular rate after an 8 hour day.

Time and one half the regular rate for Saturday.

Double time the regular rate for Sunday.

Saturday may be used as a make-up day at straight time when a day is lost during that week to inclement weather.

Overtime Holidays

Double time the regular rate for work on the following holiday(s).

New Year's Day

President's Day

Good Friday

Memorial Day

Independence Day

Labor Day

Columbus Day

Presidential Election Day

Thanksgiving Day

Christmas Day

Paid Holidays

1/2 day on Christmas Eve if work is performed in the A.M. 1/2 day on New Year's Eve if work is performed in the A.M.

Shift Rates

The first shift shall receive the straight time rate of pay. The second shift receives the straight time rate of pay plus fifteen (15%) per cent. Members of the second shift shall be allowed one half hour to eat, with this time being included in the hours of the workday established. There must be a first shift to work a second shift. All additional hours worked shall be paid at the time and one-half rate of pay plus fifteen (15%) per cent for weekday hours.

(Local #740)

MOSAIC MECHANIC

Mosaic Mechanic - Mosaic & Terrazzo Mechanic

Effective Period: 7/1/2015 - 6/30/2016

Wage Rate per Hour: \$45.91

Supplemental Benefit Rate per Hour: \$38.15

Supplemental Note: Supplemental benefits for overtime to be paid at the rate of \$48.92 per hour.

Mosaic Mechanic - Mosaic & Terrazzo Finisher

Effective Period: 7/1/2015 - 6/30/2016

Wage Rate per Hour: \$44.30

Supplemental Benefit Rate per Hour: \$38.14

Supplemental Note: Supplemental benefits for overtime to be paid at the rate of \$48.91

per hour.

Mosaic Mechanic - Machine Operator Grinder

Effective Period: 7/1/2015 - 6/30/2016

Wage Rate per Hour: \$44.30

Supplemental Benefit Rate per Hour: \$38.14

Supplemental Note: Supplemental benefits for overtime to be paid at the rate of \$48.91 per hour.

Overtime

Time and one half the regular rate after a 7 hour day. Time and one half the regular rate for Saturday. Double time the regular rate for Sunday.

Overtime Holidays

Double time the regular rate for work on the following holiday(s).

New Year's Day

Washington's Birthday

Good Friday
Independence Day
Labor Day

Columbus Day

Veteran's Day

Thanksgiving Day

Day after Thanksgiving

Christmas Day

Paid Holidays

None

(Local #7)

PAINTER

Painter - Brush & Roller

Effective Period: 7/1/2015 - 6/30/2016

Wage Rate per Hour: \$41.00

Supplemental Benefit Rate per Hour: \$26.37 Supplemental Note: \$31.00 on overtime

Spray & Scaffold / Decorative / Sandblast

Effective Period: 7/1/2015 - 6/30/2016

Wage Rate per Hour: \$44.00

Supplemental Benefit Rate per Hour: \$26.37 Supplemental Note: \$31.00 on overtime

Overtime

Time and one half the regular rate after a 7 hour day. Time and one half the regular rate for Saturday. Time and one half the regular rate for Sunday.

Overtime Holidays

Time and one half the regular rate for work on the following holiday(s).
New Year's Day
President's Day
Memorial Day
Independence Day
Labor Day
Columbus Day
Thanksgiving Day
Christmas Day

Paid Holidays

None

(District Council of Painters #9)

PAINTER - SIGN

<u>Designer</u>

Effective Period: 7/1/2015 - 6/30/2016

Wage Rate per Hour: \$40.30

Supplemental Benefit Rate per Hour: \$7.22

Journeyperson

Effective Period: 7/1/2015 - 6/30/2016

Wage Rate per Hour: \$37.48

Supplemental Benefit Rate per Hour: \$7.22

Overtime

Time and one half the regular rate after an 8 hour day. Time and one half the regular rate for Saturday. Time and one half the regular rate for Sunday. Double time the regular rate for work on the following holiday(s).

Paid Holidays

New Year's Day Martin Luther King Jr. Day **Memorial Day** Independence Day Labor Day Thanksgiving Day Day after Thanksgiving **Christmas Day** Two (2) additional holidays as floating holidays

(Local #8A-28A)

PAINTER - STRIPER

Striper (paint)

Effective Period: 7/1/2015 - 6/30/2016

Wage Rate per Hour: \$35.00

Supplemental Benefit Rate per Hour: \$12.27

Supplemental Note: Overtime Supplemental Benefit rate - \$8.02 New Hire Rate (0-3 months) - \$0.00

Lineperson (thermoplastic)

Effective Period: 7/1/2015 - 6/30/2016

Wage Rate per Hour: \$39.00

Supplemental Benefit Rate per Hour: \$12.27

Supplemental Note: Overtime Supplemental Benefit rate - \$8.02; New Hire Rate (0-3 months) - \$0.00

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Overtime '

Time and one half the regular rate after an 8 hour day.
Time and one half the regular rate for Saturday.
Double time the regular rate for Sunday.
Time and one half the regular rate for work on the following holiday(s).

Paid Holidays

New Year's Day
Good Friday
Memorial Day
Independence Day
Labor Day
Columbus Day
Presidential Election Day
Thanksgiving Day
Day after Thanksgiving
Christmas Day

Shift Rates

Employees hired before April 1, 2003: 15% night shift premium differential for work commenced at 9:00 PM or later.

Vacation

Employees with one to two years service shall accrue vacation based on hours worked: 250 hours worked - 1 day vacation; 500 hours worked - 2 days vacation; 750 hours worked - 3 days vacation; 900 hours worked - 4 days vacation; 1,000 hours worked - 5 days vacation. Employees with two to five years service receive two weeks vacation. Employees with five to twenty years service receive three weeks vacation. Employees with two to twenty-five years service receive four weeks vacation. Employees with 25 or more years service receive five weeks vacation. Vacation must be taken during winter months. 2 Personal Days except employees hired after 4/1/12 who do not have 2 years of service.

(Local #917)

PAINTER - STRUCTURAL STEEL

Painters on Structural Steel

Effective Period: 7/1/2015 - 9/30/2015

Wage Rate per Hour: \$48.00

Supplemental Benefit Rate per Hour: \$34.58

Effective Period: 10/1/2015 - 6/30/2016

Wage Rate per Hour: \$49.00

Supplemental Benefit Rate per Hour: \$36.08

Painter - Power Tool

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Effective Period: 7/1/2015 - 9/30/2015

Wage Rate per Hour: \$54.00

Supplemental Benefit Rate per Hour: \$34.58

Effective Period: 10/1/2015 - 6/30/2016

Wage Rate per Hour: \$55.00

Supplemental Benefit Rate per Hour: \$36.08

Overtime Description

Supplemental Benefits shall be paid for each hour worked, up to forty (40) hours per week for the period of May 1st to November 15th or up to fifty (50) hours per week for the period of November 16th to April 30th.

Overtime

Time and one half the regular rate after a 7 hour day. Time and one half the regular rate for Saturday. Time and one half the regular rate for Sunday.

Overtime Holidays

Double time the regular rate for work on the following holiday(s). New Year's Day Memorial Day Independence Day Labor Day Thanksgiving Day **Christmas Day**

Paid Holidays

None

Shift Rates

Regular hourly rates plus a ten per cent (10%) differential

(Local #806)

PAPERHANGER

Paperhanger

Effective Period: 7/1/2015 - 6/30/2016

Wage Rate per Hour: \$41.08

Supplemental Benefit Rate per Hour: \$29.23

Supplemental Note: Supplemental benefits are to be paid at the appropriate straight time and overtime rate.

Overtime

Time and one half the regular rate after a 7 hour day.

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Time and one half the regular rate for Saturday. Time and one half the regular rate for Sunday.

Overtime Holidays

Time and one half the regular rate for work on the following holiday(s).
New Year's Day
President's Day
Memorial Day
Independence Day
Labor Day
Thanksgiving Day
Day after Thanksgiving
Christmas Day

Paid Holidays

None

Shift Rates

Evening shift - 4:30 P.M. to 12:00 Midnight (regular rate of pay); any work performed before 7:00 A.M. shall be at time and one half the regular base rate of pay.

(District Council of Painters #9)

PAVER AND ROADBUILDER

Paver & Roadbuilder - Formsetter

Effective Period: 7/1/2015 - 6/30/2016

Wage Rate per Hour: \$44.85

Supplemental Benefit Rate per Hour: \$36.92

Paver & Roadbuilder - Laborer

Paving and road construction work, regardless of material used, including but not limited to preparation of job sites, removal of old surfaces, asphalt and/or concrete, by whatever method, including but not limited to milling; laying of concrete; laying of asphalt for temporary, patchwork, and utility paving (but not production paving); site preparation and incidental work before the installation of rubberized materials and similar surfaces; installation and repair of temporary construction fencing; slurry seal coating, maintenance of safety surfaces; play equipment installation, and other related work.

Effective Period: 7/1/2015 - 6/30/2016

Wage Rate per Hour: \$40.98

Supplemental Benefit Rate per Hour: \$36.92

Production Paver & Roadbuilder - Screed Person

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(Production paving is asphalt paving when using a paving machine or on a project where a paving machine is traditionally used)

Adjustment of paving machinery on production paving jobs.

Effective Period: 7/1/2015 - 6/30/2016

Wage Rate per Hour: \$45.45

Supplemental Benefit Rate per Hour: \$36.92

Production Paver & Roadbuilder - Raker

Effective Period: 7/1/2015 - 6/30/2016

Wage Rate per Hour: \$44.85

Supplemental Benefit Rate per Hour: \$36.92

Production Paver & Roadbuilder - Shoveler

General laborer (except removal of surfaces - see Paver and Roadbuilder-Laborer) including but not limited to tamper, AC paint and liquid tar work.

Effective Period: 7/1/2015 - 6/30/2016

Wage Rate per Hour: \$41.56

Supplemental Benefit Rate per Hour: \$36.92

Overtime Description

Veteran's Day is a Paid Holiday for employees working on production paving.

If an employee works New Year's Day or Christmas Day, they receive the single time rate plus 25%.

Employees who work on a holiday listed below receive the straight time rate plus one day's pay for the holiday.

Overtime

Time and one half the regular rate after an 8 hour day. Time and one half the regular rate for Saturday. Double time the regular rate for Sunday.

Paid Holidays

Memorial Day Independence Day Labor Day Presidential Election Day Thanksgiving Day

Shift Rates

When two shifts are employed, the work period for each shift shall be a continuous eight (8) hours. When three shifts are employed, each shift will work seven and one half (7 ½) hours but will be paid for eight (8) hours since only one half (1/2) hour is allowed for meal time.

When two or more shifts are employed, single time will be paid for each shift.

Night Work - On night work, the first eight (8) hours of work will be paid for at the single time rate, except that production paving work shall be paid at 15% over the single time rate for the screed person, rakers and

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shovelers directly involved only. All other workers will be exempt. Hours worked over eight (8) hours during said shift shall be paid for at the time and one-half rate.

(Local #1010)

PLASTERER

<u>Plasterer</u>

Effective Period: 7/1/2015 - 6/30/2016

Wage Rate per Hour: \$43.43

Supplemental Benefit Rate per Hour: \$27.95

Overtime

Time and one half the regular rate after a 7 hour day.
Time and one half the regular rate for Saturday.
Double time the regular rate for Sunday.
Saturday may be used as a make-up day at straight time when a day is lost during that week to inclement weather.

Overtime Holidays

Double time the regular rate for work on the following holiday(s). New Year's Day
Martin Luther King Jr. Day
President's Day
Good Friday
Memorial Day
Independence Day
Labor Day
Columbus Day
Presidential Election Day
Thanksgiving Day
Christmas Day

Paid Holidays

None

Shift Rates

When it is not possible to conduct alteration work during regular work hours, in a building occupied by tenants, said work shall proceed on a shift basis: however work over seven (7) hours in any twenty four (24) hour period, the time after seven (7) hours shall be considered overtime.

The second shift shall start at a time between 3:30 p.m. and 7:00 p.m. and shall consist of seven (7) working hours and shall receive eight (8) hours of wages and benefits at the straight time rate. The workers on the second shift shall be allowed one-half (½) hour to eat with this time being included in the seven (7) hours of work.

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(Local #530)

PLASTERER - TENDER

Plasterer - Tender

Effective Period: 7/1/2015 - 6/30/2016

Wage Rate per Hour: \$36.67

Supplemental Benefit Rate per Hour: \$28.02

Overtime

Time and one half the regular rate after an 8 hour day.

Time and one half the regular rate for Saturday.

Double time the regular rate for Sunday.

Saturday may be used as a make-up day at straight time when a day is lost during that week to inclement weather.

Overtime Holidays

Double time the regular rate for work on the following holiday(s).

New Year's Day

Washington's Birthday

Memorial Day

Independence Day

Labor Day

Presidential Election Day

Thanksgiving Day

Christmas Day

Paid Holidays

None

Shift Rates

When work commences outside regular work hours, workers receive an hour additional (differential) wage and supplement payment. Eight hours pay for seven hours work or nine hours pay for eight hours work.

(Mason Tenders District Council)

PLUMBER

Plumber

Effective Period: 7/1/2015 - 6/30/2016

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Wage Rate per Hour: \$65.27

Supplemental Benefit Rate per Hour: \$28.38

Supplemental Note: Overtime supplemental benefit rate per hour: \$56.48

Plumber - Temporary Services

Temporary Services - When there are no Plumbers on the job site, there may be three shifts designed to cover the entire twenty-four hour period, including weekends if necessary, at the following rate straight time.

Effective Period: 7/1/2015 - 6/30/2016

Wage Rate per Hour: \$52.24

Supplemental Benefit Rate per Hour: \$22.28

Overtime Description

Double time the regular rate after a 7 hour day - unless for new construction site work where the plumbing contract price is \$1.5 million or less, the hours of labor can be 8 hours per day at the employers option. On Alteration jobs when other mechanical trades at the site are working an eighth hour at straight time, then the plumber shall also work an eighth hour at straight time.

Overtime

Double time the regular time rate for Saturday. Double time the regular rate for Sunday.

Overtime Holidays

Double time the regular rate for work on the following holiday(s).

New Year's Day

President's Day

Memorial Day

Independence Day

Labor Day

Columbus Day

Veteran's Day

Thanksgiving Day

Day after Thanksgiving

Christmas Day

Shift Rates

Shift work, when directly specified in public agency or authority documents where plumbing contract is \$8 million or less, will be permitted. 30% shift premium shall be paid for wages and fringe benefits for 4:00 pm and midnight shifts Monday to Friday. 50% shift premium shall be paid for wages and fringe benefits for 4:00 pm and midnight shift work performed on weekends. For shift work on holidays, double time wages and fringe benefits shall be paid.

(Plumbers Local #1)

PLUMBER (MECHNICAL EQUIPMENT AND SERVICE)

(Mechanical Equipment and Service work shall include any repair and/or replacement of the present plumbing system.)

Plumber

Effective Period: 7/1/2015 - 6/30/2016

Wage Rate per Hour: \$39.27

Supplemental Benefit Rate per Hour: \$13.34

Overtime

Time and one half the regular rate after an 8 hour day. Time and one half the regular rate for Saturday. Time and one half the regular rate for Sunday.

Overtime Holidays

Time and one half the regular rate for work on the following holiday(s).
New Year's Day
President's Day
Memorial Day
Independence Day
Thanksgiving Day
Day after Thanksgiving
Christmas Day

Paid Holidays

None

(Plumbers Local # 1)

PLUMBER (RESIDENTIAL RATES FOR 1, 2 AND 3 FAMILY HOME CONSTRUCTION)

Effective Period: 7/1/2015 - 6/30/2016

Wage Rate per Hour: \$45.19

Supplemental Benefit Rate per Hour: \$20.62

Overtime

Double time the regular rate after an 8 hour day. Double time the regular time rate for Saturday. Double time the regular rate for Sunday.

Overtime Holidays

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Double time the regular rate for work on the following holiday(s). New Year's Day
President's Day
Memorial Day
Independence Day
Labor Day
Columbus Day
Veteran's Day
Thanksgiving Day
Day after Thanksgiving
Christmas Day

Paid Holidays

None

Shift Rates

30% shift premium shall be paid for wages and fringe benefits for 4:00 pm and midnight shifts Monday to Friday. 50% shift premium shall be paid for wages and fringe benefits for 4:00 pm and midnight shift work performed on weekends. For shift work on holidays, double time wages and fringe benefits shall be paid.

(Plumbers Local #1)

PLUMBER: PUMP & TANK

Oil Trades (Installation and Maintenance)

Plumber - Pump & Tank

Effective Period: 7/1/2015 - 6/30/2016

Wage Rate per Hour: \$62.83

Supplemental Benefit Rate per Hour: \$21.37

Overtime

Time and one half the regular rate after an 8 hour day. Time and one half the regular rate for Saturday. Time and one half the regular rate for Sunday.

Overtime Holidays

Time and one half the regular rate for work on the following holiday(s).

New Year's Day

President's Day

Memorial Day

Independence Day

Labor Day

Columbus Day

Veteran's Day

Thanksgiving Day

Day after Thanksgiving Christmas Day

Paid Holidays

None

Shift Rates

All work outside the regular workday (8:00 A.M. to 3:30 P.M.) is to be paid at time and one half the regular hourly rate

(Plumbers Local #1)

POINTER - WATERPROOFER, CAULKER MECHANIC (EXTERIOR BUILDING RENOVATION)

Pointer - Waterproofer, Caulker Mechanic

Effective Period: 7/1/2015 - 6/30/2016

Wage Rate per Hour: \$47.41

Supplemental Benefit Rate per Hour: \$24.40

Overtime

Time and one half the regular rate after an 8 hour day.

Time and one half the regular rate for Saturday.

Time and one half the regular rate for Sunday.

Saturday may be used as a make-up day at straight time when a day is lost during that week to inclement weather.

Overtime Holidays

Time and one half the regular rate for work on the following holiday(s).
New Year's Day
Martin Luther King Jr. Day
President's Day
Memorial Day
Independence Day
Labor Day
Thanksgiving Day

Paid Holidays

None

Shift Rates

Christmas Day

All work outside the regular work day (an eight hour workday between the hours of 6:00 A.M. and 4:30 P.M.) is to be paid at time and one half the regular rate.

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(Bricklayer District Council)

ROOFER

Roofer

Effective Period: 7/1/2015 - 6/30/2016

Wage Rate per Hour: \$40.70

Supplemental Benefit Rate per Hour: \$30.17

Overtime

Time and one half the regular rate after an 8 hour day. Time and one half the regular rate for Saturday. Time and one half the regular rate for Sunday.

Overtime Holidays

Time and one half the regular rate for work on the following holiday(s).

New Year's Day

President's Day

Memorial Day

Independence Day

Labor Day

Presidential Election Day

Thanksgiving Day

Christmas Day

Paid Holidays

None

Shift Rates

Second shift - Regular hourly rate plus a 10% differential. Third shift - Regular hourly rate plus a 15% differential.

(Local #8)

SANDBLASTER - STEAMBLASTER

(Exterior Building Renovation)

Sandblaster / Steamblaster

Effective Period: 7/1/2015 - 6/30/2016

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Wage Rate per Hour: \$47.41

Supplemental Benefit Rate per Hour: \$24.40

Overtime

Time and one half the regular rate after an 8 hour day.

Time and one half the regular rate for Saturday.

Time and one half the regular rate for Sunday.

Saturday may be used as a make-up day at straight time when a day is lost during that week to inclement weather.

Overtime Holidays

Time and one half the regular rate for work on the following holiday(s).

New Year's Day Martin Luther King Jr. Day President's Day Memorial Day Independence Day Labor Day

Thanksgiving Day **Christmas Day**

Paid Holidays

None

Shift Rates

All work outside the regular work day (an eight hour workday between the hours of 6:00 A.M. and 4:30 P.M.) is to be paid at time and one half the regular rate.

(Bricklayer District Council)

SHEET METAL WORKER

Sheet Metal Worker

Effective Period: 7/1/2015 - 6/30/2016

Wage Rate per Hour: \$46.96

Supplemental Benefit Rate per Hour: \$45.19

Supplemental Note: Supplemental benefit contributions are to be made at the applicable overtime rates.

Sheet Metal Worker - Fan Maintenance

(The temporary operation of fans or blowers in new or existing buildings for heating and/or ventilation, and/or air conditioning prior to the completion of the project.)

Effective Period: 7/1/2015 - 6/30/2016

Wage Rate per Hour: \$37.57

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Supplemental Benefit Rate per Hour: \$45.19

Sheet Metal Worker - Duct Cleaner

Effective Period: 7/1/2015 - 6/30/2016

Wage Rate per Hour: \$12.90

Supplemental Benefit Rate per Hour: \$8.07

Overtime

Time and one half the regular rate after a 7 hour day. Time and one half the regular rate for Saturday. Double time the regular rate for Sunday.

Overtime Holidays

Double time the regular rate for work on the following holiday(s).
New Year's Day
Martin Luther King Jr. Day
President's Day
Memorial Day
Independence Day
Labor Day
Columbus Day
Veteran's Day
Thanksgiving Day
Day after Thanksgiving
Christmas Day

Paid Holidays

None

Shift Rates

Work that can only be performed outside regular working hours (seven hours of work between 7:30 A.M. and 3:30 P.M.) - First shift (work between 3:30 P.M. and 11:30 P.M.) - 10% differential above the established hourly rate. Second shift (work between 11:30 P.M. and 7:30 A.M.) - 15% differential above the established hourly rate.

For Fan Maintenance: On all full shifts of fan maintenance work the straight time hourly rate of pay will be paid for each shift, including nights, Saturdays, Sundays, and holidays.

SHEET METAL WORKER - SPECIALTY (Decking & Siding)

Sheet Metal Specialty Worker

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The first worker to perform this work must be paid at the rate of the Sheet Metal Worker. The second and third workers shall be paid the Specialty Worker Rate. The ratio of One Sheet Metal Worker, then Two Specialty Workers shall be utilized thereafter.

Effective Period: 7/1/2015 - 6/30/2016

Wage Rate per Hour: \$42.64

Supplemental Benefit Rate per Hour: \$23.62

Supplemental Note: Supplemental benefit contributions are to be made at the applicable overtime rates.

Overtime

Time and one half the regular rate after an 8 hour day. Time and one half the regular rate for Saturday. Double time the regular rate for Sunday.

Overtime Holidays

Double time the regular rate for work on the following holiday(s). New Year's Day Martin Luther King Jr. Day President's Day Memorial Day Independence Day Labor Day Columbus Day Veteran's Day Thanksgiving Day **Christmas Day**

Paid Holidays

None

(Local #28)

SHIPYARD WORKER

Shipyard Mechanic - First Class

Effective Period: 7/1/2015 - 6/30/2016

Wage Rate per Hour: \$27.54

Supplemental Benefit Rate per Hour: \$3.01

Shipyard Mechanic - Second Class

Effective Period: 7/1/2015 - 6/30/2016

Wage Rate per Hour: \$20.22

Supplemental Benefit Rate per Hour: \$2.73

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Shipyard Laborer - First Class

Effective Period: 7/1/2015 - 6/30/2016

Wage Rate per Hour: \$20.90

Supplemental Benefit Rate per Hour: \$2.75

Shipyard Laborer - Second Class

Effective Period: 7/1/2015 - 6/30/2016

Wage Rate per Hour: \$13.86

Supplemental Benefit Rate per Hour: \$2.48

Shipyard Dockhand - First Class

Effective Period: 7/1/2015 - 6/30/2016

Wage Rate per Hour: \$23.61

Supplemental Benefit Rate per Hour: \$2.86

Shipyard Dockhand - Second Class

Effective Period: 7/1/2015 - 6/30/2016

Wage Rate per Hour: \$15.94

Supplemental Benefit Rate per Hour: \$2.56

Overtime Description

Work performed on holiday is paid double time the regular hourly wage rate plus holiday pay.

Overtime

Time and one half the regular rate after an 8 hour day.
Time and one half the regular rate for Saturday.
Double time the regular rate for Sunday.
Time and one half the regular hourly rate after 40 hours in any work week.

Paid Holidays

New Year's Day
Martin Luther King Jr. Day
President's Day
Good Friday
Memorial Day
Independence Day
Labor Day
Thanksgiving Day
Day after Thanksgiving
Christmas Day

Based on Survey Data

SIGN ERECTOR

(Sheet Metal, Plastic, Electric, and Neon)

Sign Erector

Effective Period: 7/1/2015 - 6/30/2016

Wage Rate per Hour: \$45.60

Supplemental Benefit Rate per Hour: \$46.28

Overtime

Time and one half the regular rate after a 7 hour day.

Time and one half the regular rate for Saturday.

Time and one half the regular rate for Sunday.

Time and one half the regular rate for work on the following holiday(s).

Paid Holidays

New Year's Day
Washington's Birthday
Memorial Day
Independence Day
Labor Day
Columbus Day
Election Day
Thanksgiving Day
Day after Thanksgiving
Christmas Day

Shift Rates

Time and one half the regular hourly rate is to be paid for all hours worked outside the regular workday either (7:00 A.M. through 2:30 P.M.) or (8:00 A.M. through 3:30 P.M.)

(Local #137)

STEAMFITTER

<u>Steamfitter I</u>

Effective Period: 7/1/2015 - 6/30/2016

Wage Rate per Hour: \$55.00

Supplemental Benefit Rate per Hour: \$52.79

Supplemental Note: Overtime supplemental benefit rate: \$104.84

Steamfitter -Temporary Services

PUBLISH DATE: 7/1/2015 EFFECTIVE PERIOD: JULY 1, 2015 THROUGH JUNE 30, 2016 Page 75 of 86

The steamfitters shall not do any other work and shall not be permitted to work more than one shift in a twenty-four hour day. When steamfitters are present during the regular working day, no temporary services steamfitter will be required

Effective Period: 7/1/2015 - 6/30/2016

Wage Rate per Hour: \$41.80

Supplemental Benefit Rate per Hour: \$42.76

Supplemental Note: .

Overtime

Double time the regular rate after a 7 hour day. Double time the regular time rate for Saturday. Double time the regular rate for Sunday.

Overtime Holidays

Double time the regular rate for work on the following holiday(s).

New Year's Day

President's Day

Memorial Day

Independence Day

Labor Day

Columbus Day

Veteran's Day

Thanksgiving Day

Day after Thanksgiving

Christmas Day

Paid Holidays

None

Shift Rates

Work performed between 3:30 P.M. and 7:00 A.M. and on Saturdays, Sundays and Holidays shall be at double time the regular hourly rate and paid at the overtime supplemental benefit rate above.

Steamfitter II

For heating, ventilation, air conditioning and mechanical public works contracts with a dollar value not to exceed \$15,000,000 and for fire protection/sprinkler public works contracts not to exceed \$1,500,000.

Effective Period: 7/1/2015 - 6/30/2016

Wage Rate per Hour: \$55.00

Supplemental Benefit Rate per Hour: \$52.79

Supplemental Note: Overtime supplemental benefit rate: \$104.84

Steamfitter -Temporary Services

The steamfitters shall not do any other work and shall not be permitted to work more than one shift in a twenty-four hour day. When steamfitters are present during the regular working day, no temporary services steamfitter will be required.

Effective Period: 7/1/2015 - 6/30/2016

Wage Rate per Hour: \$41.80

Supplemental Benefit Rate per Hour: \$42.76

Overtime

Double time the regular rate after an 8 hour day. Double time the regular time rate for Saturday. Double time the regular rate for Sunday.

Overtime Holidays

Double time the regular rate for work on the following holiday(s).

New Year's Day

President's Day

Memorial Day

Independence Day

Labor Day

Columbus Day

Veteran's Day

Thanksgiving Day

Day after Thanksgiving

Christmas Day

Paid Holidays

None

Shift Rates

May be performed outside of the regular workday except Saturday, Sunday and Holidays. A shift shall consist of eight working hours. All work performed in excess of eight hours shall be paid at double time. No shift shall commence after 7:00 P.M. on Friday or 7:00 P.M. the day before holidays. All work performed after 12:01 A.M. Saturday or 12:01 A.M. the day before a Holiday will be paid at double time. When shift work is performed the wage rate for regular time worked is a thirty percent premium together with fringe benefits.

On Transit Authority projects, where work is performed in the vicinity of tracks all shift work on weekends and holidays may be performed at the regular shift rates.

Local #638

STEAMFITTER - REFRIGERATION AND AIR CONDITIONER

(Maintenance and Installation Service Person)

Refrigeration and Air Conditioner Mechanic

Effective Period: 7/1/2015 - 6/30/2016

Wage Rate per Hour: \$39.25

Supplemental Benefit Rate per Hour: \$13.81

Refrigeration and Air Conditioner Service Person V

Effective Period: 7/1/2015 - 6/30/2016

Wage Rate per Hour: \$32.25

Supplemental Benefit Rate per Hour: \$12.44

Refrigeration and Air Conditioner Service Person IV

Effective Period: 7/1/2015 - 6/30/2016

Wage Rate per Hour: \$26.72

Supplemental Benefit Rate per Hour: \$11.30

Refrigeration and Air Conditioner Service Person III

Filter changing and maintenance thereof, oil and greasing, tower and coil cleaning, scraping and painting, general housekeeping, taking of water samples.

Effective Period: 7/1/2015 - 6/30/2016

Wage Rate per Hour: \$22.93

Supplemental Benefit Rate per Hour: \$10.45

Refrigeration and Air Conditioner Service Person II

Filter changing and maintenance thereof, oil and greasing, tower and coil cleaning, scraping and painting, general housekeeping, taking of water samples.

Effective Period: 7/1/2015 - 6/30/2016

Wage Rate per Hour: \$19.02

Supplemental Benefit Rate per Hour: \$9.67

Refrigeration and Air Conditioner Service Person I

Filter changing and maintenance thereof, oil and greasing, tower and coil cleaning, scraping and painting, general housekeeping, taking of water samples.

Effective Period: 7/1/2015 - 6/30/2016

Wage Rate per Hour: \$13.91

Supplemental Benefit Rate per Hour: \$8.78

Overtime

Time and one half the regular rate after an 8 hour day. Time and one half the regular rate for Saturday. Double time the regular rate for Sunday.

Overtime Holidays

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Double time the regular rate for work on the following holiday(s).
New Year's Day
Independence Day
Labor Day
Veteran's Day
Thanksgiving Day
Christmas Day

Double time and one half the regular rate for work on the following holiday(s).

Martin Luther King Jr. Day

President's Day

Memorial Day

Columbus Day

Paid Holidays

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

(Local #638B)

STONE MASON - SETTER

Stone Mason - Setters

Effective Period: 7/1/2015 - 6/30/2016

Wage Rate per Hour: \$47.20

Supplemental Benefit Rate per Hour: \$37.15

Overtime

Time and one half the regular rate after a 7 hour day. Time and one half the regular rate for Saturday. Double time the regular rate for Sunday.

Overtime Holidays

Double time the regular rate for work on the following holiday(s). New Year's Day Washington's Birthday Good Friday Memorial Day Independence Day

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Labor Day Thanksgiving Day Christmas Day

Paid Holidays

1/2 day on Christmas Eve if work is performed in the A.M.

Shift Rates

For all work outside the regular workday (8:00 A.M. to 3:30 P.M. Monday through Friday), the pay shall be straight time plus a ten percent (10%) differential.

(Bricklayers District Council)

TAPER

Drywall Taper

Effective Period: 7/1/2015 - 12/29/2015

Wage Rate per Hour: \$46.32

Supplemental Benefit Rate per Hour: \$22.66

Effective Period: 12/30/2015 - 6/30/2016

Wage Rate per Hour: \$46.82

Supplemental Benefit Rate per Hour: \$22.66

Overtime

Time and one half the regular rate after a 7 hour day. Time and one half the regular rate for Saturday. Time and one half the regular rate for Sunday.

Overtime Holidays

Time and one half the regular rate for work on the following holiday(s).

New Year's Day

Martin Luther King Jr. Day

President's Day

Good Friday

Memorial Day

Independence Day

Labor Day

Columbus Day

Thanksgiving Day

Christmas Day

Paid Holidays

Any worker who reports to work on Christmas Eve or New Year's Eve pursuant to his employer's instruction shall be entitled to three (3) hours afternoon pay without working.

Shift Rates

Time and one half the regular rate outside the regular work hours (8:00 A.M. through 3:30 P.M.)

(Local #1974)

TELECOMMUNICATION WORKER

(Voice Installation Only)

Telecommunication Worker

Effective Period: 7/1/2015 - 6/30/2016

Wage Rate per Hour: \$40.35

Supplemental Benefit Rate per Hour: \$13.19

Supplemental Note: The above rate applies for Manhattan, Bronx, Brooklyn, Queens. \$12.64 for Staten Island

only.

Overtime

Time and one half the regular rate after a 7 hour day. Time and one half the regular rate for Saturday. Time and one half the regular rate for Sunday.

Overtime Holidays

Time and one half the regular rate for work on the following holiday(s).
New Year's Day
Lincoln's Birthday
Washington's Birthday
Memorial Day
Independence Day
Labor Day
Columbus Day
Election Day
Veteran's Day
Thanksgiving Day

Paid Holidays

Christmas Day

New Year's Day
Lincoln's Birthday
Washington's Birthday
Memorial Day
Independence Day
Labor Day
Columbus Day
Election Day
Veteran's Day

Thanksgiving Day
Christmas Day
Employees have the option of observing either Martin Luther King's Birthday or the day after Thanksgiving instead of Lincoln's Birthday

Shift Rates

For any workday that starts before 8A.M. or ends after 6P.M. there is a 10% differential for the applicable worker's hourly rate.

Vacation

(C.W.A.)

TILE FINISHER

Tile Finisher

Effective Period: 7/1/2015 - 6/30/2016

Wage Rate per Hour: \$40.03

Supplemental Benefit Rate per Hour: \$29.71

Overtime

Time and one half the regular rate after a 7 hour day. Time and one half the regular rate for Saturday. Double time the regular rate for Sunday.

Overtime Holidays

Double time the regular rate for work on the following holiday(s).

New Year's Day

President's Day

Good Friday

Memorial Day

Independence Day

Labor Day

Columbus Day

Veteran's Day

Thanksgiving Day

Day after Thanksgiving

Christmas Day

Paid Holidays

None

Shift Rates

Off shift work day (work performed outside the regular 8:00 A.M. to 3:30 P.M. workday): shift differential of one and one quarter (11/4) times the regular straight time rate of pay for the seven hours of actual off-shift work.

(Local #7)

TILE LAYER - SETTER

Tile Layer - Setter

Effective Period: 7/1/2015 - 6/30/2016

Wage Rate per Hour: \$51.61

Supplemental Benefit Rate per Hour: \$33.46

Overtime

Time and one half the regular rate after a 7 hour day. Time and one half the regular rate for Saturday. Double time the regular rate for Sunday.

Overtime Holidays

Double time the regular rate for work on the following holiday(s).

New Year's Day
President's Day
Good Friday
Memorial Day
Independence Day
Labor Day
Columbus Day
Veteran's Day
Thanksgiving Day
Day after Thanksgiving
Christmas Day

Shift Rates

Off shift work day (work performed outside the regular 8:00 A.M. to 3:30 P.M. workday): shift differential of one and one quarter (1½) times the regular straight time rate of pay for the seven hours of actual off-shift work.

(Local	#7)
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TIMBERPERSON

PUBLISH DATE: 7/1/2015 EFFECTIVE PERIOD: JULY 1, 2015 THROUGH JUNE 30, 2016 Page 83 of 86

<u>Timberperson</u>

Effective Period: 7/1/2015 - 6/30/2016

Wage Rate per Hour: \$45.60

Supplemental Benefit Rate per Hour: \$46.67

Overtime

Time and one half the regular rate after an 8 hour day.

Time and one half the regular rate for Saturday.

Double time the regular rate for Sunday.

Saturday may be used as a make-up day at straight time when a day is lost during that week to inclement

weather.

Time and one half the regular hourly rate after 40 hours in any work week.

Overtime Holidays

Double time the regular rate for work on the following holiday(s).

New Year's Day President's Day Memorial Day Independence Day

Labor Day

Columbus Day Presidential Election Day

Thanksgiving Day Christmas Day

Paid Holidays

None

Shift Rates

Off shift work commencing between 5:00 P.M. and 11:00 P.M. shall work eight and one half hours allowing for one half hour for lunch. The wage rate shall be 113% of the straight time hourly wage rate.

(Local #1536)

TUNNEL WORKER

Blasters, Mucking Machine Operators (Compressed Air Rates)

Effective Period: 7/1/2015 - 6/30/2016

Wage Rate per Hour: \$59.17

Supplemental Benefit Rate per Hour: \$49.45

Tunnel Workers (Compressed Air Rates)

Effective Period: 7/1/2015 - 6/30/2016

Wage Rate per Hour: \$57.12

Supplemental Benefit Rate per Hour: \$47.80

Top Nipper (Compressed Air Rates)

Effective Period: 7/1/2015 - 6/30/2016

Wage Rate per Hour: \$56.07

Supplemental Benefit Rate per Hour: \$46.96

Outside Lock Tender, Outside Gauge Tender, Muck Lock Tender (Compressed Air Rates)

Effective Period: 7/1/2015 - 6/30/2016

Wage Rate per Hour: \$55.06

Supplemental Benefit Rate per Hour: \$46.07

Bottom Bell & Top Bell Signal Person: Shaft Person (Compressed Air Rates)

Effective Period: 7/1/2015 - 6/30/2016

Wage Rate per Hour: \$55.06

Supplemental Benefit Rate per Hour: \$46.07

Changehouse Attendant: Powder Watchperson (Compressed Air Rates)

Effective Period: 7/1/2015 - 6/30/2016

Wage Rate per Hour: \$48.16

Supplemental Benefit Rate per Hour: \$43.62

Blasters (Free Air Rates)

Effective Period: 7/1/2015 - 6/30/2016

Wage Rate per Hour: \$56.47

Supplemental Benefit Rate per Hour: \$47.47

Tunnel Workers (Free Air Rates)

Effective Period: 7/1/2015 - 6/30/2016

Wage Rate per Hour: \$54.04

Supplemental Benefit Rate per Hour: \$45.45

All Others (Free Air Rates)

Effective Period: 7/1/2015 - 6/30/2016

Wage Rate per Hour: \$49.93

Supplemental Benefit Rate per Hour: \$42.06

<u> Microtunneling (Free Air Rates)</u>

PUBLISH DATE: 7/1/2015 EFFECTIVE PERIOD: JULY 1, 2015 THROUGH JUNE 30, 2016 Page 85 of 86

Effective Period: 7/1/2015 - 6/30/2016

Wage Rate per Hour: \$43.23

Supplemental Benefit Rate per Hour: \$36.36

Overtime Description

For Repair-Maintenance Work on Existing Equipment and Facilities - Time and one half the regular rate after a 7 hour day, or for Saturday, or for Sunday. Double time the regular rate for work on a holiday. For Small-Bore Micro Tunneling Machines - Time and one-half the regular rate shall be paid for all overtime.

Overtime

Double time the regular rate after an 8 hour day.

Double time the regular time rate for Saturday.

Double time the regular rate for Sunday.

Double time the regular rate for work on the following holiday(s).

Paid Holidays

New Year's Day Lincoln's Birthday President's Day Memorial Day Independence Day Labor Day Columbus Day Election Day Veteran's Day Thanksgiving Day Christmas Day

(Local #147)

WELDER

TO BE PAID AT THE RATE OF THE JOURNEYPERSON IN THE TRADE PERFORMING THE WORK.

OFFICE OF THE COMPTROLLER

CITY OF NEW YORK

220 APPRENTICESHIP PREVAILING WAGE SCHEDULE

APPENDIX

Pursuant to Labor Law §220 (3-e), only apprentices who are individually registered in a bona fide program to which the employer contractor is a participant and registered with the New York State Department of Labor, may be employed on a public work project.

Any employee listed on a payroll at an apprentice wage rate, who is not registered as above, shall be paid the journey person wage rate for the classification of work he actually performed.

Apprentice ratios are established to ensure the proper safety, training and supervision of apprentices. A ratio establishes the number of journey workers required for each apprentice in a program and on a job site. Ratios are interpreted as follows: in the case of a 1:1, 1:4 ratio, there must be one journey worker for the first apprentice, and four additional journey workers for each subsequent apprentice.

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ASBESTOS HANDLER

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

Asbestos Handler (First 1000 Hours)

Effective Period: 7/1/2015 - 6/30/2016

Wage Rate Per Hour: 78% of Journeyperson's rate Supplemental Benefit Rate Per Hour: \$15.95

Asbestos Handler (Second 1000 Hours)

Effective Period: 7/1/2015 - 6/30/2016

Wage Rate Per Hour: 80% of Journeyperson's rate Supplemental Benefit Rate Per Hour: \$15.95

Asbestos Handler (Third 1000 Hours)

Effective Period: 7/1/2015 - 6/30/2016

Wage Rate Per Hour: 83% of Journeyperson's rate Supplemental Benefit Rate Per Hour: \$15.95

Asbestos Handler (Fourth 1000 Hours)

Effective Period: 7/1/2015 - 6/30/2016

Wage Rate Per Hour: 89% of Journeyperson's rate Supplemental Benefit Rate Per Hour: \$15.95

(Local #78)

BOILERMAKER

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

Boilermaker (First Year)

Effective Period: 7/1/2015 - 6/30/2016

Wage Rate Per Hour: 65% of Journeyperson's rate Supplemental Benefit Rate Per Hour: \$30.00

Boilermaker (Second Year: 1st Six Months)

Effective Period: 7/1/2015 - 6/30/2016

Wage Rate Per Hour: 70% of Journeyperson's rate

Supplemental Benefit Rate Per Hour: \$31.66

Boilermaker (Second Year: 2nd Six Months)

Effective Period: 7/1/2015 - 6/30/2016

Wage Rate Per Hour: 75% of Journeyperson's rate Supplemental Benefit Rate Per Hour: \$33.32

Boilermaker (Third Year: 1st Six Months)

Effective Period: 7/1/2015 - 6/30/2016

Wage Rate Per Hour: 80% of Journeyperson's rate Supplemental Benefit Rate Per Hour: \$35.00

Boilermaker (Third Year: 2nd Six Months)

Effective Period: 7/1/2015 - 6/30/2016

Wage Rate Per Hour: 85% of Journeyperson's rate Supplemental Benefit Rate Per Hour: \$36.67

Boilermaker (Fourth Year: 1st Six Months)

Effective Period: 7/1/2015 - 6/30/2016

Wage Rate Per Hour: 90% of Journeyperson's rate Supplemental Benefit Rate Per Hour: \$38.34

Boilermaker (Fourth Year: 2nd Six Months)

Effective Period: 7/1/2015 - 6/30/2016

Wage Rate Per Hour: 95% of Journeyperson's rate Supplemental Benefit Rate Per Hour: \$40.01

(Local #5)

BRICKLAYER

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

Bricklayer (First 750 Hours)

Effective Period: 7/1/2015 - 6/30/2016

Wage Rate Per Hour: 50% of Journeyperson's rate Supplemental Benefit Rate Per Hour: \$17.10

Bricklayer (Second 750 Hours)

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Effective Period: 7/1/2015 - 6/30/2016

Wage Rate Per Hour: 60% of Journeyperson's rate Supplemental Benefit Rate Per Hour: \$17.10

Bricklayer (Third 750 Hours)

Effective Period: 7/1/2015 - 6/30/2016

Wage Rate Per Hour: 70% of Journeyperson's rate Supplemental Benefit Rate Per Hour: \$17.10

Bricklayer (Fourth 750 Hours)

Effective Period: 7/1/2015 - 6/30/2016

Wage Rate Per Hour: 80% of Journeyperson's rate Supplemental Benefit Rate Per Hour: \$17.10

Bricklayer (Fifth 750 Hours)

Effective Period: 7/1/2015 - 6/30/2016

Wage Rate Per Hour: 90% of Journeyperson's rate Supplemental Benefit Rate Per Hour: \$17.10

Bricklayer (Sixth 750 Hours)

Effective Period: 7/1/2015 - 6/30/2016

Wage Rate Per Hour: 95% of Journeyperson's rate Supplemental Benefit Rate Per Hour: \$17.10

(Bricklayer District Council)

CARPENTER

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

Carpenter (First Year)

Effective Period: 7/1/2015 - 6/30/2016

Wage Rate Per Hour: 40% of Journeyperson's rate Supplemental Benefit Rate Per Hour: \$31.14

Carpenter (Second Year)

Effective Period: 7/1/2015 - 6/30/2016

Wage Rate Per Hour: 50% of Journeyperson's rate

Supplemental Benefit Rate Per Hour: \$31.14

Carpenter (Third Year)

Effective Period: 7/1/2015 - 6/30/2016

Wage Rate Per Hour: 65% of Journeyperson's rate Supplemental Benefit Rate Per Hour: \$31.14

Carpenter (Fourth Year)

Effective Period: 7/1/2015 - 6/30/2016

Wage Rate Per Hour: 80% of Journeyperson's rate Supplemental Benefit Rate Per Hour: \$31.14

(Carpenters District Council)

CEMENT MASON

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

Cement Mason (First Year)

Effective Period: 7/1/2015 - 6/30/2016

Wage and Supplemental Rate Per Hour: 50% of Journeyperson's Rate

Cement Mason (Second Year)

Effective Period: 7/1/2015 - 6/30/2016

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

Cement Mason (Third Year)

Effective Period: 7/1/2015 - 6/30/2016

Wage and Supplemental Rate Per Hour: 70% of Journeyperson's Rate

(Local #780)

CEMENT AND CONCRETE WORKER

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

Cement & Concrete Worker (First 1333 hours)

Effective Period: 7/1/2015 - 6/30/2016

Wage Rate Per Hour: 50% of Journeyperson's rate Supplemental Benefit Rate Per Hour: \$18.84

Cement & Concrete Worker (Second 1333 hours)

Effective Period: 7/1/2015 - 6/30/2016

Wage Rate Per Hour: 65% of Journeyperson's rate Supplemental Benefit Rate Per Hour: \$24.65

Cement & Concrete Worker (Last 1334 hours)

Effective Period: 7/1/2015 - 6/30/2016

Wage Rate Per Hour: 80% of Journeyperson's rate Supplemental Benefit Rate Per Hour: \$25.47

(Cement Concrete Workers District Council)

DERRICKPERSON & RIGGER (STONE)

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

Derrickperson & Rigger (stone) - First Year

Effective Period: 7/1/2015 - 6/30/2016

Wage Rate Per Hour: 50% of Journeyperson's rate

Supplemental Benefit Rate Per Hour: 50% of Journeyperson's rate

Derrickperson & Rigger (stone) - Second Year: 1st Six Months

Effective Period: 7/1/2015 - 6/30/2016

Wage Rate Per Hour: 70% of Journeyperson's rate

Supplemental Benefit Rate Per Hour: 75% of Journeyperson's rate

Derrickperson & Rigger (stone) - Second Year: 2nd Six Months

Effective Period: 7/1/2015 - 6/30/2016

Wage Rate Per Hour: 80% of Journeyperson's rate

Supplemental Benefit Rate Per Hour: 75% of Journeyperson's rate

Derrickperson & Rigger (stone) - Third Year

Effective Period: 7/1/2015 - 6/30/2016

Wage Rate Per Hour: 90% of Journeyperson's rate

Supplemental Benefit Rate Per Hour: 75% of Journeyperson's rate

PUBLISH DATE: 7/1/2015 EFFECTIVE PERIOD: JULY 1, 2015 THROUGH JUNE 30, 2016 Page 7 of 34

(Local #197)

DOCKBUILDER/PILE DRIVER

(Ratio of Apprentice to Journeyperson: 1 to 1, 1 to 6)

Dockbuilder/Pile Driver (First Year)

Effective Period: 7/1/2015 - 6/30/2016

Wage Rate Per Hour: 40% of Journeyperson's rate Supplemental Benefit Rate Per Hour: \$31.52

Dockbuilder/Pile Driver (Second Year)

Effective Period: 7/1/2015 - 6/30/2016

Wage Rate Per Hour: 50% of Journeyperson's rate Supplemental Benefit Rate Per Hour: \$31.52

Dockbuilder/Pile Driver (Third Year)

Effective Period: 7/1/2015 - 6/30/2016

Wage Rate Per Hour: 65% of Journeyperson's rate

Supplemental Benefit Rate Per Hour: \$31.52

Dockbuilder/Pile Driver (Fourth Year)

Effective Period: 7/1/2015 - 6/30/2016

Wage Rate Per Hour: 80% of Journeyperson's rate Supplemental Benefit Rate Per Hour: \$31.52

(Carpenters District Council)

ELECTRICIAN

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

Electrician (First Term: 0-6 Months)

Effective Period: 7/1/2015 - 6/30/2016

Wage Rate per Hour: \$13.00

Supplemental Benefit Rate per Hour: \$11.61 Overtime Supplemental Rate Per Hour: \$12.47

Electrician (First Term: 7-12 Months)

Effective Period: 7/1/2015 - 6/30/2016

Wage Rate per Hour: \$14.00

Supplemental Benefit Rate per Hour: \$12.12 Overtime Supplemental Rate Per Hour: \$13.04

Electrician (Second Term: 0-6 Months)

Effective Period: 7/1/2015 - 6/30/2016

Wage Rate per Hour: \$15.00

Supplemental Benefit Rate per Hour: \$12.63
Overtime Supplemental Rate Per Hour: \$13.62

Electrician (Second Term: 7-12 Months)

Effective Period: 7/1/2015 - 6/30/2016

Wage Rate per Hour: \$16.00

Supplemental Benefit Rate per Hour: \$13.14
Overtime Supplemental Rate Per Hour: \$14.19

Electrician (Third Term: 0-6 Months)

Effective Period: 7/1/2015 - 6/30/2016

Wage Rate per Hour: \$17.00

Supplemental Benefit Rate per Hour: \$13.65
Overtime Supplemental Rate Per Hour: \$14.77

Electrician (Third Term: 7-12 Months)

Effective Period: 7/1/2015 - 6/30/2016

Wage Rate per Hour: \$18.00

Supplemental Benefit Rate per Hour: \$14.16
Overtime Supplemental Rate Per Hour: \$15.34

Electrician (Fourth Term: 0-6 Months)

Effective Period: 7/1/2015 - 6/30/2016

Wage Rate per Hour: \$19.00

Supplemental Benefit Rate per Hour: \$14.67 Overtime Supplemental Rate Per Hour: \$15.92

Electrician (Fourth Term: 7-12 Months)

Effective Period: 7/1/2015 - 6/30/2016

Wage Rate per Hour: \$21.00

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Supplemental Benefit Rate per Hour: \$15.68 Overtime Supplemental Rate Per Hour: \$17.07

Electrician (Fifth Term: 0-12 Months - Hired on or after 5/10/07)

Effective Period: 7/1/2015 - 6/30/2016

Wage Rate per Hour: \$23.00

Supplemental Benefit Rate per Hour: \$18.56 Overtime Supplemental Rate Per Hour: \$20.00

Electrician (Fifth Term: 13-18 Months - Hired on or after 5/10/07)

Effective Period: 7/1/2015 - 6/30/2016

Wage Rate per Hour: \$27.50

Supplemental Benefit Rate per Hour: \$20.82 Overtime Supplemental Rate Per Hour: \$22.54

Electrician (Fifth Term: 0-18 Months - Hired before 5/10/07)

Effective Period: 7/1/2015 - 6/30/2016

Wage Rate per Hour: \$26.80

Supplemental Benefit Rate per Hour: \$20.46 Overtime Supplemental Rate Per Hour: \$22.14

Overtime Description

Overtime Wage paid at time and one half the regular rate For "A" rated Apprentices (work in excess of 7 hours per day) For "M" rated Apprentices (work in excess of 8 hours per day)

(Local #3)

ELEVATOR CONSTRUCTOR

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

Elevator (Constructor) - First Year

Effective Period: 7/1/2015 - 3/16/2016

Wage Rate Per Hour: 50% of Journeyperson's rate

Supplemental Rate Per Hour: \$26.94

Effective Period: 3/17/2016 - 6/30/2016

Wage Rate Per Hour: 50% of Journeyperson's rate

Supplemental Rate Per Hour: \$28.41

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Elevator (Constructor) - Second Year

Effective Period: 7/1/2015 - 3/16/2016

Wage Rate Per Hour: 55% of Journeyperson's rate

Supplemental Rate Per Hour: \$27.35

Effective Period: 3/17/2016 - 6/30/2016

Wage Rate Per Hour: 55% of Journeyperson's rate

Supplemental Rate Per Hour: \$28.84

Elevator (Constructor) - Third Year

Effective Period: 7/1/2015 - 3/16/2016

Wage Rate Per Hour: 65% of Journeyperson's rate

Supplemental Rate Per Hour: \$28.17

Effective Period: 3/17/2016 - 6/30/2016

Wage Rate Per Hour: 65% of Journeyperson's rate

Supplemental Rate Per Hour: \$29.69

Elevator (Constructor) - Fourth Year

Effective Period: 7/1/2015 - 3/16/2016

Wage Rate Per Hour: 75% of Journeyperson's rate

Supplemental Rate Per Hour: \$29.00

Effective Period: 3/17/2016 - 6/30/2016

Wage Rate Per Hour: 75% of Journeyperson's rate

Supplemental Rate Per Hour: \$30.54

(Local #1)

ELEVATOR REPAIR & MAINTENANCE

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

Elevator Service/Modernization Mechanic (First Year)

Effective Period: 7/1/2015 - 3/16/2016

Wage Rate Per Hour: 50% of Journeyperson's rate

Supplemental Benefit Per Hour: \$26.87

Effective Period: 3/17/2016 - 6/30/2016

Wage Rate Per Hour: 50% of Journeyperson's rate

Supplemental Benefit Per Hour: \$28.34

<u> Elevator Service/Modernization Mechanic (Second Year)</u>

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Effective Period: 7/1/2015 - 3/16/2016

Wage Rate Per Hour: 55% of Journeyperson's rate

Supplemental Benefit Per Hour: \$27.27

Effective Period: 3/17/2016 - 6/30/2016

Wage Rate Per Hour: 55% of Journeyperson's rate

Supplemental Benefit Per Hour: \$28.76

Elevator Service/Modernization Mechanic (Third Year)

Effective Period: 7/1/2015 - 3/16/2016

Wage Rate Per Hour: 65% of Journeyperson's rate

Supplemental Benefit Per Hour: \$28.08

Effective Period: 3/17/2016 - 6/30/2016

Wage Rate Per Hour: 65% of Journeyperson's rate

Supplemental Benefit Per Hour: \$29.60

Elevator Service/Modernization Mechanic (Fourth Year)

Effective Period: 7/1/2015 - 3/16/2016

Wage Rate Per Hour: 75% of Journeyperson's rate

Supplemental Benefit Per Hour: \$28.89

Effective Period: 3/17/2016 - 6/30/2016

Wage Rate Per Hour: 75% of Journeyperson's rate

Supplemental Benefit Per Hour: \$30.43

(Local #1)

ENGINEER

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

<u>Engineer - First Year</u>

Effective Period: 7/1/2015 - 6/30/2016

Wage Rate per Hour: \$23.68

Supplemental Benefit Rate per Hour: \$22.55

Engineer - Second Year

Effective Period: 7/1/2015 - 6/30/2016

Wage Rate per Hour: \$29.60

Supplemental Benefit Rate per Hour: \$22.55

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Engineer - Third Year

Effective Period: 7/1/2015 - 6/30/2016

Wage Rate per Hour: \$32.56

Supplemental Benefit Rate per Hour: \$22.55

Engineer - Fourth Year

Effective Period: 7/1/2015 - 6/30/2016

Wage Rate per Hour: \$35.52

Supplemental Benefit Rate per Hour: \$22.55

(Local #15)

ENGINEER - OPERATING

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

Operating Engineer - First Year

Effective Period: 7/1/2015 - 6/30/2016

Wage Rate Per Hour 40% of Journeyperson's Rate

Supplemental Benefit Per Hour: \$20.15

Operating Engineer - Second Year

Effective Period: 7/1/2015 - 6/30/2016

Wage Rate Per Hour: 50% of Journeyperson's Rate

Supplemental Benefit Per Hour: \$20.15

Operating Engineer - Third Year

Effective Period: 7/1/2015 - 6/30/2016

Wage Rate Per Hour: 60% of Journeyperson's Rate

Supplemental Benefit Per Hour: \$20.15

(Local #14)

FLOOR COVERER

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

Floor Coverer (First Year)

Effective Period: 7/1/2015 - 6/30/2016

Wage Rate Per Hour: 40% of Journeyperson's rate

Supplemental Rate Per Hour: \$31.14

Floor Coverer (Second Year)

Effective Period: 7/1/2015 - 6/30/2016

Wage Rate Per Hour: 50% of Journeyperson's rate

Supplemental Rate Per Hour: \$31.14

Floor Coverer (Third Year)

Effective Period: 7/1/2015 - 6/30/2016

Wage Rate Per Hour: 65% of Journeyperson's rate

Supplemental Rate Per Hour: \$31.14

Floor Coverer (Fourth Year)

Effective Period: 7/1/2015 - 6/30/2016

Wage Rate Per Hour: 80% of Journeyperson's rate

Supplemental Rate Per Hour: \$31.14

(Carpenters District Council)

GLAZIER

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

Glazier (First Year)

Effective Period: 7/1/2015 - 6/30/2016

Wage Rate Per Hour: 40% of Journeyperson's rate

Supplemental Rate Per Hour: \$13.64

Effective 11/1/2015 - Supplemental Rate Per Hour: \$13.79

Glazier (Second Year)

Effective Period: 7/1/2015 - 6/30/2016

Wage Rate Per Hour: 50% of Journeyperson's rate

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Supplemental Rate Per Hour: \$22.97

Effective 11/1/2015 - Supplemental Rate Per Hour: \$23.13

Glazier (Third Year)

Effective Period: 7/1/2015 - 6/30/2016

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

Supplemental Rate Per Hour: \$25.87

Effective 11/1/2015 - Supplemental Rate Per Hour: \$26.03

Glazier (Fourth Year)

Effective Period: 7/1/2015 - 6/30/2016

Wage Rate Per Hour: 80% of Journeyperson's rate

Supplemental Rate Per Hour: \$31.04

Effective 11/1/2015 - Supplemental Rate Per Hour: \$31.29

(Local #1281)

HEAT & FROST INSULATOR

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

Heat & Frost Insulator (First Year)

Effective Period: 7/1/2015 - 6/30/2016

Wage and Supplemental Rate Per Hour: 40% of Journeyperson's rate

Heat & Frost Insulator (Second Year)

Effective Period: 7/1/2015 - 6/30/2016

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

Heat & Frost Insulator (Third Year)

Effective Period: 7/1/2015 - 6/30/2016

Wage and Supplemental Rate Per Hour: 70% of Journeyperson's rate

Heat & Frost Insulator (Fourth Year)

Effective Period: 7/1/2015 - 6/30/2016

Wage and Supplemental Rate Per Hour: 80% of Journeyperson's rate

(Local #12)

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HOUSE WRECKER

(TOTAL DEMOLITION)

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

House Wrecker - First Year

Effective Period: 7/1/2015 - 6/30/2016

Wage Rate per Hour: \$21.17

Supplemental Benefit Rate per Hour: \$17.33

House Wrecker - Second Year

Effective Period: 7/1/2015 - 6/30/2016

Wage Rate per Hour: \$22.32

Supplemental Benefit Rate per Hour: \$17.33

House Wrecker - Third Year

Effective Period: 7/1/2015 - 6/30/2016

Wage Rate per Hour: \$23.97

Supplemental Benefit Rate per Hour: \$17.33

House Wrecker - Fourth Year

Effective Period: 7/1/2015 - 6/30/2016

Wage Rate per Hour: \$26.53

Supplemental Benefit Rate per Hour: \$17.33

(Mason Tenders District Council)

IRON WORKER - ORNAMENTAL

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

Iron Worker (Ornamental) - 1st Ten Months

Effective Period: 7/1/2015 - 6/30/2016

Wage Rate Per Hour: 50% of Journeyperson's rate

Supplemental Rate Per Hour: \$36.50

Iron Worker (Ornamental) - 11 -16 Months

Effective Period: 7/1/2015 - 6/30/2016

Wage Rate Per Hour: 55% of Journeyperson's rate

Supplemental Rate Per Hour: \$37.62

Iron Worker (Ornamental) - 17 - 22 Months

Effective Period: 7/1/2015 - 6/30/2016

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

Supplemental Rate Per Hour: \$38.73

Iron Worker (Ornamental) - 23 - 28 Months

Effective Period: 7/1/2015 - 6/30/2016

Wage Rate Per Hour: 70% of Journeyperson's rate

Supplemental Rate Per Hour: \$40.97

Iron Worker (Ornamental) - 29 - 36 Months

Effective Period: 7/1/2015 - 6/30/2016

Wage Rate Per Hour: 80% of Journeyperson's rate

Supplemental Rate Per Hour: \$43.20

(Local #580)

IRON WORKER - STRUCTURAL

(Ratio of Apprentice to Journeyperson: 1 to 1, 1 to 6)

Iron Worker (Structural) - 1st Six Months

Effective Period: 7/1/2015 - 6/30/2016

Wage Rate per Hour: \$25.48

Supplemental Benefit Rate per Hour: \$46.83

Iron Worker (Structural) - 7- 18 Months

Effective Period: 7/1/2015 - 6/30/2016

Wage Rate per Hour: \$26.08

Supplemental Benefit Rate per Hour: \$46.83

Iron Worker (Structural) - 19 - 36 months

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Effective Period: 7/1/2015 - 6/30/2016

Wage Rate per Hour: \$26.68

Supplemental Benefit Rate per Hour: \$46.83

(Local #40 and #361)

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

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

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

Effective Period: 7/1/2015 - 6/30/2016

Wage Rate Per Hour: 50% of Journeyperson's rate

Supplemental Rate Per Hour: \$36.53

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

Effective Period: 7/1/2015 - 6/30/2016

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

Supplemental Rate Per Hour: \$36.53

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

Effective Period: 7/1/2015 - 6/30/2016

Wage Rate Per Hour: 75% of Journeyperson's rate

Supplemental Rate Per Hour: \$36.53

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

Effective Period: 7/1/2015 - 6/30/2016

Wage Rate Per Hour: 90% of Journeyperson's rate

Supplemental Rate Per Hour: \$36.53

(Local #731)

MARBLE MECHANICS

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

Cutters & Setters - First 750 Hours

Effective Period: 7/1/2015 - 6/30/2016

Wage and Supplemental Rate Per Hour: 50% of Journeyperson's rate

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

Cutters & Setters - Second 750 Hours

Effective Period: 7/1/2015 - 6/30/2016

Wage and Supplemental Rate Per Hour: 55% of Journeyperson's rate

Cutters & Setters - Third 750 Hours

Effective Period: 7/1/2015 - 6/30/2016

Wage and Supplemental Rate Per Hour: 65% of Journeyperson's rate

Cutters & Setters - Fourth 750 Hours

Effective Period: 7/1/2015 - 6/30/2016

Wage and Supplemental Rate Per Hour: 75% of Journeyperson's rate

Cutters & Setters - Fifth 750 Hours

Effective Period: 7/1/2015 - 6/30/2016

Wage and Supplemental Rate Per Hour: 85% of Journeyperson's rate

Cutters & Setters - Sixth 750 Hours

Effective Period: 7/1/2015 - 6/30/2016

Wage and Supplemental Rate Per Hour: 95% of Journeyperson's rate

Polishers & Finishers - First 750 Hours

Effective Period: 7/1/2015 - 6/30/2016

Wage and Supplemental Rate Per Hour: 50% of Journeyperson's rate

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

Polishers & Finishers - Second 750 Hours

Effective Period: 7/1/2015 - 6/30/2016

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

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Polishers & Finishers - Third 750 Hours

Effective Period: 7/1/2015 - 6/30/2016

Wage and Supplemental Rate Per Hour: 75% of Journeyperson's rate

Polishers & Finishers - Fourth 750 Hours

Effective Period: 7/1/2015 - 6/30/2016

Wage and Supplemental Rate Per Hour: 90% of Journeyperson's rate

(Local #7)

MASON TENDER

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

Mason Tender - First Year

Effective Period: 7/1/2015 - 6/30/2016

Wage Rate per Hour: \$21.39

Supplemental Benefit Rate per Hour: \$18.44

Mason Tender - Second Year

Effective Period: 7/1/2015 - 6/30/2016

Wage Rate per Hour: \$22.54

Supplemental Benefit Rate per Hour: \$18.44

<u> Mason Tender - Third Year</u>

Effective Period: 7/1/2015 - 6/30/2016

Wage Rate per Hour: \$24.29

Supplemental Benefit Rate per Hour: \$18.49

Mason Tender - Fourth Year

Effective Period: 7/1/2015 - 6/30/2016

Wage Rate per Hour: \$26.95

Supplemental Benefit Rate per Hour: \$18.49

(Local #79)

METALLIC LATHER

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

Metallic Lather (First Year -Called Prior to 6/29/11)

Effective Period: 7/1/2015 - 6/30/2016

Wage Rate per Hour: \$29.41

Supplemental Benefit Rate per Hour: \$22.89

Metallic Lather (Second Year - Called Prior to 6/29/11)

Effective Period: 7/1/2015 - 6/30/2016

Wage Rate per Hour: \$34.01

Supplemental Benefit Rate per Hour: \$24.54

Metallic Lather (Third Year - Called Prior to 6/29/11)

Effective Period: 7/1/2015 - 6/30/2016

Wage Rate per Hour: \$39.07

Supplemental Benefit Rate per Hour: \$25.69

Metallic Lather (First Year -Called On Or After 6/29/11)

Effective Period: 7/1/2015 - 6/30/2016

Wage Rate per Hour: \$23.01

Supplemental Benefit Rate per Hour: \$17.95

Metallic Lather (Second Year - Called On Or After 6/29/11)

Effective Period: 7/1/2015 - 6/30/2016

Wage Rate per Hour: \$28.11

Supplemental Benefit Rate per Hour: \$17.95

Metallic Lather (Third Year - Called On Or After 6/29/11)

Effective Period: 7/1/2015 - 6/30/2016

Wage Rate per Hour: \$33.21

Supplemental Benefit Rate per Hour: \$17.95

(Local #46)

MILLWRIGHT

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

Millwright (First Year)

Effective Period: 7/1/2015 - 6/30/2016

Wage Rate per Hour: \$27.23

Supplemental Benefit Rate per Hour: \$34.06

Millwright (Second Year)

Effective Period: 7/1/2015 - 6/30/2016

Wage Rate per Hour: \$32.18

Supplemental Benefit Rate per Hour: \$37.62

Millwright (Third Year)

Effective Period: 7/1/2015 - 6/30/2016

Wage Rate per Hour: \$37.13

Supplemental Benefit Rate per Hour: \$41.83

Millwright (Fourth Year)

Effective Period: 7/1/2015 - 6/30/2016

Wage Rate per Hour: \$47.03

Supplemental Benefit Rate per Hour: \$48.31

(Local #740)

PAVER AND ROADBUILDER

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

Paver and Roadbuilder - First Year (Minimum 1000 hours)

Effective Period: 7/1/2015 - 6/30/2016

Wage Rate per Hour: \$27.05

Supplemental Benefit Rate per Hour: \$17.12

Paver and Roadbuilder - Second Year (Minimum 1000 hours)

Effective Period: 7/1/2015 - 6/30/2016

Wage Rate per Hour: \$28.69

Supplemental Benefit Rate per Hour: \$17.12

(Local #1010)

PAINTER

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

Painter - Brush & Roller - First Year

Effective Period: 7/1/2015 - 10/31/2015

Wage Rate per Hour: \$15.80

Supplemental Benefit Rate per Hour: \$11.88

Effective Period: 11/1/2015 - 6/30/2016

Wage Rate per Hour: \$16.40

Supplemental Benefit Rate per Hour: \$12.13

Painter - Brush & Roller - Second Year

Effective Period: 7/1/2015 - 10/31/2015

Wage Rate per Hour: \$19.75

Supplemental Benefit Rate per Hour: \$15.73

Effective Period: 11/1/2015 - 6/30/2016

Wage Rate per Hour: \$20.50

Supplemental Benefit Rate per Hour: \$15.98

Painter - Brush & Roller - Third Year

Effective Period: 7/1/2015 - 10/31/2015

Wage Rate per Hour: \$23.70

Supplemental Benefit Rate per Hour: \$18.64

Effective Period: 11/1/2015 - 6/30/2016

Wage Rate per Hour: \$24.60

Supplemental Benefit Rate per Hour: \$18.89

Painter - Brush & Roller - Fourth Year

Effective Period: 7/1/2015 - 10/31/2015

Wage Rate per Hour: \$31.60

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Supplemental Benefit Rate per Hour: \$24.02

Effective Period: 11/1/2015 - 6/30/2016

Wage Rate per Hour: \$32.80

Supplemental Benefit Rate per Hour: \$24.27

(District Council of Painters)

PAINTER - STRUCTURAL STEEL

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

Painters - Structural Steel (First Year)

Effective Period: 7/1/2015 - 6/30/2016

Wage and Supplemental Rate Per Hour: 40% of Journeyperson's rate

Painters - Structural Steel (Second Year)

Effective Period: 7/1/2015 - 6/30/2016

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

Painters - Structural Steel (Third Year)

Effective Period: 7/1/2015 - 6/30/2016

Wage and Supplemental Rate Per Hour: 80% of Journeyperson's rate

(Local #806)

PLASTERER

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

Plasterer - First Year: 1st Six Months

Effective Period: 7/1/2015 - 6/30/2016

Wage Rate Per Hour: 40% of Journeyperson's rate

Supplemental Rate Per Hour: \$15.76

Plasterer - First Year: 2nd Six Months

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Effective Period: 7/1/2015 - 6/30/2016

Wage Rate Per Hour: 45% of Journeyperson's rate

Supplemental Rate Per Hour: \$16.24

Plasterer - Second Year: 1st Six Months

Effective Period: 7/1/2015 - 6/30/2016

Wage Rate Per Hour: 55% of Journeyperson's rate

Supplemental Rate Per Hour: \$18.21

Plasterer - Second Year: 2nd Six Months

Effective Period: 7/1/2015 - 6/30/2016

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

Supplemental Rate Per Hour: \$19.29

Plasterer - Third Year: 1st Six Months

Effective Period: 7/1/2015 - 6/30/2016

Wage Rate Per Hour: 70% of Journeyperson's rate

Supplemental Rate Per Hour: \$21.46

Plasterer - Third Year: 2nd Six Months

Effective Period: 7/1/2015 - 6/30/2016

Wage Rate Per Hour: 75% of Journeyperson's rate

Supplemental Rate Per Hour: \$22.54

(Local #530)

PLUMBER

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

Plumber - First Year: 1st Six Months

Effective Period: 7/1/2015 - 6/30/2016

Wage Rate per Hour: \$14.00

Supplemental Benefit Rate per Hour: \$0.71

Plumber - First Year: 2nd Six Months

Effective Period: 7/1/2015 - 6/30/2016

Wage Rate per Hour: \$14.00

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Supplemental Benefit Rate per Hour: \$2.96

Plumber - Second Year

Effective Period: 7/1/2015 - 6/30/2016

Wage Rate per Hour: \$23.87

Supplemental Benefit Rate per Hour: \$12.76

Plumber - Third Year

Effective Period: 7/1/2015 - 6/30/2016

Wage Rate per Hour: \$25.97

Supplemental Benefit Rate per Hour: \$12.76

Plumber - Fourth Year

Effective Period: 7/1/2015 - 6/30/2016

Wage Rate per Hour: \$28.82

Supplemental Benefit Rate per Hour: \$12.76

Plumber - Fifth Year: 1st Six Months

Effective Period: 7/1/2015 - 6/30/2016

Wage Rate per Hour: \$30.22

Supplemental Benefit Rate per Hour: \$12.76

Plumber - Fifth Year: 2nd Six Months

Effective Period: 7/1/2015 - 6/30/2016

Wage Rate per Hour: \$42,29

Supplemental Benefit Rate per Hour: \$12.76

(Plumbers Local #1)

POINTER - WATERPROOFER, CAULKER MECHANIC (EXTERIOR BUILDING RENOVATION)

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

Pointer - Waterproofer, Caulker Mechanic - First Year

Effective Period: 7/1/2015 - 6/30/2016

Wage Rate per Hour: \$25.01

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Supplemental Benefit Rate per Hour: \$4.75

Pointer - Waterproofer, Caulker Mechanic - Second Year

Effective Period: 7/1/2015 - 6/30/2016

Wage Rate per Hour: \$27.25

Supplemental Benefit Rate per Hour: \$9.70

Pointer - Waterproofer, Caulker Mechanic - Third Year

Effective Period: 7/1/2015 - 6/30/2016

Wage Rate per Hour: \$32.24

Supplemental Benefit Rate per Hour: \$12.45

Pointer - Waterproofer, Caulker Mechanic - Fourth Year

Effective Period: 7/1/2015 - 6/30/2016

Wage Rate per Hour: \$38.66

Supplemental Benefit Rate per Hour: \$12.45

(Bricklayer District Council)

ROOFER

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

Roofer - First Year

Effective Period: 7/1/2015 - 6/30/2016

Wage and Supplemental Rate Per Hour: 35% of Journeyperson's Rate

Roofer - Second Year

Effective Period: 7/1/2015 - 6/30/2016

Wage and Supplemental Rate Per Hour: 50% of Journeyperson's Rate

Roofer - Third Year

Effective Period: 7/1/2015 - 6/30/2016

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

Roofer - Fourth Year

Effective Period: 7/1/2015 - 6/30/2016

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Wage and Supplemental Rate Per Hour: 75% of Journeyperson's Rate

(Local #8)

SHEET METAL WORKER

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

Sheet Metal Worker (0-6 Months)

Effective Period: 7/1/2015 - 6/30/2016

Wage Rate Per Hour: 25% of Journeyperson's rate

Supplemental Rate Per Hour: \$6.24

Sheet Metal Worker (7-18 Months)

Effective Period: 7/1/2015 - 6/30/2016

Wage Rate Per Hour: 35% of Journeyperson's rate

Supplemental Rate Per Hour: \$16.71

Sheet Metal Worker (19-30 Months)

Effective Period: 7/1/2015 - 6/30/2016

Wage Rate Per Hour: 45% of Journeyperson's rate

Supplemental Rate Per Hour: \$23.00

Sheet Metal Worker (31-36 Months)

Effective Period: 7/1/2015 - 6/30/2016

Wage Rate Per Hour: 55% of Journeyperson's rate

Supplemental Rate Per Hour: \$27.02

Sheet Metal Worker (37-42 Months)

Effective Period: 7/1/2015 - 6/30/2016

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

Supplemental Rate Per Hour: \$29.06

Sheet Metal Worker (43-48 Months)

Effective Period: 7/1/2015 - 6/30/2016

Wage Rate Per Hour: 70% of Journeyperson's rate

Supplemental Rate Per Hour: \$33.10

Sheet Metal Worker (49-54 Months)

Effective Period: 7/1/2015 - 6/30/2016

Wage Rate Per Hour: 75% of Journeyperson's rate

Supplemental Rate Per Hour: \$35.12

Sheet Metal Worker (55-60 Months)

Effective Period: 7/1/2015 - 6/30/2016

Wage Rate Per Hour: 80% of Journeyperson's rate

Supplemental Rate Per Hour: \$37.15

(Local #28)

SIGN ERECTOR

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

Sign Erector - First Year: 1st Six Months

Effective Period: 7/1/2015 - 6/30/2016

Wage Rate Per Hour: 35% of Journeyperson's rate

Supplemental Rate Per Hour: \$13.18

Sign Erector - First Year: 2nd Six Months

Effective Period: 7/1/2015 - 6/30/2016

Wage Rate Per Hour: 40% of Journeyperson's rate

Supplemental Rate Per Hour: \$14.95

Sign Erector - Second Year: 1st Six Months

Effective Period: 7/1/2015 - 6/30/2016

Wage Rate Per Hour: 45% of Journeyperson's rate

Supplemental Rate Per Hour: \$16.74

Sign Erector - Second Year: 2nd Six Months

Effective Period: 7/1/2015 - 6/30/2016

Wage Rate Per Hour: 50% of Journeyperson's rate

Supplemental Rate Per Hour: \$18.52

Sign Erector - Third Year: 1st Six Months

Effective Period: 7/1/2015 - 6/30/2016

Wage Rate Per Hour: 55% of Journeyperson's rate

Supplemental Rate Per Hour: \$24.94

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Sign Erector - Third Year: 2nd Six Months

Effective Period: 7/1/2015 - 6/30/2016

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

Supplemental Rate Per Hour: \$26.87

Sign Erector - Fourth Year: 1st Six Months

Effective Period: 7/1/2015 - 6/30/2016

Wage Rate Per Hour: 65% of Journeyperson's rate

Supplemental Rate Per Hour: \$29.47

Sign Erector - Fourth Year: 2nd Six Months

Effective Period: 7/1/2015 - 6/30/2016

Wage Rate Per Hour: 70% of Journeyperson's rate

Supplemental Rate Per Hour: \$31.46

Sign Erector - Fifth Year

Effective Period: 7/1/2015 - 6/30/2016

Wage Rate Per Hour: 75% of Journeyperson's rate

Supplemental Rate Per Hour: \$33.43

Sign Erector - Sixth Year

Effective Period: 7/1/2015 - 6/30/2016

Wage Rate Per Hour: 80% of Journeyperson's rate

Supplemental Rate Per Hour: \$35.41

(Local #137)

STEAMFITTER

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

Steamfitter - First Year

Effective Period: 7/1/2015 - 6/30/2016

Wage Rate and Supplemental Per Hour: 40% of Journeyperson's rate

Steamfitter - Second Year

Effective Period: 7/1/2015 - 6/30/2016

Wage Rate and Supplemental Rate Per Hour: 50% of Journeyperson's rate.

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Steamfitter - Third Year

Effective Period: 7/1/2015 - 6/30/2016

Wage Rate and Supplemental Rate per Hour: 65% of Journeyperson's rate.

Steamfitter - Fourth Year

Effective Period: 7/1/2015 - 6/30/2016

Wage Rate and Supplemental Rate Per Hour: 80% of Journeyperson's rate.

Steamfitter - Fifth Year

Effective Period: 7/1/2015 - 6/30/2016

Wage Rate and Supplemental Rate Per Hour: 85% of Journeyperson's rate.

(Local #638)

STONE MASON - SETTER

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

Stone Mason - Setters - First 750 Hours

Effective Period: 7/1/2015 - 6/30/2016

Wage and Supplemental Rate Per Hour: 50% of Journeyperson's rate

Stone Mason - Setters - Second 750 Hours

Effective Period: 7/1/2015 - 6/30/2016

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

Supplemental Rate Per Hour: 50% of Journeyperson's rate

Stone Mason - Setters - Third 750 Hours

Effective Period: 7/1/2015 - 6/30/2016

Wage Rate Per Hour: 70% of Journeyperson's rate

Supplemental Rate Per Hour: 50% of Journeyperson's rate

Stone Mason - Setters - Fourth 750 Hours

Effective Period: 7/1/2015 - 6/30/2016

Wage Rate Per Hour: 80% of Journeyperson's rate

Supplemental Rate Per Hour: 50% of Journeyperson's rate

Stone Mason - Setters - Fifth 750 Hours

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Effective Period: 7/1/2015 - 6/30/2016

Wage Rate Per Hour: 90% of Journeyperson's rate

Supplemental Rate Per Hour: 50% of Journeyperson's rate

Stone Mason - Setters - Sixth 750 Hours

Effective Period: 7/1/2015 - 6/30/2016

Wage Rate Per Hour: 100% of Journeyperson's rate Supplemental Rate Per Hour: 50% of Journeyperson's rate

(Bricklayers District Council)

TAPER

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

Drywall Taper - First Year

Effective Period: 7/1/2015 - 6/30/2016

Wage and Supplemental Rate Per Hour: 40% of Journeyperson's rate

<u>Drywall Taper - Second Year</u>

Effective Period: 7/1/2015 - 6/30/2016

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

Drywall Taper - Third Year

Effective Period: 7/1/2015 - 6/30/2016

Wage and Supplemental Rate Per Hour: 80% of Journeyperson's rate

(Local #1974)

TILE LAYER - SETTER

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

Tile Layer - Setter - First 750 Hours

Effective Period: 7/1/2015 - 6/30/2016

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Wage and Supplemental Rate Per Hour: 50% of Journeyperson's rate

Tile Layer - Setter - Second 750 Hours

Effective Period: 7/1/2015 - 6/30/2016

Wage and Supplemental Rate Per Hour: 55% of Journeyperson's rate

Tile Layer - Setter - Third 750 Hours

Effective Period: 7/1/2015 - 6/30/2016

Wage and Supplemental Rate Per Hour: 65% of Journeyperson's rate

Tile Layer - Setter - Fourth 750 Hours

Effective Period: 7/1/2015 - 6/30/2016

Wage and Supplemental Rate Per Hour: 75% of Journeyperson's rate

Tile Layer - Setter - Fifth 750 Hours

Effective Period: 7/1/2015 - 6/30/2016

Wage and Supplemental Rate Per Hour: 85% of Journeyperson's rate

Tile Layer - Setter - Sixth 750 Hours

Effective Period: 7/1/2015 - 6/30/2016

Wage and Supplemental Rate Per Hour: 95% of Journeyperson's rate

(Local #7)

TIMBERPERSON

(Ratio of Apprentice to Journeyperson: 1 to 1, 1 to 6)

Timberperson - First Year

Effective Period: 7/1/2015 - 6/30/2016

Wage Rate Per Hour: 40% of Journeyperson's rate

Supplemental Rate Per Hour: \$31.54

<u>Timberperson - Second Year</u>

Effective Period: 7/1/2015 - 6/30/2016

Wage Rate Per Hour: 50% of Journeyperson's rate

Supplemental Rate Per Hour: \$31.54

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OFFICE OF THE COMPTROLLER, CITY OF NEW YORK §220 APPRENTICESHIP PREVAILING WAGE SCHEDULE

Timberperson - Third Year

Effective Period: 7/1/2015 - 6/30/2016

Wage Rate Per Hour: 65% of Journeyperson's rate

Supplemental Rate Per Hour: \$31.54

Timberperson - Fourth Year

Effective Period: 7/1/2015 - 6/30/2016

Wage Rate Per Hour: 80% of Journeyperson's rate

Supplemental Rate Per Hour: \$31.54

(Local #1536)



DDC STANDARD GENERAL CONDITIONS FOR SINGLE CONTRACT PROJECTS



No Text



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NO TEXT



SECTION 01 10 00 SUMMARY

PART I - GENERAL

1.1 RELATED DOCUMENTS:

- A. The following documents apply to all required work for the Project: (1) the Contract Drawings, (2) the Specifications, (3) the General Conditions, (4) the Addendum, and (5) the Contract [City of New York Standard Construction Contract].
- B. Addendum to the General Conditions: These General Conditions include and are supplemented by the Addendum to the General Conditions (the "Addendum"). The Addendum includes the following: (1) schedules referred to in these General Conditions (Schedule A through F), (2) information regarding the applicability of various articles, and (3) amended articles, if any.

1.2 SUMMARY:

- A. This section includes the following:
 - 1. Scope and Intent
 - 2. Provisions Referenced in the Contract
 - 3. Performance of Work During Non-Regular Work Hours (Pursuant to a Change Order)
 - 4. Interruption of Services at Existing Facilities

1.3 DEFINITIONS:

- A. Refer to Article 2 of the Contract for definition of terms, words and expressions used in the General Conditions not otherwise defined herein.
- B. Design Consultant: "Design Consultant" shall mean the entity responsible for providing design services for the Project, including without limitation, preparing the construction documents (drawings and specifications) and providing services in connection with such documents during construction. The entity serving as the "Design Consultant" may be a corporation, firm, partnership, joint venture, individual or combination thereof. Such entity may be either an employee(s) of the City or an entity engaged by the City to provide such services.

1.4 SCOPE AND INTENT:

A. Description of Project: Refer to the Addendum for a description of the project.

REFER TO THE ADDENDUM FOR THE APPLICABILITY OF SUB-SECTION 1.4 B

B. LEED: The City of New York will seek U.S. Green Building Council (USGBC) LEED (Leadership in Energy and Environmental Design) certification for this Project as specified in Section 01 81 13, "SUSTAINABLE DESIGN REQUIREMENTS FOR LEED BUILDINGS" and the Addendum to the General Conditions.



REFER TO THE ADDENDUM FOR THE APPLICABILITY OF SUB-SECTION 1.4 C

- C. COMMISSIONING: The project will be commissioned by an independent third party under separate contract with the City of New York. Commissioning shall be in accordance with ASHRAE and USGBC LEED-NC procedures, as described in Section 01 91 13, GENERAL COMMISSIONING REQUIREMENTS, and the Addendum to the General Conditions. The Contractor shall cooperate with the commissioning agent and provide whatever assistance is required.
- D. PROGRESS SCHEDULE: Refer to Section 01 32 00 CONSTRUCTION PROGRESS DOCUMENTATION for requirements of the project.
- E. COMPLETION OF WORK: Work to be done under the Contract is comprised of the furnishing of all labor, materials, equipment and other appurtenances, and obtaining all regulatory agency approvals necessary and required to complete the construction work in accordance with the Contract.
- F. OMISSION OF DETAILS: All work called for in the Specifications applicable to the Contract but not shown on the Contract Drawings in their present form, or vice versa, is required, and shall be performed by the Contractor as though it were originally delineated or described. The cost of such work shall be deemed included in the total Contract Price.
- G. WORK NOT IN SPECIFICATIONS OR CONTRACT DRAWINGS: Work not particularly specified in the Specifications nor detailed on the Contract Drawings but involved in carrying out their intent or in the complete and proper execution of the work, is required, and shall be performed by the Contractor. The cost of such work shall be deemed included in the total Contract Price.
- H. SILENCE OF THE SPECIFICATIONS: The apparent silence of the Specifications as to any detail, or the apparent omission from them of a detailed description concerning any work to be done and materials to be furnished, shall be regarded as meaning that only the best practice is to prevail and that only the best material and workmanship is to be used and interpretation of the Specifications shall be made upon that basis.
- I. CONFLICT BETWEEN CONTRACT DRAWINGS AND SPECIFICATIONS: Should any conflict occur in or between the Drawings and Specifications, the Contractor shall be deemed to have estimated the most expensive way of doing the work unless the Contractor shall have asked for and obtained a decision in writing from the Commissioner before the submission of the bid as to what shall govern.

1.5 CONTRACT DRAWINGS AND SPECIFICATIONS:

A. SCHEDULE C - The Contract Drawings are listed in Schedule C, which is set forth in the Addendum. Such drawings referred to in the Contract, and in the applicable Specifications for the Contract, bear the general title:

City of New York
Department of Design and Construction
Division of Public Buildings

- B. DOCUMENTS FURNISHED TO THE CONTRACTOR After the award of the Contract, the Contractor will be furnished with five (5) complete sets of paper prints of all Contract Drawings mentioned in Paragraph A above, as well as a copy of the Specifications.
- C. ADDITIONAL COPIES of Drawings and Specifications, when requested, will be furnished to the Contractor if available.



- D. SUPPLEMENTARY DRAWINGS When, in the opinion of the Commissioner, it becomes necessary to more fully explain the work to be done, or to illustrate the work further, or to show any changes which may be required, drawings known as Supplementary Drawings will be prepared by the Commissioner.
- E. COMPENSATION Where Supplementary Drawings entail extra work, compensation therefore to the Contractor shall be subject to the terms of the Contract. The Supplementary Drawings shall be binding upon the Contractor with the same force as the Contract Drawings.
- F. SUPPLEMENTARY DRAWING PRINTS Three (3) copies of prints of these Supplementary Drawings will be furnished to the Contractor.
- G. COPIES TO SUBCONTRACTORS The Contractor shall furnish each of its subcontractors and material suppliers such copies of Contract Drawings, Supplementary Drawings, or copies of the Specifications as may be required for its work.

1.6 COORDINATION:

- A. COORDINATION AND COOPERATION The Contractor shall consult and study the requirements of the Contract Drawings and Specifications for all required work, including all work to be performed by trade subcontractors, so that the Contractor may become acquainted with the work of the project as a whole in order to achieve the proper coordination and cooperation necessary for the efficient and timely performance of the work.
- B. CONTRACTOR TO CHECK DRAWINGS: The Contractor shall verify all dimensions, quantities and details shown on the Contract Drawings, Schedules, or other data received from the Commissioner, and shall notify the Commissioner of all errors, omissions, conflicts and discrepancies found therein. Notice of such errors shall be given before the Contractor proceeds with any work. Figures shall be used in preference to scale dimensions and large-scale drawings in preference to small-scale drawings.

1.7 SHOP DRAWINGS AND RECORD DRAWINGS:

Refer to Division I Section 01 33 00 - SUBMITAL PROCEDURES and Section 01 78 39 - PROJECT RECORD DRAWINGS for requirements applicable to shop drawings and record drawings.

1.8 TEMPORARY FACILITIES, SERVICES AND CONTROLS:

Refer to Division I Section 01 50 00 – TEMPORARY FACILITIES SERVICES AND CONTROLS for the responsibilities of the Contractor.

1.9 DUST CONTROL:

The Contractor shall prepare, execute and manage a "Dust Control Plan" for the prevention of the emission of dust from construction related activities in compliance with 15 RCNY 13-01 et. seq.

1.10 PROVISIONS REFERENCED IN THE CONTRACT:

A. SCHEDULE A - Various Articles of the Contract refer to requirements set forth in Schedule A of the General Conditions. Schedule A, which is included in the Addendum, sets forth (1) the referenced Articles of the Contract, and (2) the specific requirements applicable to the Contract.



- B. EXTENSION OF TIME Applications for Extensions of Time, as indicated in Article 13 of the Contract, shall be made in accordance with the Rules of the Procurement Policy Board.
- C. PARTIAL PAYMENTS FOR MATERIALS IN ADVANCE OF THEIR INCORPORATION IN THE WORK PURSUANT TO ARTICLE 42 OF THE CONTRACT In order to better insure the availability of materials, fixtures and equipment when needed for the work, the Commissioner may authorize partial payment for certain materials, fixtures and equipment, prior to their incorporation in the work, but only in strict accordance with, and subject to, all the terms and conditions set forth in the Specifications, unless an alternate method of payment is elsewhere provided in the Specifications for specified materials, fixtures or equipment.
 - 1. The Contractor shall submit to the Commissioner a written request, in quadruplicate, for payment for materials purchased or to be purchased for which the Contractor needs to be paid prior to their actual incorporation in the work. The request shall be accompanied by a schedule of the types and quantities of materials, and shall state whether such materials are to be stored on or off the site.
 - Where the materials are to be stored off the site, they shall be stored at a place other than the Contractor's premises (except with the written consent of the Commissioner) and under the conditions prescribed or approved by the Commissioner. The Contractor shall set apart and separately store at the place or places of storage all materials and shall clearly mark same "PROPERTY OF THE CITY OF NEW YORK", and further, shall not at any time move any of said materials to another off-site place of storage without the prior written consent of the Commissioner. Materials may be removed from their place of storage off the site for incorporation in the work upon approval of the Resident Engineer.
 - 3. Where the materials are to be stored at the site, they shall be stored at such locations as shall be designated by the Resident Engineer and only in such quantities as, in the opinion of the Resident Engineer, will not interfere with the proper performance of the work by the Contractor or by other Contractors then engaged in performing work on the site. Such materials shall not be removed from their place of storage on the site except for incorporation in the work, without the approval of the Resident Engineer.

4. INSURANCE

- a. STORAGE OFF-SITE Where the materials are stored off the site and until such time as they are incorporated in the work, the Contractor shall fully insure such materials against any and all risks of destruction, damage or loss including but not limited to fire, theft, and any other casualty or happening. The policy of insurance shall be payable to the City of New York. It shall be in such terms and amounts as shall be approved by the Commissioner and shall be placed with a company duly licensed to do business in the State of New York. The Contractor shall deliver the original and one (1) copy of such policy or policies marked "Fully Paid" to the Commissioner.
- b. STORAGE ON THE SITE Where the materials are stored at the site, the Contractor shall furnish satisfactory evidence to the Commissioner that they are properly insured against loss, by endorsements or otherwise, under the policy or policies of insurance obtained by the Contractor to cover losses to materials owned or installed by the Contractor. The policy of insurance shall cover fire and extended coverage against windstorm, hail, explosion and riot attending a strike, civil commotion, aircraft, vehicles and smoke.
- 5. All costs, charges and expenses arising out of the storage of such materials, shall be paid by the Contractor and the City hereby reserves the right to retain out of any partial or final payment made under the Contract an amount sufficient to cover such costs, charges and expenses with the understanding that the City shall have and may exercise any and all other remedies at law for the recovery of such cost, charges and expenses. There shall be no



increase in the Contract price for such costs, charges and expenses and the Contractor shall not make any claim or demand for compensation therefore.

- 6. The Contractor shall pay any and all costs of handling and delivery of materials, to the place of storage and from the place of storage to the site of the work; and the City shall have the right to retain from any partial or final payment an amount sufficient to cover the cost of such handling and delivery.
- 7. In the event that the whole or any part of these materials are lost, damaged or destroyed in advance of their satisfactory incorporation in the work, the Contractor, at the Contractor's own cost, shall replace such lost, damaged or destroyed materials of the same character and quality. The City will reimburse the Contractor for the cost of the replaced materials to the extent, and only to the extent, of the funds actually received by the City under the policies of insurance hereinbefore referred to. Until such time as the materials are replaced, the City will deduct from the value of the stored materials or from any other money due under the Contract, the amount paid to the Contractor for such lost, damaged or destroyed materials.
- 8. Should any of the materials paid for the City hereunder be subsequently rejected or incorporated in the work in a manner or by a method not in accordance with the Contract Documents, the Contractor shall remove and replace, at Contractor's own cost, such defective or improperly incorporated material with materials complying with the Contract Documents. Until such materials are replaced, the City will deduct from the value of the stored materials or from any other money due the Contractor, the amount paid by the City for such rejected or improperly incorporated materials.
- 9. Payments for the cost of materials made hereunder shall not be deemed to be an acceptance of such materials as being in accordance with the Contract Documents, and the Contractor always retains and must comply with the Contractor's duty to deliver to the site and properly incorporate in the work only materials which comply with the Contract Documents.
- 10. The Contractor shall retain any and all risks in connection with the damage, destruction or loss of the materials paid for hereunder to the time of delivery of the same to the site of the work and their proper incorporation in the work in accordance with the Contract Documents.
- 11. The Contractor shall comply with all laws and the regulations of any governmental body or agency pertaining to the priority purchase, allocation and use of the materials.
- 12. When requesting payment for such materials, the Contractor shall submit with the partial estimate duly authenticated documents of title, such as bills of sale, invoices or warehouse receipts, all in quadruplicate. The executed bills of sale shall transfer title to the materials from the Contractor to the City. (In the event that the invoices state that the material has been purchased by a subcontractor, bills of sale in quadruplicate will also be required transferring title to the materials from subcontractor to the Contractor).
- Where the Contractor, with the approval of the Commissioner, has purchased unusually large quantities of materials in order to assure their availability for the work, the Commissioner, at the Commissioner's option, may waive the requirements of Paragraph 12 provided the Contractor furnishes evidence in the form of an affidavit from the Contractor in quadruplicate, and such other proof as the Commissioner may require, that the Contractor is the sole owner of such materials and has purchased them free and clear of all liens and other encumbrances. In such event, the Contractor shall pay for such materials and submit proof thereof, in the same manner as provided in Paragraph 12 hereof, within seven (7) days after receipt of payment therefore from the Comptroller. Failure on the part of the Contractor to submit satisfactory evidence that all such materials have been paid for in full, shall preclude the Contractor from payments under the Contract.

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- 14. The Contractor shall include in each succeeding partial estimate requisition a summary of materials stored which shall set forth the quantity and value of materials in storage, on or off the site, at the end of each preceding estimate period; the amount removed for incorporation in the work; the quantity and value of materials delivered during the current period and the total value of materials on hand for which payment thereof will be included in the current payment estimate.
- 15. Upon proof to the satisfaction of the Commissioner of the actual cost of such materials and upon submission of proper proof of title as required under Paragraph 12 or Paragraph 13 hereof, payment will be made therefore to the extent of 85%, provided however, that the cost so verified, established and approved shall not exceed the estimated cost of such materials included in the approved detailed breakdown estimate submitted in accordance with Article 41 of the Contract; if it does, the City will pay only 85% approved estimated cost.
- 16. Upon the incorporation in the work of any such materials, which have been paid for in advance of such incorporation in accordance with the foregoing provisions, payment will be made for such materials incorporated in the work pursuant to Article 42 of the Contract, less any sums paid pursuant to Paragraph 15 herein.
- D. MOBILIZATION PAYMENT A line item for mobilization shall be allowed on the Contractor's Detailed Bid Breakdown submitted in accordance with Article 41 of the Contract. The Mobilization Payment is intended to include the cost of required bonds, insurance coverage and/or any other expenses required for the initiation of the Contract Work. All costs for mobilization shall be deemed included in the total Contract Price. The Detailed Bid Breakdown shall reflect, and the Mobilization Payment shall be made, in accordance with the following schedule:

Contract Amou	Percent		M	lobilization		
Less than - \$	50,000	x	0	=	0	
\$ 50,000 - \$	100,000	X		=	\$ 6,000	
\$ 100,001 - \$	500,000	X	6	=	\$ 6,000 (min) - \$30,000	0 (max)
\$ 500,000 - \$	2,500,000	X	5	=	\$ 30,000 (min) - \$ 125,00	00 (max)
Over - \$	2,500,000	x	4	=	\$ 125,000 (min) - \$ 300,0	00 (max)

The Contractor may requisition for one-half (1/2) of the Mobilization Payment upon satisfactory completion of the following:

- 1. Installation of any required field office(s).
- 2. Submission of all required insurance certificates and bonds.
- 3. Approval by the Department of Design and Construction of the coordinated progress schedule for the project and the Contractor's Shop Drawing schedule.

The remaining balance of the Mobilization Payment may be requisitioned only after 10 percent (10%) of the Contract price, exclusive of the total amount of Mobilization Payments made or to be made hereunder, shall have been approved for payment.

E. ULTRA LOW SULFUR DIESEL FUEL AND BEST AVAILABLE TECHNOLOGY REPORTING: The Contractor shall submit reports to the Commissioner regarding the use of Ultra Low Sulfur Diesel Fuel in Non-Road Vehicles, and the implementation of Best Available Technology (BAT), as set forth in Article 5.4 of the Contract. Such reports shall be submitted in accordance with the schedule, format, directions and procedures established by the Commissioner.



1.11 PERFORMANCE OF WORK DURING NON-REGULAR WORK HOURS:

- A. NON-REGULAR WORK HOURS: The Commissioner may issue a change order in accordance with Article 25 of the Contract which (1) directs the Contractor to perform the Work, or specific components thereof, during other than regular work hours (i.e., evenings, weekends and holidays), and (2) provides compensation to the Contractor for costs in connection with the performance of Work during other than regular work hours. The Commissioner may issue a change order if a delay has occurred and such delay is not the fault of the Contractor, or if the work is of such an important nature that delay in completing such work would result in serious disadvantage to the public.
- B. PROCEDURE: The Contractor shall (1) obtain whatever permits may be required for performance of the work during other than regular business hours, and (2) pay all necessary fees in connection with such permits. In addition, if directed by the Commissioner, the Contractor shall make immediate application to the Commissioner of the Department of Labor, State of New York, for dispensation in accordance with Subdivision 2 of Section 220 of the Labor Law.

1.12 INTERRUPTION OF SERVICES AT EXISTING FACILITIES:

- A. EVENING AND WEEKEND WORK Where performance of the Work requires the temporary shutdown(s) of services, such shutdown(s) shall be made at night or on weekends or at such times that will cause no interference with the established routines and operations of the facility in question.
 - 1 Where weekend or evening work is required due to unavoidable service shutdowns, such work shall be performed at no extra cost to the City. Components of the Work that must be performed during other than regular work hours are indicated in the Drawings and/or the Specifications.

B. INTERRUPTION OF EXISTING FACILITIES:

- The Contractor shall not interrupt any of the services of the facility nor interfere with such services in any way without the permission of the Commissioner. Such interruption or interferences shall be made as brief as possible, and only at such time stated.
- 2 Under no circumstances shall the Contractor, its subcontractors, or its workers, be permitted to use any part of the project as a shop, without the permission of the Commissioner.
- 3 Unnecessary noise shall be avoided at all times and necessary noise shall be reduced to a minimum.
- Toilet facilities, water and electricity must be operational at all times (i.e. 24/7). No services of the facility can be interrupted in any way without the permission of the Commissioner. Careful coordination of all work with the Resident Engineer must be done to maintain the operational level of the project personnel at the facility.
- The Contractor shall schedule the work to avoid noise interference that will affect the normal functions of the facility. In particular, construction operations producing noises that are objectionable to the functions of the facility must be scheduled at times of day or night, day of the week, or weekend, which will not interfere with personnel at the facility. Any additional cost resulting from this scheduling shall be borne by the Contractor.



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The Contractor shall arrange to work continuously, including evening and weekend hours, if required, to assure that services will be shut down only during the time actually required to make the necessary connections to the existing facility.

7 The Contractor shall give ample written notice in advance to the Commissioner and personnel at the facility of any required shutdown.

PART II - PRODUCTS (Not Used)

PART III - EXECUTION (Not Used)

END OF SECTION 01 10 00



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Revised - January 15, 2015

SECTION 01 31 00 PROJECT MANAGEMENT AND COORDINATION

PART I - GENERAL

RELATED DOCUMENTS:

- The following documents apply to all required work for the Project: (1) the Contract Drawings, (2) the Specifications, (3) the General Conditions, (4) the Addendum, and (5) the Contract [City of New York Standard Construction Contract].
- LEED: Refer to the Addendum to identify whether this project is designed to comply with a Certification B. Level according to the U.S. Green Building Council's Leadership in Energy & Environmental Design (LEED) Rating System, as specified in Section 01 81 13, "SUSTAINABLE DESIGN REQUIREMENTS FOR LEED BUILDINGS."
- COMMISSIONING: Refer to the Addendum to identify whether this project will be commissioned by an C. independent third party under separate contract with the City of New York. Commissioning shall be in accordance with ASHRAE and USGBC LEED-NC procedures, as described in Section 01 91 13, GENERAL COMMISSIONING REQUIREMENTS. The Contractor shall cooperate with the commissioning agent and provide whatever assistance is required.

1.2 SUMMARY:

- A. This Section includes administrative provisions for coordinating construction operations on the Project including without limitation the following.
 - Coordination Drawings. 1.
 - Administrative and supervisory personnel. 2.
 - Project meetings. 3.
 - Requests for Interpretation (RFIs).
- B. This section includes the following:
 - 1. **Definitions**
 - 2. Coordination
 - 3. Submittals
 - 4. Administrative and Supervisory Personnel
 - 5. **Project Meetings**
 - Requests for Interpretation (RFI's) 6.
 - 7. Correspondence
 - 8. Contractor's Daily Reports
 - Alternate and Substitute Equipment 9.
- C. RELATED SECTIONS: include without limitation the following:
 - 1. Section 01 10 00 SUMMARY CONSTRUCTION PROGRESS DOCUMENTATION 2. Section 01 32 00 3. Section 01 33 00 **SUBMITTALS**
 - 4. Section 01 35 26 SAFETY REQUIREMENTS 5. Section 01 73 00 **EXECUTION REQUIREMENTS**
 - CONSTRUCTION WASTE MANAGEMENT AND DISPOSAL 6. Section 01 74 19



7. Section 01 77 00 PROJECT CLOSEOUT PROCEDURES

1.3 **DEFINITIONS:**

- A. Refer to Article 2 of the Contract for definition of terms, words and expressions used in the General Conditions not otherwise defined herein.
- B. Design Consultant: "Design Consultant" shall mean the entity responsible for providing design services for the Project, including without limitation, preparing the construction documents (drawings and specifications) and providing services in connection with such documents during construction. The entity serving as the "Design Consultant" may be a corporation, firm, partnership, joint venture. individual or combination thereof. Such entity may be either an employee(s) of the City or an entity engaged by the City to provide such services.

COORDINATION:

- Coordination: The Contractor shall coordinate its construction operations, including those of its subcontractors, with other entities to ensure the efficient and orderly installation of each part of the Work. The Contractor shall coordinate the various operations required by different Sections of the Specifications that depend on each other for proper installation, connection, and operation.
 - Schedule construction operations in sequence in order to obtain the best results where installation of one part of the Work depends on installation of other components, before or after its own installation.
 - 2. Coordinate installation of different components to ensure maximum accessibility for requir maintenance, service, and repair.
 - 3. Make adequate provisions to accommodate items scheduled for later installation.
 - Where availability of space is limited, coordinate installation of different components to ensure 4. maximum performance and accessibility for required maintenance, service, and repair of all components, including mechanical and electrical.
- B. The Contractor shall prepare memoranda for distribution to its subcontractors and other involved entities, outlining special procedures required for coordination. Such memoranda shall include required notices, reports, and meeting minutes as applicable.
- Administrative Procedures: The Contractor shall coordinate scheduling and timing of required C. administrative procedures with other construction activities and activities of its subcontractors to avoid conflicts and to ensure orderly progress of the Work. Such administrative activities include without limitation the following:
 - 1. Preparation of Contractor's Construction Schedule.
 - 2. Installation and removal of temporary facilities and controls.
 - 3. Delivery and processing of submittals.
 - 4. Progress meetings.
 - 5. Pre-installation conferences...
 - 6. Startup and adjustment of systems.
 - 7. Project closeout activities.
- D. Conservation: The Contractor shall coordinate construction activities to ensure that operations are carried out with consideration given to conservation of energy, water, and materials.



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E. Salvaged Items, Material and/or Equipment: The Specifications may identify certain items, materials or equipment which must be salvaged by the Contractor and handled or disposed of as directed. The Contractor shall comply with all directions in the Specifications regarding the salvaging and handling of identified items, material or equipment.

1.5 SUBMITTALS:

- A. Submit shop drawings, product data, samples etc. in compliance with Section 01 33 00, SUBMITTAL PROCEDURES.
- B. Coordination Drawings: The Contractor shall prepare applicable Coordination Drawings in compliance with the requirements for Coordination Drawings in Section 01 33 00, SUBMITTAL PROCEDURES.
- C. Safety Plan in compliance with Section 01 35 26, SAFETY REQUIREMENTS PROCEDURES.
- D. Waste Management Plan in compliance with Section 01 74 19, CONSTRUCTION WASTE MANAGEMENT AND DISPOSAL
- E. Key Personnel Names: Within 15 days after the Notice to Proceed, the Contractor shall submit a list of key personnel assignments of the Contractor and its subcontractors, including superintendent and other personnel in attendance at Project site. Identify individuals and their duties and responsibilities; list addresses and telephone numbers, including home and office telephone numbers. Provide names, addresses, and telephone numbers of individuals assigned as standbys in case of the absence of individuals assigned to Project.
 - 1. Post copies of list in Project meeting room, in temporary field office, and by each temporary telephone. Keep list current at all times.
 - 2. In addition to Project superintendent, provide other administrative and supervisory personnel as required for proper performance of the Work. Include special personnel required for coordinating all operations by its subcontractors.

1.6 PROJECT MEETINGS:

- A. General: The Resident Engineer will hold regularly scheduled construction progress meetings at the site, at which time the Contractor and appropriate subcontractors shall have their representatives present to discuss all details relative to the execution of the work. The Resident Engineer shall preside over these meetings.
 - 1. Agenda: Prior to each meeting, the Resident Engineer will consult with the Contractors and will prepare an agenda of items to be discussed. In general, after informal discussion of any item on the agenda, the Resident Engineer will summarize the discussion in a brief written statement, and the Contractor will then dictate a brief statement for the record.
 - 2. Coordination: In addition to construction progress meetings called by the Resident Engineer, the Contractor shall hold regularly scheduled meetings for the purpose of coordinating; expediting and scheduling the work in accordance with the master coordinated Job Progress Chart. The Contractor and its subcontractors, material suppliers or vendors whose presence is necessary, are required to attend. These meetings may, at the discretion of the Contractor, be held at the same place and immediately following the project meetings held by the Resident Engineer. Minutes of these meetings shall be recorded, typed and printed by the Contractor and distributed to all parties concerned.

B. PRECONSTRUCTION KICK-OFF MEETING:

 The Resident Engineer will schedule a preconstruction kick-off meeting either at DDC's main office or at the Project site to review responsibilities and personnel assignments and clarify the



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role of each participant. Unless otherwise directed the Design Consultant will record and distribute meeting minutes.

- 2. Attendees: Authorized representative of the Client Agency; Design Consultant; the Contractor and its superintendents, subcontractor(s) and their superintendent(s); LEED sub-consultant and Commissioning Authority /Agent (CxA) as applicable and other concerned parties. All participants at the meeting shall be familiar with the Project and authorized to conclude matters relating to the Contract Work.
- 3. Agenda: Includes without limitation the following as applicable:
 - a. Establishing construction schedule
 - b. Schedule for regular construction meetings
 - c. Phasing
 - d. Critical work sequencing and long-lead items
 - e. Designation of key personnel and their duties
 - f. Reviewing Application for Payment and Change Order Procedures
 - g. Procedures for Requests for Information (RFIs.)
 - h. Review Permits and Approval requirements
 - Review all recent Administrative Code reporting requirements relating to the project, (i.e. LL 77, LL86 etc.)
 - j. Procedures for testing and inspecting
 - k. Reviewing special conditions at the Project site
 - I. Distribution of the Contract Documents
 - m. Submittal procedures
 - n. Safety Procedures
 - o. LEED requirements
 - p. Commissioning Requirements
 - q. Preparation of Record Documents
 - r. Historic Treatment requirements
 - s. Use of the premises
 - t. Work restrictions
 - u. Client Agency occupancy requirements
 - v. Responsibility for temporary facilities, services and controls
 - w. Construction Waste Management and Disposal
 - x. Indoor Air Quality Management Plan
 - y. Dust Mitigation Plan
 - z. Office, work, and storage areas
 - aa. Equipment deliveries and priorities
 - bb. Security
 - cc. Progress cleaning
 - dd. Working hours



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C. CONSTRUCTION PROGRESS MEETINGS:

1. The Resident Engineer will schedule and conduct construction progress meetings at bi-weekly intervals or as otherwise determined. All participants at the meeting shall be familiar with the Project and authorized to conclude matters relating to the Work. Unless otherwise directed the Design Consultant will record and distribute meeting minutes.

2. Attendees:

- a. Design Consultant and applicable sub-consultants
- b. Client Agency Representative
- c. Representatives from the Contractor, sub-contractor(s), suppliers or other entities involved in the current progress, planning, coordination or future activities of the Work
- d. Other appropriate DDC personnel, DDC consultants and concerned parties
- 3. Agenda: Includes without limitation the following:
 - a. Review the Construction Schedule and progress of the Work. Determine if the Work is on time, ahead of schedule or behind schedule. Determine actions to be taken to maintain or accelerate the schedule
 - b. Review and approve prior meeting minutes and follow up open issues
 - c. Coordinate work between each subcontractor
 - d. Sequence of Operations
 - e. Status of submittals, deliveries and off-site fabrication
 - f. Status of inspections and approvals by governing agencies
 - g. Temporary facilities and controls
 - h. Review Site Safety
 - Quality and work standards
 - Field observations
 - k. Status of correction of deficient items
 - I. RFI's
 - m. Pending changes
 - n. Status of outstanding Payments and Change Orders
 - o. LEED requirements including Construction Waste Management, Indoor Air Quality Plan, Dust Mitigation and Commissioning
 - p. Status of Administrative Code reporting requirements related to the project

1.7 REQUESTS FOR INFORMATION (RFI):

- A. Procedure: Immediately on discovery of the need for information or interpretation of the Contract Documents, and if not possible to request interpretation at Project meeting, the Contractor shall prepare and submit an RFI in the form specified by the Resident Engineer.
 - 1. RFI shall originate with the Contractor. RFIs submitted by entities other than Contractor will be returned with no response.
 - 2. Coordinate and submit RFI in a prompt manner to the Resident Engineer so as to avoid delays in Contractor's work or work of its subcontractors.
 - 3. RFI Log: The Contractor shall prepare, maintain, and submit a tabular log of RFIs organized by the RFI number monthly to the Resident Engineer.



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4. On receipt of responses and action to the RFI, the Contractor shall update the RFI log and immediately distribute the RFI response to affected parties. Review response(s) and notify the Resident Engineer immediately if the Contractor disagrees with response(s).

1.8 CORRESPONDENCE:

Copies of all correspondence to DDC shall be sent directly to the Resident Engineer at the job site.

1.9 CONTRACTOR'S DAILY REPORTS:

The Contractor shall prepare and submit Daily Construction Progress Reports as outlined in Section 01 32 00, CONSTRUCTION PROGRESS DOCUMENTATION.

PART II – PRODUCTS (Not Used)

PART III - EXECUTION (Not Used)

END OF SECTION 01 31 00



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SECTION 01 32 00 CONSTRUCTION PROGRESS DOCUMENTATION

PARTI - GENERAL

1.1 RELATED DOCUMENTS:

A. The following documents apply to all required work for the Project: (1) the Contract Drawings, (2) the Specifications, (3) the General Conditions, (4) the Addendum, and (5) the Contract [City of New York Standard Construction Contract].

1.2 SUMMARY

- A. This Section includes administrative and procedural requirements for establishing an effective base line schedule for the project and documenting the progress of construction during performance of the Work by developing, revising as necessary, various documents including but not limited to the following:
 - 1. Baseline Construction Schedule.
 - 2. Composite Schedule for entire project
 - 3. Recovery Composite Schedule
 - 4. Revised and/or updated Composite Schedule
 - 5. Submittals Schedule.
 - 6. Daily construction reports.
 - 7. Material location reports.
 - 8. Field condition reports.
 - 9. Special reports.
- B. RELATED SECTIONS: include without limitation the following:
 - 1. Section 01 10 00 SUMMARY
 - 2. Section 01 32 22 PHOTOGRAPHIC DOCUMENTATION
 - 3. Section 01 33 00 SUBMITTAL PROCEDURES
 - 4. Section 01 40 00 QUALITY REQUIREMENTS

1.3 DEFINITIONS:

- A. Refer to Article 2 of the Contract for definition of terms, words and expressions used in the General Conditions not otherwise defined herein.
- B. Design Consultant: "Design Consultant" shall mean the entity responsible for providing design services for the Project, including without limitation, preparing the construction documents (drawings and specifications) and providing services in connection with such documents during construction. The entity serving as the "Design Consultant" may be a corporation, firm, partnership, joint venture, individual or combination thereof. Such entity may be either an employee(s) of the City or an entity engaged by the City to provide such services.



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Baseline Construction Schedule:

A horizontal bar chart type schedule (Microsoft Project OR similar program) listing all the activities and their duration for entire contract duration OR construction period, including logical ties and interrelations between the activities necessary for the timely and successful completion of the project. Critical path activities shall be clearly marked. The Baseline construction schedule is a preliminary schedule that must be reviewed and approved by the Resident Engineer.

D. Composite Schedule:

A composite horizontal bar chart type schedule (Microsoft Project OR similar program) listing all activities to be performed by the Contractor and its subcontractors, the duration of each activity including logical ties and interrelations between activities, and the sequence of each of necessary activities for the timely and successful completion of the project within the stipulated contract duration. Critical path activities shall be clearly marked. The Composite schedule must be signed and submitted by the Contractor within thirty (30) calendar days after the date established for commencement of the Contract, unless otherwise directed. The Composite Schedule must be reviewed and approved by the Resident Engineer.

E. Recovery Composite Schedule: A Recovery Composite Schedule is not required unless the City issues an Acceleration Change Order.

A Composite Schedule outlining and incorporating extraordinary efforts required to recover lost time with the aim of achieving completion of the project within the stipulated contract duration, plus authorized time extensions. In such case special attention must be given to keep the delays as minimum as possible and must establish the nature of efforts such as extended hours of work, weekend work, accelerated fabrication, required action(s) or effort(s) by the Contractor, its subcontractor consultants, clients, end users and/or other concerned parties.

Such schedule must be prepared and submitted within Five (5) calendar days of request by the Resident Engineer. The Recovery Composite Schedule must be reviewed and approved by the Resident Engineer.

F. Revised and/or Updated Composite Schedule:

> A Baseline construction schedule OR Composite Schedule OR Recovery Composite Schedule for the project that shows the actual duration of all the completed activities, including duration of and the reasons for delays, if any has occurred, AND revisions to all remaining activities of the Contractor and its subcontractors, including changes, if any, to logical ties, interrelations and the sequence of each of the outlined activities. Any such revisions should be shown on the row just below the approved schedule of the respective activity so that revisions can be compared.

> The Revised and/or updated Composite Schedule must be reviewed and approved by the Resident Engineer.

- Activity: A discrete part of a project that can be identified for planning, scheduling, monitoring, and controlling the construction project. Activities included in a construction schedule consume time and resources.
- H. Event: The starting or ending point of an activity.
- 1. Fragment: A part of the activity that breaks down activities into smaller activities for greater detail.
- J. Milestone: A key or critical point in time for reference or measurement.
- K. Network Diagram: A graphic diagram of a network schedule, showing activities and activities relationships.



PART II - PRODUCTS

2.1 BASELINE CONSTRUCTION SCHEDULE:

- A. The Contractor shall prepare a Baseline horizontal bar-chart-type construction schedule for the project. Submit the Baseline Construction Schedule to the Resident Engineer within (15) fifteen calendar days after the date established for commencement of the Contract, unless directed otherwise. The Baseline Schedule must be reviewed and approved by the Resident Engineer.
 - 1. Provide a separate time bar for each significant construction activity. Coordinate each activity on the schedule with other construction activities for proper interrelationship & sequence.
 - 2. Duration: The duration of each activity on the schedule besides installation must clearly show required duration of filing for permits, inspections, testing, approvals, shop drawings and materials submittals and approvals, fabrication, delivery, phasing for each construction activity.
 - 3. Schedule shall be time-scaled in not more than weekly increments, with the dates of the first day (Monday) of each week indicated.
 - 4. Completion of all the project activities shall be indicated in advance of the date established for completion of the Contract, allowing time for required inspection and punch list work.
 - 5. Clearly show time bar for all the tasks, to be completed before start of physical work of scheduled activities, including but not limited to obtaining required permit, subcontractor approval, submission and approval of shop drawings, field verification, time for fabrication and delivery, testing of materials and/or samples, preparation and approval of mock-up sample, curing, pre-testing of soil, pre-testing of equipment including start up, testing & adjusting, filing for inspection by regulatory agencies, training, final use, etc. required to maintain orderly progress of the activity. A special consideration must be given to those activities requiring early approvals because of long lead-time for manufacture or fabrication.
 - 6. Phasing: Arrange all activities in proper sequence to reflect requirements for phased completion, work by other entities, work by the City, City furnished items, coordination with existing work, limitations arising due to continued occupancies, non-interruptible services, partial completion for occupancy, site restrictions, provisions for future work, seasonal variations, environmental control, and similar conditions of the project.
 - 7. Arrange all activities and/or show interrelationship and logical sequence of all activities, determine and mark all critical path activities including any phasing reflecting actual project condition.
 - 8. Keep at least two blank horizontal bars between all activities for recording actual progress and submitting Revised Schedule as defined in Sub-Section 1.3 G
 - 9. If necessary a new revised schedule shall be prepared in the same manner as outlined above.

2.2 COMPOSITE SCHEDULE FOR THE PROJECT:

- A. The Contractor shall prepare a Composite Schedule based on the approved Baseline Schedule Such schedule shall indicate graphically and chronologically the start and completion of each and every activity, including all the pre-activity and post activity tasks. Keep at least two blank horizontal bars between all activities for recording actual progress and/or revisions.
 - 1. If necessary the Contractore shall meet with each subcontractor and with the Resident Engineer to review and make warranted adjustments and finalize the Composite Schedule. Once the schedule is finalized, the Contractor shall sign and date a reproducible form of the Composite Schedule. The Composite Schedule must be finalized and signed by the Contractor within (30) thirty calendar days after the date established for commencement of the Contract, unless directed otherwise. The Composite Schedule must be reviewed and approved by the Resident Engineer.



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2.3 RECOVERY COMPOSITE SCHEDULE:

A Recovery Composite Schedule is not required unless the City issues an Acceleration Change Order, A Recovery Composite Schedule outlining and incorporating extraordinary efforts required to recover lost time with the aim of achieving completion of the project within the stipulated contract duration, plus authorized time extensions, must be developed and submitted within (5) five calendar days of the request by the Resident Engineer. Such Recovery Composite Schedule shall include all information as defined in Article 1.3 F and shall be prepared in the same manner as outlined in Sub-Sections 2.1 and 2.2. The Recovery Composite Schedule must be reviewed and approved by the Resident Engineer.

REVISED AND/OR UPDATED COMPOSITE SCHEDULE: 2.4

- The Contractor shall revise and/or update the approved Composite Schedule as directed. The Revised schedule shall be prepared in the same manner as outlined above in Sub-Sections 2.1 and 2.2.
- B. The Contractor shall mark actual progress, delays, work stoppage etc. in the row just below the approved schedule for the respective activity so that revisions can be compared.
- C. Such schedule also shall indicate graphically and chronologically any revisions to the start and completion of the remaining activities including revisions to all the pre-activity and post activity tasks for all subcontractors.
- D. If necessary, the Contractor shall meet with each subcontractor and with the Resident Engineer to review and make warranted adjustments and finalize the Revised Composite Schedule. Once the schedule is finalized, the Contractor shall sign and date a reproducible form of the Schedule. Such schedule must be prepared and submitted by the Contractor within Five (5) calendar days of request by the Resident Engineer. The Revised Composite Schedule must be reviewed and approved by the Resident Engineer

SUBMITTALS SCHEDULE: 2.5

- Α. Preparation: The Contractor shall submit a schedule of submittals, arranged in chronological order by dates required by the construction schedule. Include time required for review, re-submittal, ordering, manufacturing, fabrication, and delivery when establishing dates.
- B. SCHEDULE F: Schedule F sets forth all submittal requirements for shop drawings and material samples. Schedule F is included in the Addendum. At the kick-off meeting, the Contractor must review this Schedule with the Resident Engineer and the Design Consultant. Within 10 days after the kick-off meeting, the Contractor must complete information on Schedule F concerning the submission date, the required delivery date and the fabrication time. For all required submittals of shop drawings and material samples, the Schedule F provided by the Contractor must indicate a submission date which is at least 20 business days prior to the date of the manufacture of the item or materials to be installed. In addition, if so directed by the Commissioner, the Schedule F provided by the Contractor must indicate a submission date for shop drawings and/or material samples of specified items or materials which is within 60 business days after the kick-off meeting. In the event of any conflict between the Specifications and Schedule F, Schedule F shall take precedence; provided, however, in the event of an omission from Schedule F (i.e., Schedule F omits either a reference to or information concerning a submittal requirement which is set forth in the Specifications), such omission from Schedule F shall have no effect and the Contractor's submittal obligation, as set forth in the Specifications, shall remain in full force and effect.
- C. Review: The Resident Engineer will review the Schedule F submitted by Contractor. Upon acceptance, the Resident Engineer will date and sign the schedule as approved and transmit it to the Consultant. Contractor and others within DDC as he/she deems appropriate.

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2.6 **REPORTS:**

Daily Construction Reports: The Contractor shall submit to the Resident Engineer written Daily Construction Reports at the end of each work day, recording basic information such as the date, day, weather conditions, and contract days passed, remaining contract duration/days and the following information concerning the Project.

Information: The reports shall be prepared by the Contractor's Superintendent and shall bear the Contractor's Superintendents signature. Each report shall contain the following information:

- List of name of Contractor, subcontractors, their work force in each category, and details of 1. activities performed.
- 2. The type of materials and/or major equipment being installed by the Contractor and/or by each subcontractor.
- 3. The major construction equipment being used by the Contractor and/or subcontractors.
- 4. Material and Equipment deliveries.
- 5. High and low temperatures and general weather conditions.
- 6. Accidents.
- 7. Meetings and significant decisions.
- Unusual events. 8.
- 9. Stoppages, delays, shortages, and losses.
- 10. Meter readings and similar recordings
- 11. Emergency procedures.
- Orders and/or requests of authorities having jurisdiction. 12.
- 13. Approved Change Orders received and implemented.
- 14. Field Orders and Directives received and implemented.
- Services connected and disconnected. 15.
- Equipment or system tests and startups. 16.
- Partial Completions and occupancies. 17.
- 18. Substantial Completions authorized.

NOTE: If there is NO ACTIVITY at site, a daily report indicating so and the reason for no activity at the site must be submitted.

- B. Material Location Reports: The contractor shall submit a Material Location Report at weekly OR monthly intervals as determined and established by the Resident Engineer. Such report shall include a comprehensive list of materials delivered to and stored at Project site. List shall be cumulative, showing materials previously reported plus items recently delivered. Include with list a statement of progress on and delivery dates for materials or items of equipment fabricated or stored away from Project site.
- C. Field Condition Reports: Immediately on discovery of a difference between field conditions and the Contract Documents, prepare and submit a detailed report. Submit a Request For Information (RFI) form with a detailed description of the differing conditions, together with recommendations for changing the Contract Documents.

2.7 **SPECIAL REPORTS:**

Accident report, incident report, special condition report for the conditions out of control of any party involved with the project effecting project progress, explaining impact on the project schedule and cost if

PART III - EXECUTION (Not Used) END OF SECTION 01 32 00



No Text



SECTION 01 32 33 PHOTOGRAPHIC DOCUMENTATION

REFER TO THE ADDENDUM FOR THE APPLICABILITY OF SECTION 01 32 33

PART I - GENERAL

1.1 RELATED DOCUMENTS:

A. The following documents apply to all required work for the Project: (1) the Contract Drawings, (2) the Specifications, (3) the General Conditions, (4) the Addendum, and (5) the Contract [City of New York Standard Construction Contract]

1.2 SUMMARY:

- A. This Section includes the following:
 - 1. Photographic Media
 - 2. Construction Photographs
 - 3. Pre-construction Photographs
 - 4. Periodic Construction Progress Photographs
 - 5. Special Photographs
 - 6. DVD Recordings
 - 7. Final Completion Construction Photographs
- B. RELATED SECTIONS: include without limitation the following:

1. Section 01 10 00

SUMMARY

2. Section 01 33 00

SUBMITTAL PROCEDURES

3. Section 01 35 91

HISTORIC TREATMENT PROCEDURES

4. Section 01 78 39

CONTRACT RECORD DOCUMENTS

5. Section 01 81 19

INDOOR AIR QUALITY REQUIREMENTS FOR LEED BUILDINGS

C. PHOTOGRAPHER - The Contractor shall employ and pay for the services of a professional photographer who shall take photographs showing the progress of the work for all Contracts.

1.3 DEFINITIONS:

- A. Refer to Article 2 of the Contract for definition of terms, words and expressions used in the General Conditions not otherwise defined herein.
- B. Design Consultant: "Design Consultant" shall mean the entity responsible for providing design services for the Project, including without limitation, preparing the construction documents (drawings and specifications) and providing services in connection with such documents during construction. The entity serving as the "Design Consultant" may be a corporation, firm, partnership, joint venture, individual or combination thereof. Such entity may be either an employee(s) of the City or an entity engaged by the City to provide such services.

1.4 SUBMITTALS:

A. Qualification Data: For photographer.



a key plan of Project site and building

- B. Key Plan: With each Progress Photograph Submittal include a key plan of Project site and building with notation of vantage points marked for location and direction of each image. Indicate location, elevation or story of construction. Include same label information as corresponding set of photographs.
- C. Construction Progress Photograph Prints: Take Progress Photographs bi-weekly and submit four color prints of each photographic view for each trade to the Resident Engineer. Such photographs shall be included in each monthly progress report or as otherwise directed by the Resident Engineer.
- D. Construction Photograph Negatives: Submit a complete set of photographic negatives in individually protected negative sleeves with each submittal of prints. Identify negatives with label matching photographic prints.
- E. Digital Images: If Digital Media is used, submit a complete set of digital color image electronic files on CD-ROM with each submittal of prints. Identify electronic media with date photographs were taken. Submit images that have same aspect ratio as the sensor, un-cropped.

1.5 QUALITY ASSURANCE:

A. Photographer Qualifications: An individual who has been regularly engaged as a professional photographer of construction projects for not less than three years.

1.6 COORDINATION:

A. The Contractor and its subcontractor(s) shall cooperate with the photographer and provide auxiliary services requested, including access to Project site and use of temporary facilities, including temporary lighting required to produce clear, well-lit photographs without obscuring shadows.

1.7 COPYRIGHT:

- A. The Contractor shall include the provisions set forth below in the agreement between the Contractor and the Photographer who will provide the construction photographs described in this section. The Contractor shall submit to the Resident Engineer a copy of its agreement with the Photographer.
- B. Any photographs, images and/or other materials produced pursuant to this Agreement, and any and all drafts and/or other preliminary materials in any format related to such items produced pursuant to this Agreement, shall upon their creation become the exclusive property of the City.
- C. Any photographs, images and/or other materials provided pursuant to this Agreement ("Copyrightable Materials") shall be considered "work-made-for-hire" within the meaning and purview of Section 101 of the United States Copyright Act, 17 U.S.C. § 101, and the City shall be the copyright owner thereof and of all aspects, elements and components thereof in which copyright protection might exist. To the extent that the Copyrightable Materials do not qualify as "work-made-for-hire," the Photographer hereby irrevocably transfers, assigns and conveys exclusive copyright ownership in and to the Copyrightable Materials to the City, free and clear of any liens, claims, or other encumbrances. The Photographer shall retain no copyright or intellectual property interest in the Copyrightable Materials. The Copyrightable Materials shall be used by the Photographer for no purpose other than in the performance of this Agreement without the prior written permission of the City. The Department may grant the Photographer a license to use the Copyrightable Materials on such terms as determined by the Department and set forth in the license.
- D. The Photographer acknowledges that the City may, in its sole discretion, register copyright in the Copyrightable Materials with the United States Copyright Office or any other government agency authorized to grant copyright registrations. The Photographer shall fully cooperate in this effort, and agrees to provide any and all documentation necessary to accomplish this.

E. The Photographer represents and warrants that the Copyrightable Materials: (i) are wholly original material not published elsewhere (except for material that is in the public domain); (ii) do not violate any copyright Law; (iii) do not constitute defamation or invasion of the right of privacy or publicity; and (iv) are not an infringement, of any kind, of the rights of any third party. To the extent that the Copyrightable Materials incorporate any non-original material, the Photographer has obtained all necessary permissions and clearances, in writing, for the use of such non-original material under this Agreement, copies of which shall be provided to the City.

PART II - PRODUCTS

2.1 PHOTOGRAPHIC MEDIA:

- A. Photographic Film: Medium format, 2-1/4 by 2-1/4 inches (60 by 60 mm).
- B. Digital Images:
 - Construction Progress Images: Color images in JPEG format with minimum sensor size of 1.3 megapixels.
 - 2. Presentation Quality Images: Provide Color images in uncompressed TIFF format, produced by a digital camera with minimum sensor size of 4.0 megapixels, and at an image resolution of not less than 1024 by 768 with 8"x10" original capture at 300 dpi or greater.

C. Prints:

- 1. Format: 8-by-10-inch (203-by-254-mm) smooth-surface matte color prints on single-weight commercial-grade stock paper, with 1inch wide margins and punched for standard 3-ring binder.
- 2. Identification: On the front of each photograph affix a label in the margin with Project name and date photograph was taken. On the back of each print, provide an applied label or rubber-stamped impression with the following information:
 - a. Project Contract I.D. Number.
 - b. Project Contract Name.
 - c. Name of Contractor. (and Subcontractor Trade Represented)
 - d. Subject of Image Taken.
 - e. Date and time photograph was taken if not date stamped by camera.
 - f. Description of vantage point, indicating location, direction and other pertinent information.
 - g. Unique sequential identifier.
 - h. Name and address of photographer.

PART III - EXECUTION

3.1 CONSTRUCTION PHOTOGRAPHS:

- A. General: Take photographs using the maximum range of depth of field, and that are in focus, to clearly show the Work. Photographs with blurry or out-of-focus areas will not be accepted.
 - 1. Maintain key plan with each set of construction photographs that identifies each photographic location and direction of view.

B. Film Images:

1. Date Stamp: Unless otherwise indicated, date and time stamp each photograph as it is being taken so stamp is integral to photograph.



- 2. Field Office Prints: Retain one set of prints of progress photographs in the field office at Project site, available at all times for reference. Identify photographs same as for those submitted to Commissioner.
- C. Digital Images: Submit digital images exactly as originally recorded in the digital camera, without alteration, manipulation, editing, or modifications using image-editing software.
 - 1. Date and Time: Include date and time in filename for each image.
 - Field Office Images: Maintain one set of images on CD-ROM in the field office at Project site, available at all times for reference. Identify images same as for those submitted to Commissioner.

3.2 PRE-CONSTRUCTION & PRE-DEMOLITION PHOTOGRAPHS:

- A. Before commencement of Contract work at the site, take color photographs of Project site and surrounding properties, including existing structures or items to remain during construction, from different vantage points, as directed by the Resident Engineer.
 - 1. Flag applicable excavation areas and construction limits before taking construction photographs.
 - 2. Take photographs of minimum eight (8) views to show existing conditions adjacent to property before starting the Work.
 - 3. Take applicable photographs of minimum eight (8) views of existing buildings either on or adjoining property to accurately record physical conditions at start of construction.
 - 4. Take additional photographs as required or directed by the Resident Engineer to record settlement or cracking of adjacent structures, pavements, and improvements.
- B. Demolition Operations: Take photographs as directed by the Resident Engineer of minimum of eight (8) views each before commencement of demolition operations, at mid-point of operations and at completion of operations.
- C. Pre-Demolition Photographs: Take archival quality color photographs, to include all exterior building facades, of all structures at the Project site designated to be fully demolished or removed in compliance with NYC Building Code requirements. Submit four (4) complete sets of pre-demolition photographs, in the format specified herein, to the Resident Engineer for submission to the Department of Buildings.

3.3 PERIODIC CONSTRUCTION PROGRESS PHOTOGRAPHS:

A. Take photographs of minimum eight (8) views bi-weekly as directed by the Resident Engineer of construction progress for each contract trade. Select vantage points to show status of construction and progress since last photographs were taken.

3.4 SPECIAL PHOTOGRAPHS:

- A. The photographer shall take special photographs of subject matter or events as specified in other sections of the Project Specifications from vantage points specified or as otherwise directed by the Resident Engineer.
- B. Historical Elements: As required in Section 01 35 91, HISTORIC TREATMENT PROCEDURES, for Contract work at designated landmark structures or sites the photographer, as specified and required by individual sections of the Contract documents or at the direction of the Commissioner, shall take images of existing elements scheduled to be removed for replacement, repair or replication in quantities as directed, including post-construction photographs of completed work as directed by the Commissioner.



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 Take Presentation Quality Photographs of designated landmark structures as directed by the Commissioner for submission to the New York City Landmarks Preservation Commission. Provide a minimum of four color photographic prints of each view as directed.

3.5 DVD RECORDING:

A. When DVD Recording of Demonstration and Training sessions is required for Non-Commissioned projects the Contractor shall provide the services of a Videographer as indicated in Section 01 79 00, DEMONSTRATION AND OWNER'S PRE-ACCEPTANCE ORIENTATION.

3.6 FINAL COMPLETION CONSTRUCTION PHOTOGRAPHS:

A. Take color photographs of minimum eight (8) unobstructed views of the completed project or project and site, as directed by the Commissioner and after all scaffolding, hoists, shanties, field offices or other temporary work has been removed and final cleaning is done after date of Substantial Completion for submission as Project Record Documents. Submit four (4) sets of each view of Presentation Quality photographic prints including negatives and/or digital images electronic file.

END OF SECTION 01 32 33



No Text



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SECTION 01 33 00 SUBMITTAL PROCEDURES

PARTI- GENERAL:

1.1 RELATED DOCUMENTS:

A. The following documents apply to all required work for the Project: (1) the Contract Drawings, (2) the Specifications, (3) the General Conditions, (4) the Addendum, and (5) the Contract [City of New York Standard Construction Contract].

1.2 SUMMARY:

- A. This Section includes administrative and procedural requirements for submitting Shop Drawings, Coordination Drawings, Catalogue Cuts, Material Samples and other submittals required by the Contract Documents.
- B. Review of submittals does not relieve the Contractor of responsibility for any Contractor's errors or omissions in such submittals, nor from responsibility for complying with the requirements of the Contract.
- C. Responsibility of the Contractor: The approval of Shop Drawings will be general and shall not relieve the Contractor of responsibility for the accuracy of such Shop Drawings, nor for the proper fitting and construction of the work, nor of the furnishing of materials or work required by the Contract and not indicated on the Shop Drawings. Approval of Shop Drawings shall not be construed as approving departures from the Contract Drawings, Supplementary Drawings or Specifications.
- D. This Section includes the following:
 - 1. Definitions
 - 2. Submission Procedures
 - 3. Coordination Drawings
 - 4. LEED Submittals
 - 5. Ultra Low Sulfur Diesel Fuel Reporting
 - 6. Construction Photographs and DVD Recordings
 - 7. As-Built Documents

1.3 RELATED SECTIONS: Include without limitation the following:

A.	Section 01 10 00	SUMMARY
B.	Section 01 31 00	PROJECT MANAGEMENT AND COORDINATION
C.	Section 01 32 00	CONSTRUCTION PROGRESS DOCUMENTATION
D.	Section 01 32 33	PHOTOGRAPHIC DOCUMENTATION
Ē.	Section 01 77 00	CLOSEOUT PROCEDURES
F.	Section 01 78 39	CONTRACT RECORD DOCUMENTS
G	Section 01 81 13	SUSTAINABLE DESIGN REQUIREMENTS FOR LEED BUILDINGS

1.4 DEFINITIONS:

- A. Refer to Article 2 of the Contract for definition of terms, words and expressions used in the General Conditions not otherwise defined herein.
- B. Design Consultant: "Design Consultant" shall mean the entity responsible for providing design services for the Project, including without limitation, preparing the construction documents (drawings and specifications) and providing services in connection with such documents during construction. The entity serving as the "Design Consultant" may be a corporation, firm, partnership, joint venture, individual or



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combination thereof. Such entity may be either an employee(s) of the City or an entity engaged by the City to provide such services.

- C. Submittals: Written and graphic information that requires responsive actions and includes without limitation all shop drawings, product data, letters of certification, tests and other information required for quality control and as required by the Contract Documents.
- D. Informational Submittals: Written information that does not require responsive action. Submittals may be rejected for non-compliance with the Contract.
- E. Shop Drawings: Include drawings, diagrams, illustrations, schedules, performance charts, brochures, and other data, except for coordination drawings, specifically prepared for the project by the Contractor or any subcontractor, manufacturer, supplier or distributor, which illustrates how specific portions of the work shall be fabricated and/or installed.
- F. Coordination Drawings: As required in Section 01 31 00 PROJECT MANAGEMENT AND COORDINATION.
- G. Product Data and Quality Assurance Submittals: Includes manufacturer's standard catalogs, pamphlets and other printed materials including without limitation the following:
 - 1. Catalogue and Product specifications
 - 2. Installation instructions
 - 3. Color charts
 - 4. Catalog cuts
 - 5. Rough-in diagrams and templates
 - 6. Wiring diagrams
 - 7. Performance curves
 - 8. Operational range diagrams
 - 9. Mill reports
 - 10. Design data and calculations
 - 11. Certification of compliance or conformance
 - 12. Manufacturer's instructions and field reports

1.5 COORDINATION DRAWINGS:

- A. The Contractor shall provide reproducible Coordination Drawing(s) of the reflective ceiling showing the integration of all applicable contract work, including general construction work as well as trade work (Plumbing, HVAC, and Electrical) to be performed by subcontractors. The Coordination Drawing(s) shall include, without limitation, the following information:
 - 1. General Construction work showing the reflective ceiling plan including starting points, ceiling and beam soffits elevations, ceiling heights, roof openings, etc.
 - HVAC Contract work showing ductwork, heating and sprinkler piping, location of grilles, registers
 etc. and access doors in hung ceilings. Locations shall be fixed by elevations and dimensions from
 column centerlines and/or walls.
 - 3. Plumbing Contract work including piping, valves, cleanouts etc., indicating locations and elevations and shall indicate the necessary access doors.
 - 4. Electrical Contract work indicating fixtures, large conduit runs, clearances, pull boxes, junction boxes, sound system speakers, etc.
- B. The Contractor shall issue the completed Coordination Drawing(s) to the Resident Engineer for his/her review. The Resident Engineer may call as many meetings as necessary with the Contractor, including



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attendance by applicable subcontractors, and may call on the services of the Design Consulting where necessary, to resolve any conflicts that become apparent.

C. Upon resolution of any conflicts, the Contractor shall provide a final Coordination Drawing(s) which will become the Master Coordination Drawing(s). The Master Coordination Drawing(s) shall be signed and dated by the Contractor to indicate acceptance of the arrangement of the work.

D. A reproducible copy of the Master Coordination Drawing(s) shall be provided by the Contractor to each of the appropriate subcontractor(s), the Resident Engineer and the Design Consultant for information.

E. Shop Drawings shall not be submitted prior to acceptance of the final coordinated drawings and shall be prepared in accordance with the Master Coordination Drawing(s). No work will be permitted without accepted Shop Drawings. It is therefore essential that this procedure be instituted as quickly as possible.

1.6 SUBMITTAL PROCEDURES:

- A. Refer to Section 01 35 03 GENERAL MECHANICAL REQUIREMENTS and Section 01 35 06 GENERAL ELECTRICAL REQUIREMENTS for additional submittal requirements involving electrical and mechanical work or equipment of any nature called for the project.
- B. Coordination: Coordinate preparation and processing of submittals with performance of construction activities.
 - Coordinate each submittal with fabrication, purchasing, testing, delivery, other submittals, and related activities that require sequential activities, with the Submittal Schedule specified in Section 01 32 00 CONSTRUCTION PROGRESS DOCUMENTATION.
 - Coordinate transmittal of different types of submittals for related parts of the Work so processing will not be delayed because of need to review submittals concurrently for coordination.
 - 3. The Commissioner reserves the right to withhold action on a submittal requiring coordination with other submittals until related submittals are received.
- C. Submittals Schedule: The Submittals Schedule is set forth in Schedule F, which is included in the Addendum.
- D. Identification: Place a permanent label or title block on each submittal for identification.
 - 1. Indicate name of firm or entity that prepared each submittal on label or title block.
 - 2. Provide a space approximately 6 by 8 inches on label or beside title block to record Contractor's review and approval markings and action taken by Design Consultant.
 - 3. Include the following minimum information on label for processing and recording action taken:
 - a. Project name, DDC Project Number and Contract Number
 - b. Date
 - c. Name and address of Design Consultant
 - d. Name and address of Contractor
 - e. Name and address of subcontractor
 - f. Name and address of supplier
 - g. Name of manufacturer
 - h. Submittal number or other unique identifier, including revision identifier
 - i. Number and title of appropriate Specification Section
 - j. Drawing number and detail references, as appropriate
 - k. Location(s) where product is to be installed, as appropriate
 - Other necessary identification

E. Transmittal:

1. Package each submittal individually and appropriately for transmittal and handling. Transmit each submittal using a transmittal form in triplicate. Transmittals received from sources other than the



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Contractor will be returned without review. Re-submission of the same drawings or product data shall bear the original number of the prior submission and the original titles.

- 2. Transmittal Form: Provide locations on form for the following information:
 - a. Project name, DDC Project number and Contract Number
 - b. Date
 - c. Destination (To:)
 - d. Source (From:)
 - e. Names of Contractor, subcontractor, manufacturer, and supplier
 - f. Category and type of submittal
 - g. Submittal purpose and description
 - h. Specification Section number and title
 - i. Drawing number and detail references, as appropriate
 - j. Transmittal number, numbered consecutively
 - k. Submittal and transmittal distribution record
 - Remarks
 - m. Signature of transmitter

F. Shop Drawings:

- 1. Procedures for Preparing, Forwarding, Checking and Returning all Shop Drawings shall be, generally, as follows:
 - a. The Contractor shall make available to its subcontractors the necessary Contract Documents and shall instruct such subcontractor to determine dimensions and conditions in the field, particularly with reference to coordination between the trade subcontractors. The Contract shall direct its subcontractors to prepare Shop Drawings for submission to the Desig Consultant in accordance with the requirements of these General Conditions. The Contractor shall also direct its subcontractors to "Ring Up" corrections made on all re-submissions for approval, so as to be readily seen, and that the symbol "sub" be used to identify the source of the correction or information that has been added.

The Contractor shall:

- Review and be responsible to the Commissioner, for information shown on its subcontractor's Shop and Installation drawings and manufacturers' data, and also for conformity to Contract Documents.
- "Ring Up" corrections made on all submissions for approval, so as to be readily seen, and that the symbol "GC", "PL", "HVAC" or "EL" be used to indicate that the correction and/or information added was made by the Contractor and/or its subcontractor(s).
- 3. Clearly designate which entity is to perform the work when the term, "work by others" or other similar phrases are indicated on the Contract Drawings before submission to the Design Consultant.
- Stamp submissions "Recommended for Acceptance", date and forward to the Design Consultant.
- 2. The Contractor shall promptly prepare and submit project specific layout detail and Shop Drawings of such parts of the work as are indicated in the Specifications, Schedule F of the Addendum or as required. These Shop Drawings shall be made in accordance with the Contract Drawings, Specifications and Supplementary Drawings, if any. The Shop Drawings shall be accurate and distinct and give all the dimensions required for the fabrication, erection and installation of the work.
- 3. Size of Drawings: The Shop Drawings, unless otherwise directed, shall be on sheets of the same size as the Contract Drawings, drawn accurately and of sufficient scale to be legible, with a one half (1/2) inch marginal space on each side and a two (2) inch marginal space for binding on the side.

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- 4. Scope of Drawings: Shop Drawings shall be numbered consecutively and shall accurately and distinctly represent all aspects of the work, including without limitation the following:
 - a. All working and erection dimensions
 - b. Arrangements and sectional views
 - c. Necessary details, including performance characteristics, and complete information for making necessary connections with other work
 - d. Kinds of materials including thickness and finishes
 - e. Identification of products
 - f. Fabrication and installation drawings
 - g. Roughing-in and setting diagrams
 - h. Wiring diagrams showing field-installed wiring, including power, signal, and control wiring
 - i. Shop work manufacturing instructions
 - j. Templates and patterns
 - k. Schedules
 - I. Design calculations
 - m. Compliance with specified standards
 - n. Notation of coordination requirements
 - o. Notation of dimensions established by field measurement
 - p. Relationship to adjoining construction clearly indicated
 - q. Seal and signature of professional engineer if specified
 - r. Wiring Diagrams: Differentiate between manufacturer-installed and field-installed wiring
 - s. All other information necessary for the work and/or required by the Commissioner
- 5. Titles and Reference: Shop Drawings shall be dated and contain:
 - a. Name of the Project, DDC Project Number and Contract Number
 - b. The descriptive names of equipment, or materials covered by the Contract Drawings and the classified item number or numbers, if any, under which it is, or they are required
 - c. The locations or points and sequence at which materials, or equipment, are to be installed in the work
 - d. Cross references to the section number, detail number and paragraph number of the Contract Specifications
 - e. Cross references to the sheet number, detail number, etc., of the Contract Drawings
- 6. Field Measurements: In addition to the above requirements, the Shop Drawings shall be signed by the Contractor and, if applicable, the subcontractor responsible for preparation of the Shop Drawings. Each Shop Drawing shall be stamped with the following wording:

FIELD MEASUREMENTS: The Contractor certifies that it has verified and supplemented the Contract Drawings by taking all required field measurements, which said measurements correctly reflect all field conditions and that this Shop Drawing incorporates said measurements.

7. Contractor's Statement with Submittal: Any Submittal by the Contractor for acceptance, including without limitation, all dimensional drawings of equipment, blueprints, catalogues, models, samples and other data relative to the equipment, the materials, the work or any part thereof, must be accompanied by a statement that the Submittal has been examined by the Contractor and that everything shown in the Submittal is in accordance with the requirements of the Contract Drawings and Specifications. If there is any discrepancy between what is shown in the Submittal and the requirements of the Contract Drawings and Specifications, the Contractor shall, in its statement, list and clearly describe each such discrepancy.

Acceptance will be given based upon the Contractor's representation that what is shown in the Submittal is in accordance with the requirements of the Contract Drawings and Specifications. If



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the Contractor's statement indicates any discrepancy between what is shown in the Submittal and the requirements of the Contract Drawings and Specifications, such change is subject to review and prior written acceptance by the Design Consultant. In addition, such change may require a change order in accordance with Article 25 of the Contract. In the event any such change is approved, any additional expense or increased cost in connection with the change is the sole responsibility of the Contractor.

8. Submission of Shop Drawings:

- a. Initial Submission: The Contractor shall submit seven (7) copies of each Shop Drawing to the Design Consultant for his/her review and acceptance. The Design Consultant will transmit Shop Drawings to appropriate sub-consultants for review and acceptance, including Commissioning Authority/Agent as applicable. A satisfactory Shop Drawing will be stamped "No Exceptions Taken", be dated and distributed by the Design Consultant as follows:
 - Two (2) copies thereof will be returned to the Contractor by letter
 - 2) Three (3) copies of the approved Shop Drawing and copy of the transmittal letter to the Contractor will be forwarded to DDC
 - 3) One copy will be retained by the Design Consultant
 - 4) One copy will be forwarded / retained by sub-consultant(s) as appropriate

Should the Shop Drawing(s) be "Rejected" or noted "Revise and Resubmit" by the Design Consultant, the Design Consultant will return the Shop Drawings to the Contractor with the necessary corrections and changes to be made as indicated thereon.

- b. Revisions: The Contractor must make such corrections and changes and again submit seven (7) copies of each shop drawing to the Design Consultant. The Contractor shall revise and resubmit the Shop Drawing as required by the Design Consultant until the Shop Drawings a stamped "No Exceptions Taken". However, Shop Drawings which have been stamped "Make Corrections Noted" shall be considered an "Acceptable" Shop Drawing and NEED NOT be resubmitted.
- c. Commencement of Work: No work or fabrication called for by the Shop Drawings shall be done until the acceptance of the said drawings by the Design Consultant is given. In addition to the foregoing Shop Drawing transmissions, a copy of any Shop Drawing prepared by any of the Contractor's subcontractors which Shop Drawing indicated work related to, adjacent to, impinging upon, or affecting work to be done by other subcontractors shall be transmitted to the subcontractors so affected. [These accepted Shop Drawings shall be distributed to the affected subcontractors when required with a copy of the transmittal to the Resident Engineer.]
- d. Variations: If the Shop Drawings show variations from the Contract requirements because of standard shop practice or other reasons, the Contractor shall make specific mention of such variations in its letter of submittal. Acceptance of the Shop Drawings shall constitute acceptance of the subject matter thereof only and not of any structural apparatus shown or indicated.

G. Product Data:

- General: Except as otherwise prescribed herein, the submission, review and acceptance of Product Data and Catalogue cuts shall conform to the procedures specified in Sub-Section 1.6 F, Shop Drawings.
- 2. If information must be specially prepared for submittal because standard printed data are not suitable for use, submit as Shop Drawings, not as Product Data.
- 3. Mark each copy of each submittal to show which products and options are applicable.
- 4. Include the following information, as applicable:



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- a. Manufacturer's written recommendations.
- b. Manufacturer's product specifications.
- c. Manufacturer's installation instructions.
- d. Standard color charts.
- e. Manufacturer's catalog cuts.
- f. Wiring diagrams showing factory-installed wiring.
- g. Printed performance curves.
- h. Operational range diagrams.
- i. Mill reports.
- i. Standard product operation and maintenance manuals.
- k. Compliance with specified referenced standards.
- I. Testing by recognized testing agency.
- m. Application of testing agency labels and seals.
- n. Notation of coordination requirements.
- 5. Submit Product Data before or concurrent with Samples.
- 6. Submission of Product Data:
 - a. Initial Submission: The Contractor shall submit seven (7) sets of Product Data to the Design Consultant for his/her review and acceptance. The Design Consultant will transmit Product Data to appropriate sub-consultants for review and acceptance, including Commissioning Authority/Agent as applicable. A satisfactory catalogue cut will be stamped "No Exception Taken", be dated and distributed as follows:
 - 1) Two (2) copies thereof will be returned to the Contractor by letter
 - Three (3) copies of the Product Data and copy of the transmittal letter to the Contractor will be forwarded to DDC
 - One copy will be retained by the Design Consultant
 - 4) One copy will be forwarded / retained by sub-consultant(s) as appropriate

Should the Product Data be "Rejected" or noted "Revise and Resubmit" by the Design Consultant, the Design Consultant will return one (1) set of such Product Data to the Contractor with the necessary corrections and changes to be made indicated and one (1) set to DDC.

7. Revisions: The Contractor must make such corrections and changes and again submit seven (7) copies of each Product Data for the review of the Design Consultant. The Contractor shall revise and resubmit the Product Data as required by the Design Consultant until the submission is stamped "No Exceptions Taken" by the Design Consultant. However, Product Data which has been stamped "Make Corrections Noted" shall be considered an "Accepted" Product Data and NEED NOT be resubmitted.

H. Samples of Materials:

- 1. For samples of materials involving electrical work of any nature, refer to Section 00 35 06 General Electrical Requirements.
- 2. Samples shall be in triplicate, of sufficient size to show the quality, type, range of color, finish and texture of the material.
- 3. Each of the samples shall be labeled as follows:
 - a. Name of the Project, DDC Project Number and Contract Number
 - b. Name and quality of the material
 - c. Date



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- d. Name of Contractor, subcontractor, manufacturer and supplier
- e. Related Specification or Contract Drawing reference to the samples submitted
- 4. A letter of transmittal, in triplicate, from the Contractor requesting acceptance must accompany all such samples.
- Transportation charges to the Design Consultant's office must be prepaid on all samples forwarded.
- 6. Samples for testing purposes shall be as required in the Specifications.
- 7. Samples on Display: When samples are specified to be equal to approved product, they shall be carefully examined by the Contractor and by those whom the Contractor expects to employ for the furnishing of such materials.
- 8. Timely Submissions Log/Schedule: Samples shall be submitted in accordance with approved Shop Drawing log so as to permit proper consideration without delaying any operation under the project. Materials should not be ordered until acceptance is received, in writing, from the Design Consultant. All materials shall be furnished equal in every respect to the accepted samples.
- 9. The Acceptance of any samples will be given as promptly as possible, and shall be only for the characteristic color, texture, strength, or other feature of the material named in such approval, and no other. When this approval is issued by the Design Consultant, it is done with the distinct understanding that the materials to be furnished will fully and completely comply with the Specifications, the determination of which may be made at some later date by a laboratory test or by other procedure. Use of materials will be permitted only so long as the quality remains equal to the approved samples and complies in every respect with the Specifications, and the colors and textures of the samples on file in the office of the Design Consultant, for the project.
- 10. Acceptability of test Data: The Commissioner will be the final judge as to acceptability of laborate test data and performance in service of materials submitted.
- 11. Valuable Samples: Valuable samples, such as hardware, plumbing and electrical fixtures, etc., not destroyed by inspection or test, will be returned to the Contractor and may be incorporated into the work after all questions of acceptability have been settled, providing suitable permanent records are made as to the location of the samples, their properties, etc.
- 12. Equivalent Quality: Any material, article and/or equipment which is designated in the Drawings and/or Specifications by a number in the catalogue of any manufacturer or by a manufacturer's grade or trade name is designated for the purpose of describing the material, article and/or equipment and fixing the standard of performance and/or function, as well as the quality and/or finish. Any material, article and/or equipment which is other than what is specified in the Drawings and/or Specifications will only be accepted if the Commissioner makes a written determination that such material, article and/or equipment is equivalent to that which is specified in the Drawings and/or Specifications.
- 13. The submission of any material, article and/or equipment as the equal of any material, article and/or equipment set forth in the Drawings and/or Specifications as a standard shall be accompanied by any and all information essential for determining whether such proposed material, article and/or equipment is equivalent to that which is specified. Such information shall include, without limitation, illustrations, drawings, descriptions, catalogues, records of tests, samples, as well as information regarding the finish, durability and satisfactory use of such proposed material, article and/or equipment under similar operating conditions.



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REFER TO THE ADDENDUM FOR THE APPLICABILITY OF SUB-SECTION 1.7

1.7 LEED SUBMITTALS:

- A. Comply with submittal requirements specified in Section 01 74 19, CONSTRUCTION WASTE MANAGEMENT AND DISPOSAL; Section 01 81 13, SUSTAINABLE DESIGN REQUIREMENTS FOR LEED BUILDINGS; Section 01 81 13.13, VOLATILE ORGANIC COMPOUND (VOC) LIMITS FOR ADHESIVES, SEALANTS, PAINTS AND COATINGS FOR LEED BUILDINGS; Section 01 81 19, INDOOR AIR QUALITY REQUIREMENTS FOR LEED BUILDINGS and Section 01 91 13, GENERAL COMMISSIONING REQUIREMENTS.
- B. LEED Building submittal information shall be assembled into one package per each applicable specification section, separate from all other non-LEED submittals. Each submittal package shall have a separate transmittal and identification as described in Sub-Section 1.5 herein.
- C. Number of Copies: Submit FOUR (4) copies of LEED submittals, in accordance with procedure described in Article 1.5 herein, unless otherwise indicated.
- D. Material Safety Data Sheets (MSDSs) for LEED Certification: Submit information necessary to show compliance with LEED certification requirements, which will be the limit of the Design Consultant's review for LEED compliance.
 - Designated LEED submittals that include non-LEED MSDS data will not be reviewed. The entire submittal will be returned for re-submission.
- E. Product Cut Sheets and/or Shop Drawings for LEED Certification: Provide product cut sheets and/or shop drawings with the Contractor's or sub-contractor's stamp, confirming that the submitted products are the products installed in the Project. For detailed requirements refer to Sub-Section 1.6 of Section 01 81 13 SUSTAINALE DESIGN REQUIREMENTS FOR LEED PROJECTS.
 - Provide the quantity, length, area, volume, weight, and/or cost of each product submitted as required to satisfy LEED documentation requirements. Refer to Sub-Section 1.6 of Section 01 81 13 SUSTAINABLE DESIGN REQUIREMENTS FOR LEED PROJECTS.

1.8 ULTRA LOW SULFUR DIESEL FUEL AND BEST AVAILABLE TECHNOLOGY REPORTING:

A. In accordance with Section 01 10 00 Summary, Sub-Section 1.5 E, the Contractor shall submit reports to the Commissioner regarding the use of Ultra Low Sulfur Diesel Fuel and Best Available Technology (BAT) in Non road Vehicles. Submission of such reports shall be in accordance with the schedule, format, directions and procedures established by the Commissioner.

1.9 CONSTRUCTION PHOTOGRAPHS AND DVD RECORDINGS:

A. Submit construction progress photographs and DVD recordings in accordance with requirements of Section 01 32 33, PHOTOGRAPHIC DOCUMENTATION

1.10 AS-BUILT DOCUMENTS:

A. Submit all as-built documents in accordance with Section 01 78 39 CONTRACT RECORD DOCUMENTS.



PART II - PRODUCTS (Not Used)

PART III - EXECUTION (Not Used)

END OF SECTION 01 33 00



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SECTION 01 35 03 GENERAL MECHANICAL REQUIREMENTS

REFER TO THE ADDENDUM FOR APPLICABILITY OF THIS SECTION 01 35 03

PART I -**GENERAL**

1.1 RELATED DOCUMENTS:

A. The following documents apply to all required work for the Project: (1) the Contract Drawings, (2) the Specifications, (3) the General Conditions, (4) the Addendum, and (5) the Contract [City of New York Standard Construction Contract].

1.2 SUMMARY:

A. The General Mechanical Requirements contained herein shall be followed by the Contractor, as well as its subcontractor for HVAC work. This Section sets forth the General Requirements applicable to mechanical work for the Project. Such requirements are intended to be read in conjunction with the Specifications and Contract Drawings for the Project. In the event of any conflict between the requirements set forth in this Section and the requirements of the Specifications and/or the Contract Drawings, whichever requirement is the most stringent, as determined by the Commissioner, shall take precedence.

RELATED SECTIONS: Include without limitation the following:

- Section 01 10 00 SUMMARY A.
- B. Section 01 33 00 SUBMITTAL PROCEDURES
- C. Section 01 35 06 GENERAL ELECTRICAL REQUIREMENTS
- Section 01 42 00 REFERENCES D.
- Section 01 77 00 CLOSEOUT PROCEDURES E.
- Section 01 78 39 CONTRACT RECORD DOCUMENTS

1.4 DEFINITIONS:

A. CONCEALED PIPING AND DUCTS -: shall mean piping and ducts hidden from sight in masonry or other construction, in floor fill, trenches, partitions, hung ceilings, furred spaces, pipe shafts and in service tunnels not used for passage. Where piping and ducts run in areas that have hung ceilings, such piping and ducts shall be installed in the hung ceilings. For work on existing piping any insulation on such existing piping is to be tested for asbestos and abated, if found to be positive by a certified asbestos contractor. Such testing and abatement shall occur prior to the performance of any work on these pipes.

SUBMITTALS:

- A. INTENT OF MECHANICAL CONTRACT DRAWINGS Mechanical Contract Drawings are in part diagrammatic and show the general arrangement of the equipment, ducts and piping included in the Contract and the approximate size and location of the equipment.
- B. The Contractor shall follow these Contract Drawings in laying out the work and verify the spaces in which it will be installed. The Contractors shall submit, as directed, Mechanical Shop Drawings, roughing drawings, manufacturer's Shop Drawings, field drawings, cuts, bulletins, etc., of all materials, equipment and methods of installation shown or specified in accordance with Section 01 33 00 SUBMITTAL PROCEDURES.



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- 1. Submit sheet metal shop standards. Submit manufacturer's product data including gauges, materials, types of joints, scaling materials and installations for metal ductwork materials and products.
- 2. Submit scaled layout drawing (3/8"=1") of metal ductwork and fittings including, but not limited to, duct sizes, locations, elevations, slopes of horizontal runs, wall and floor penetrations and connections. Show modifications of indicated requirements made to conform to local shop practice and how those modifications ensure that free area, materials and rigidity are not reduced. Layouts should include all the room plans, mechanical equipment rooms and penthouses. Method of attachment of duct hangers to building construction all with the support details. Coordinate shop drawings with related trades prior to submission.
- 3. Indicate duct fittings, particulars such as gauges, sizes, welds and configuration prior to start of work for low-pressure systems.
- 4. Submit maintenance data and parts lists for metal ductwork materials and products. Include this data, product data and shop drawings in maintenance manual.

1.6 ACCESSIBILITY:

All work shall be installed by the Contractor so as to be readily accessible for inspection, operation, maintenance and repair. Minor deviations from the arrangement indicated on the Contract Drawings may be made to accomplish this, but they shall not be made without approval by the Commissioner.

1.7 CHANGES IN PIPING, DUCTS, AND EQUIPMENT:

Wherever field conditions are such that for proper execution of the work, reasonable changes in location of piping, ducts and equipment are necessary and required, the Contractor shall make such changes as directed and approved, without extra cost to the City.

1.8 CLEANING OF PIPING, DUCTS, AND EQUIPMENT:

Piping, ducts and equipment shall be thoroughly cleaned by the Contractor of all dirt, cuttings and other foreign substances. Should any pipe, duct or other part of the several systems be obstructed by any foreign matter, the Contractor will be required to pay for disconnecting, cleaning and reconnecting wherever necessary for the purpose of locating and removing obstructions. The Contractor shall pay for repairs to other work damaged in the course of removing obstructions. For work on existing piping, ducts and equipment the Contractor shall pay special attention during this task so as not to disturb the insulation on such piping, ducts or equipment.

1.9 STANDARDIZATION OF SIMILAR EQUIPMENT:

Unless otherwise particularly specified, all equipment of the same kind, type or classification, and used for identical purposes, shall be the product of one (1) manufacturer.

1.10 SUPPORTING STRUCTURES DESIGNED BY THE CONTRACTOR:

Unless otherwise specified, supporting structures for equipment to be furnished by the Contractor shall be designed by an Engineer licensed in New York State retained by the Contractor. Supporting structures shall be built by the Contractor of sufficient strength to safely withstand all stresses to which they may be subjected, within permissible deflections, and shall meet the following standards:

A. Structural Steel - ASTM Standard Specifications, AISC and New York City Construction Codes.



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- B. Concrete for supports for equipment shall conform to the Specifications for concrete herein, but in no case shall be less than the requirements of the New York City Construction Codes for average concrete.
- C. Steel reinforcement for concrete shall be of intermediate grade and shall meet the requirements of the Standard Specifications for Billet Steel-Concrete Reinforcement Bars, ASTM.
- D. Drawings and calculations shall be submitted for review and acceptance in accordance with Section 01 33 00 SUBMITTAL PROCEDURES.

1.11 ELIMINATION OF NOISE:

- A. All systems and/or equipment provided under the Contract shall operate without objectionable noise or vibration.
- B. Should operation of any one or more of the several systems produce noise or vibration which is, in the opinion of the Commissioner, objectionable, the Contractor shall at its own expense make changes in piping, equipment, etc. and do all work necessary to eliminate objectionable noise or vibration.
- C. Should noise or vibration found objectionable by the Commissioner be transmitted by any pipe or portions of the structure from systems and/or equipment installed under the Contract, the Contractor shall at its own expense install such insulators and make such changes in or additions to the installations as may be necessary to prevent transmission of this noise or vibration.

1.12 PRELIMINARY FIELD TEST:

As soon as conditions permit, the Contractor shall furnish all necessary labor and materials for, and shall make, preliminary field tests of the equipment to ascertain compliance with the requirements of the Contract. If the preliminary field tests disclose equipment that does not comply with the Contract, the Contractor shall, prior to the acceptance test, make all changes, adjustments and replacements required.

1.13 INSTRUCTIONS ON OPERATION:

At the time the equipment is placed in permanent operation by the City, the Contractor shall make all adjustments and tests required by the Commissioner to prove that such equipment is in proper and satisfactory operating condition. The Contractor shall instruct the City's operating personnel on the proper maintenance and operation of the equipment for the period of time called for in the Specifications.

1.14 CERTIFICATES:

On completion of the work, the Contractor shall obtain certificates of inspection, approval, acceptance and of compliance with all laws from all agencies and/or entities having jurisdiction over the work and shall deliver these certificates to the Commissioner in accordance with Section 01 77 00 CLOSEOUT PROCEDURES. The work shall not be deemed substantially complete until the certificates have been delivered. See General Comments regarding problems with specifying items required for substantial completion.

PART II - PRODUCTS (Not Used)
PART III - EXECUTION (Not Used)
END OF SECTION 01 35 03



No Text



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SECTION 01 35 06 GENERAL ELECTRICAL REQUIREMENTS

PARTI- GENERAL

1.1 RELATED DOCUMENTS:

A. The following documents apply to all required work for the Project: (1) the Contract Drawings, (2) the Specifications, (3) the General Conditions, (4) the Addendum, and (5) the Contract [City of New York Standard Construction Contract].

1.2 SUMMARY:

- A. This Section sets forth the General Requirements applicable to electrical work for the Project. Such requirements are intended to be read in conjunction with the Specifications and Contract Drawings for the Project. In the event of any conflict between the requirements set forth in this Section and the requirements of the Project Specifications and/or the Contract Drawings, whichever requirement is the most stringent, as determined by the Commissioner, shall take precedence.
- B. This Section includes the following:
 - 1. Procedure for Electrical Approval
 - 2. Submittals
 - 3. Electrical Installation Procedures
 - 4. Electrical Conduit System Including Boxes (Pull, Junction and Outlet)
 - 5. Electrical Wiring Devices
 - 6. Electrical Conductors and Terminations
 - 7. Circuit Protective Devices
 - 8. Distribution Centers
 - 9. Motors
 - 10. Motor Control Equipment
 - 11. Schedule of Electrical Equipment

1.3 RELATED SECTIONS: Include without limitation the following:

A.	Section 01 10 00	SUMMARY
В.	Section 01 33 00	SUBMITTAL PROCEDURES
C.	Section 01 35 03	GENERAL MECHANICAL REQUIREMENTS
D.	Section 01 42 00	REFERENCES
E.	Section 01 77 00	CLOSEOUT PROCEDURES
F	Section 01 78 39	CONTRACT RECORD DOCUMENTS

1.4 **DEFINITIONS**:

- A. WIRING: means both wire and raceway (rigid steel, heavy wall conduit unless specifically indicated otherwise).
- B. POWER WIRING: means wiring from a panel board or other specified source to a starter (if required) then to a disconnect (if required), then to the final point of usage such as a motor, unit or device.
- C. CONTROL and/or INTERLOCK WIRING: means that wiring that signals the device to operate or shut down in response to a signal from a remote control device such as a temperature, smoke, pressure, float,



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etc. device (starters and disconnect switches are not included in this definition) regardless of the voltage required for the controlling device.

- D. RIGID STEEL CONDUIT: shall mean rigid steel, heavy wall conduit that is hot dipped galvanized inside and outside. The conduit shall meet the requirements of the latest edition, as amended, of the "Standard for Rigid Steel Conduit" of the Underwriters' Laboratories, Inc. Unless otherwise specified in the Specifications or indicated on the Contract Drawings, rigid steel conduit shall be used for all exposed work, for all underground conduits in contact with earth and for fire alarms systems, as required by the New York City Construction Codes.
- E. ELECTRICAL METALLIC TUBING (EMT): shall mean industry standard thin wall conduit of galvanized steel only. All elbows, bends, couplings and similar fittings which are installed as a part of the conduit system shall be compatible for use with electric metallic tubing. Couplings and terminating fittings shall be of the pressure type as approved by the Commissioner. Set screw fittings will not be acceptable. EMT shall meet the requirements of the latest edition, as amended, of the "Standard for Electrical Metallic Tubing of the Underwriters Laboratories Inc." EMT may only be used where specifically indicated. In no case will EMT be permitted in spaces other than hung ceilings and dry wall partitions.
- F. FLEXIBLE METALLIC CONDUIT (FMC): Shall mean a conduit made through the coiling of a self-interlocking ribbed strip of aluminum or steel, forming a hollow tube through which wires can be pulled. For final connections to motors and motorized equipment, not more than a 4' 0" length of flexible conduit may be used. For watertight installations, this conduit shall be of a watertight type, attached with watertight glands or fittings for final connections from outlet box to recessed lighting fixtures and in locations only where specifically permitted by the Specifications or Contract Drawings.

1.5 PROCEDURE FOR ELECTRICAL APPROVAL:

This Sub-Section sets forth General Electrical information, as well as required approvals for all electrical work required for the Project, including ancillary electrical work which may be included in the work of other trade subcontractors.

- A. ELECTRIC SERVICE: The electric service supply is subject to commercial and operating variation of the utility company. Proper provision shall be made to have all apparatus operate normally under these conditions.
- B. ACCEPTANCE: Acceptance and approval of the work will be contingent upon the inspection and test of the installation by the City regulatory agency.
- C. TESTS: The Contractor shall notify the Commissioner when the Contractor has completed the work and is ready to have it inspected and tested. Upon completion of the work tests shall be made as required by the Commissioner of all electrical materials, electrical and associated mechanical equipment, and of appliances installed hereunder. The Contractor shall furnish all labor and material for such tests. Should the tests show that any of the material, appliances or workmanship is not first class or not in compliance with the Contract, the Contractor on written notice shall remove and promptly replace them with other materials in conformity with the Contract.
- D. CERTIFICATE OF THE BUREAU OF ELECTRICAL CONTROL, OF THE DEPARTMENT OF BUILDINGS (B.E.C.): The Contractor must file prior to requesting a substantial completion inspection a Certificate of Inspection issued by B.E.C. On completion of the work the Contractor shall obtain certificates of inspection, approval, acceptance and compliance from all agencies and/or entities having jurisdiction over the work and shall deliver these certificates to the Commissioner in accordance with Section 01 77 00 CLOSEOUT PROCEDURES.
- E. RESPONSIBILITY FOR CARE AND PROTECTION OF EQUIPMENT:
 - The Contractor furnishing any equipment shall be responsible for the equipment until it has be finally inspected, tested and accepted, in accordance with the requirements of the Contract.



- 2. After delivery and before and after installation, the Contractor shall protect all equipment against theft, injury or damage from all causes. The Contractor shall carefully store all equipment received for work, which is not immediately installed. If any equipment has been subject to possible injury by water, it shall be thoroughly dried out and put through a special dielectric test as directed by the Commissioner, at the expense of the Contractor or replaced by the Contractor without additional cost to the City.
- F. UNIFORMITY OF EQUIPMENT: Any two (2) or more pieces of equipment, apparatus or materials of the same kind, type or classification which are intended to be used for identical types of service, shall be made by the same manufacturer.

1.6 SUBMITTALS:

- A. CONTRACTOR'S ELECTRICAL DRAWINGS AND SAMPLES FOR APPROVAL:
 - 1. The Contractor shall submit to the Commissioner for approval, in accordance with Section 01 33 00 SUBMITTAL PROCEDURES, complete dimensional drawings of all equipment, wiring diagrams, motor test data, details of control, installation layouts showing all details and locations and including all schedules, and descriptions and supplementary data to comprise complete working drawings and instructions for the performance of the work. A description of the operation of the equipment and controls shall be included. A letter, in triplicate, shall accompany each submittal.
 - 2. The Contractor shall submit in accordance with Section 01 33 00 SUBMITTAL PROCEDURES, duplicate samples of such materials and appliances as may be requested by the Commissioner for approval. These samples shall be properly tagged for identification and submitted for examination and test. After the samples are approved, one (1) sample will be returned to the Contractor and the other sample will be filed in the office of the Commissioner's representative for inspection use. After the Contract is completed, the second set of samples will be returned to the Contractor.
- B. TIMELINESS: All material shall be submitted in accordance with the submittal schedule in sufficient time for the progress of construction. Failure to promptly submit acceptable samples and dimensional drawings of equipment will not be accepted as grounds for an extension of time. The Commissioner may decline to consider submittals unless all related items are submitted at the same time.
- C. CONTRACTOR'S STATEMENT WITH SUBMITTALS: Contractor shall submit statement in accordance with Section 01 33 00, SUBMITTAL PROCEDURES.
- D. BULLETINS AND INSTRUCTIONS: The Contractor shall furnish and deliver to the Commissioner in accordance with Section 01 78 39, CONTRACT RECORD DOCUMENTS and Section 01 77 00, CLOSEOUT PROCEDURES, after acceptance of the work, four (4) complete sets of instructions, technical bulletins and any other printed matter (diagrams, prints, or drawings) required to provide complete information for the proper operation, maintenance and repair of the equipment and the ordering of spare parts.

PART II - PRODUCTS (Not Used)



PART III – EXECUTION

3.1 ELECTRICAL INSTALLATION PROCEDURES:

This Sub-Section sets forth the General Installation Procedure that shall apply to all electrical work and electrical equipment appearing in the Contract.

(Refer to Sub-Section 1.4 DEFINITIONS for terms used in this section)

- A. INTENT OF CONTRACT DOCUMENTS: The Drawings and Specifications are to be interpreted as a means of conveying the scope and intent of the work without giving every minor electrical detail. It is intended, nevertheless, that the Contractor shall provide whatever labor and materials are found necessary, within the scope of the Contract, for the successful operation of the installation. Specific details of individual installations are to be finally decided upon when the Contractor submits Working or Shop Drawings for approval to DDC. Whenever there are two (2) or more methods to complete project work within the Contract scope, the Commissioner reserves the right to choose that method which, in the Commissioner's opinion, will afford the most satisfactory performance, lasting qualities, and accessibility for repairs, even though this selection is the most costly.
- B. SCHEMATIC PLANS APPROXIMATE LOCATIONS: Conduits and wiring are shown on the plans for diagrammatic purposes only. Therefore, conduit layouts may not necessarily give the actual physical route of the conduits. The Contractor who installs a conduit system will also be required, as part of the work, to furnish and install all hangers and pull-boxes, including any special pull-boxes found necessary to overcome interferences, and to facilitate the pulling of electrical cables. Similarly, the locations of equipment, appliances, outlets and other items shown on Contract Drawings are only approximate and are to be definitively established when equipment Shop Drawings are submitted and approved by DD during construction.
- C. SLEEVES: required for conduits passing through walls or floors, shall be furnished and set by the Contractor installing the conduits. Sleeves in waterproofed floors shall be provided with flashing extending 12 inches in all directions from sleeve and secured to waterproofing. Flashing shall be turned down into space between pipe and sleeve and caulked watertight. Flashing shall be 20 oz. cold rolled copper. Sleeves shall be supplied with welded flanges similar to those supplied by the subcontractor for Plumbing Work and shall extend one (1) inch above finished floor.
- D. COORDINATION: The Contractor shall keep in close touch with the construction progress and obtain the necessary information for the accurate placement of its work in ample time before project construction operations obstruct its work. The Contractor is to consult all other Contract Drawings, as well as approved equipment Shop Drawings on file in the Resident Engineer's Field Office. This will aid in avoiding interferences, omissions and errors in the electrical installation.
- E. RESTORATION: If drilling or cutting is done on finished surfaces of equipment or the structure, any marring of the surface shall be repaired or replaced by the Contractor. The Contractor shall be held responsible for corrective restoration due to its cutting or drilling, and for any damage to the project or its contents caused by the Contractor or the Contractor's workers. If any piercing of waterproofing occurs because of the installation of the work, the Contractor shall restore the waterproofing, at its own expense, to the satisfaction of the Commissioner.
- F. ELECTRICAL WORK AT SITE: The Contractor furnishing equipment consisting of a number of related electrical devices or appliances, mounted in a single enclosure, or on a common base, shall furnish this unit complete with internal wiring, connections, terminal boxes with copper connectors and/or lugs and ample electrical leads, ready for connection and operation. The cost of any wiring, re-wiring or other work required to be done on this unit in the field, shall be borne by the Contractor; without additional cost to the City.
- G. COOPERATION AMONG SUBCONTRACTORS: Whenever an electrically operated unit or syst involves the combined work of several subcontractors for its installation and successful operation, to



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Contractor shall require each subcontractor to exercise the utmost diligence in cooperating with others to produce a complete, harmonious installation.

REFER TO THE ADDENDUM FOR THE APPLICABILITY OF SUB-SECTION 3.2

3.2 ELECTRICAL CONDUIT SYSTEM INCLUDING BOXES (PULL, JUNCTION AND OUTLET):

This Sub-Section sets forth the requirements applying to the installation of electrical conduits, boxes or fittings. Rigid steel conduit shall be used throughout, unless otherwise directed by the Commissioner. Where the word 'conduit', without a modifier such as, rigid steel, EMT, etc., is specified to be used, it shall be interpreted to mean, rigid steel, heavy wall, threaded conduit.

(Refer to Sub-Section 1.4 DEFINITIONS for terms used in this section)

A. INSTALLATIONS AND APPLICATIONS:

- 1. Unless otherwise specified or indicated on the Contract Drawings, conduit runs shall be installed concealed in finished spaces.
- 2. CONDUIT SIZES: The sizes of conduit shall be as indicated on the Contract Drawings. Wherever conduit sizes are not indicated, the conduit shall meet the requirements of the New York City Electrical Code to accommodate the conductors to be installed therein.
- Conduits shall be reamed smooth after cutting. No running threads will be permitted. Universal
 type couplings shall be used where required. Conduit joints shall be screwed up to butt. Empty
 conduits after installation shall have all open ends temporarily plugged to prevent the entrance of
 water or other foreign matter.
- Conduits being installed in concrete or masonry shall be securely held in place during pouring and construction operations. A group of conduits terminating together shall be held in place by a template.
- 5. UNDERGROUND STEEL CONDUITS: Unless otherwise specified, all underground steel conduits in contact with earth shall be encased by the Contractor who installs them, in a covering of not less than two (2) inches of an approved concrete mixture. Concrete mix shall be one (1) part cement to four and one-half (4 ½) parts of fine and coarse aggregate.
- 6. EXCAVATION RESTORATION PERMITS: When installing underground conduits, duct banks or manholes the Contractor shall perform the work of cutting pavement, excavation shoring, keeping trenches or holes pumped dry, backfilling, restoration of surfaces to original condition and removal of excess earth and rubbish from premises. During the work, the Contractor shall provide adequate crossovers, protective barriers, lamps, flags, etc., to safeguard traffic and the public. When the work is in a public highway or street, the Contractor shall secure and pay for all necessary permits and inspection fees and pay the cost of repaving.
- 7. EXPOSED CONDUIT SUPPORTS: Exposed conduit shall be supported by Galvanized hangers with necessary inserts, beam clamps of approved design or attached to walls or ceilings by expansion bolts. Exposed conduits shall be supported or fastened at intervals not more than five (5) feet.
- 8. Exposed conduit shall be installed parallel or at right angles to ceiling, walls and partitions. Where direction changes of exposed conduit cannot be made with neat bends, such as required around beams or columns, conduit type fitting shall be used.



- 9. The conduit shall be installed with an approved expansion joint:
 - a. Wherever the conduit crosses a building expansion joint the Contractor will be held responsible for determining where the building expansion joints are located.
 - b. Every 200 feet, when in straight runs of 200 feet or longer.
- 10. Conduit may only enter and leave a floating slab in the vertical direction, and then only in an approved manner. Horizontal entries into floating slabs are not permitted.
- 11. Conduit installed in pipe shafts shall be properly supported to carry the total weight of the raceway system complete with cable. In addition at least one (1) horizontal brace per 10 ft. section shall be provided to assure stability of the raceway system.
- 12. BUSHINGS AND LOCKNUTS: Approved bushings and locknuts shall be used wherever conduits enter outlet boxes, switch boxes, pull boxes, panel board cabinets, etc.
- 13. CONDUIT BENDS: shall be made without kinking conduit or appreciably reducing the internal diameter. All bends in conduit of two (2) inch in diameter or larger shall be made with an hydraulic or power pipe bender. The radius of the inner edge of any bend shall not be less than six (6) times the internal diameter of the conduit where rubber covered conductors are to be installed, and not less than 10 times the internal diameter of the conduit where lead covered conductors are to be used. Long gradual sweeps will be required, rather than sharp bends, when changes of direction are necessary.

14. EMPTY CONDUITS

- a. TESTS: All conduits and ducts required to be installed and left empty shall be tested for clear bore and correct installation by the Contractor using a ball mandrel and a brush and sna before the installation will be accepted. The ball shall be turned to approximately 85% of the internal diameter of the raceway to be tested. Two (2) short wire brushes shall be included in the mandrel assembly. Snaking of conduits, ducts, etc., shall be performed by the Contractor in the presence of the Resident Engineer. Any conduits or ducts which reject the mandrel shall be cleared at once with the Contractor bearing all costs, such as chopping concrete, to replace the defective conduit and restore the surface to its original condition.
- b. TAGS: Numbers or letters shall be assigned to the various conduit runs, and as they test clear they shall be identified by a fiber tag not less than 1-1/4 inch width, attached by means of a nylon cord. All conduit terminations in panel, splice or pull boxes as well as those out of the floor or ceiling shall be tagged.
- c. TEST RECORDS: As the conduit runs clear, a record shall be kept under the heading of "Empty Conduit Tested, Left Clear, Tagged and Capped" showing conduit designation, diameter, location, date tested and by whom. When complete, this record shall be signed by the Resident Engineer and submitted in triplicate for approval. This record shall be entered on the Contract Record Drawings under Section 01 78 39, CONTRACT RECORD DOCUMENTS.
- d. CAPPING: All empty conduit and duct openings, after test, shall be capped or plugged by the Contractor as directed.
- e. DRAG LINES: A drag line shall be left in all empty conduit.

B. BOXES:

 The Contractor shall furnish and erect all pull boxes indicated on the plans or where required. Sides, top and bottom of pull boxes shall be Galvanized coated and shall be built of No. 12 USSC steel reinforced at corners by substantial angle irons and riveted or welded to plates. Bottom or s



of pull boxes shall be removable and held in place by corrosion resistant machine screws. Pull boxes in damp locations shall have threaded hubs and gaskets and be NEMA 4X. All pull boxes shall be suspended from ceiling or walls in the most substantial manner.

- 2. In centering outlets, the Contractor is cautioned to allow for overhead pipes, ducts and other obstructions, and for variations in arrangement and thickness of fireproofing, soundproofing and plastering. Precaution should be exercised regarding the location of window and door trims, paneling, etc. Mistakes resulting from failure to exercise precaution must be corrected by the Contractor at no additional cost to the City. Outlets in hung ceilings shall be supported from the black iron or structure.
- 3. The exact location of all outlets in finished rooms shall be as directed. When the interior finish has been applied, the Contractor shall make any necessary adjustment of its work to properly center the outlets. All outlet boxes for local switches near doors shall be located at the strike side of doors as finally hung, whether so indicated on the drawings or not.
- 4. Exposed wall outlet boxes shall be erected neatly and tight against the walls and securely anchored to same.
- 5. All wall outlets of each type shall be set accurately at the same level on each floor, except where otherwise specified or directed. Where special conditions occur, outlets shall be located as directed.
- 6. MOUNTING HEIGHTS: The following heights are standard heights and are subject to correction due to coordination with Contract Drawings. All such changes must be approved by the Resident Engineer. Heights given are from finished floor to center line of outlet or device on wall or partition, unless otherwise indicated.

a.	General	Convenience	Outlets

	(mount vertical)	1'-6"
b.	Clock Outlets	8'-6"or 1'-6" below ceiling
c.	Wall Lighting Switches	4'-0"
d.	Motor Controllers	5'-0"
e.	Motor Push-button	4'-2"
f.	Telephone Outlets	As Directed
g.	Fire Alarm Bells	8'-6"or 1'-6" below ceiling
h.	Fire Alarm Stations	4'-0"
i.	Intercom Outlet	1'-6"

- j. Cooking and Refrigerator Unit As Directed
- 7. Outlet boxes shall be of approved design and construction; of form and dimensions suited and adapted to its specific location; the kind of fixture to be used and the number and arrangements of conduits, etc., connecting therewith. All ferrous outlet boxes shall meet the requirements for zinc coating as specified under Electrical Conduit Systems.
- 8. There shall be knockouts opened only for the insertion of conduit. Any outlet boxes with more openings than are necessary for conduit insertion shall be sealed by the Contractor without additional charge.
- All outlet boxes and junction boxes for exposed work shall be galvanized cast iron or cast aluminum with threaded openings. Outlet boxes for exposed inside work in damp locations shall be galvanized cast iron or cast aluminum with threaded hubs and neoprene gaskets.
- 10. Junction boxes shall not be less than 4 11/16" square and shall be equipped with zinc coated plates. Where plates are exposed they shall be finished to match the room decor.



- 11. FIXTURE SUPPORTS: Outlet boxes supporting lighting fixtures shall be equipped with fixture studs held by approved galvanized stove bolts or integral with the box. Cast iron or malleable boxes shall have four (4) tapped holes for mounting required cover or fixtures.
- 12. Outlet boxes exposed to the weather or indicated W.P. shall be cast iron or cast aluminum and the covers made watertight with neoprene gaskets. The boxes shall have external lugs for mounting. Drilling of the body of the fitting for mounting will not be permitted. The cover screws shall be appropriate in size, non-corrodible and not less than four (4) in number for each box opening.

REFER TO THE ADDENDUM FOR THE APPLICABILITY OF SUB-SECTION 3.3

3.3 ELECTRICAL WIRING DEVICES:

A. WALL SWITCHES shall be of the best specification grade, quiet type, and shall have a rating of 20 Amperes at 277 volts, as manufactured by Bryant, Hubbell or approved equal. The mechanism shall be equipped with arc snuffers. They shall be of the tumbler type, single pole. Switches of the 3-way type shall have a similar rating.

B. RECEPTACLES:

- 1. CONVENIENCE OUTLETS: shall be of the best specification grade, duplex, two-pole, 3-wire, 20 Amperes at 125 volts. It shall have a grounding pole that shall be grounded to the conduit system. Receptacles shall be capable of both back and side wiring and shall have only one (1) grounding screw. Receptacles shall be Hubbell Cat. #5262 or approved equal.
- 2. HEAVY DUTY RECEPTACLE OUTLETS: shall have the Ampere rating and the number of poles specified on the Contract Drawings and shall be Hubbell, Russell-Stoll, Bryant, AH & H or approve equal. Each outlet shall have a grounding pole, which shall be grounded to the conduit system.
- 3. FLOOR RECEPTACLES: shall be Russell & Stoll #3040 or approved equal, to fit into floor box previously specified.
- 4. NAMEPLATES: are required for all receptacles other than 120V.
- C. CLOCK HANGERS: Clock outlets for surface type clocks shall be equipped with a supporting hook and recessed faceplate to conceal the electrical cord.
- D. WATERTIGHT DEVICES: For installations exposed to weather or in damp locations, the devices shall be in a gasketed, cast iron enclosure.

E. PLATES:

- 1. Every convenience outlet and switch outlet shall be covered by means of a stainless steel No. 302 0.4" antimagnetic plate with an approved finish, unless provided otherwise in the detailed Specifications.
- 2. Where two (2) or three (3) switches are grouped together, a single faceplate shall be used. Where more than three (3) switches are located at one (1) point, the faceplates may be made up in multiple units.

REFER TO THE ADDENDUM FOR THE APPLICABILITY OF SUB-SECTION 3.4

3.4 ELECTRICAL CONDUCTORS AND TERMINATIONS:

A. CONDUCTORS FOR LIGHT AND POWER - All wire and cable shall be of annealed copper of 98% conductivity. Aluminum wire or cable will not be permitted. The insulation shall be flame retardal moisture and heat resistant, thermoplastic, type THW or THWN rated for 600 volts at 75 degrees C.



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both wet and dry locations. Wires No. 8 or larger shall be stranded. Wires and cables shall also be subject to the requirements of the NYCEC. Cables for incoming service or wire in conduits contiguous with the earth or in concrete or other damp or wet locations shall be synthetic rubber insulated with neoprene jacket, heat and moisture resistant and shall be equal to UL Type USE and rated for 600 volts at 75 degrees C. for both wet and dry locations.

- B. FIXTURE WIRE: Lighting fixtures shall be wired with No. 14 gauge wire designated as AWM and rated at 105 degrees C.
- C. OTHER TYPES: Cables and wires for interior communication systems are described in applicable detailed Specifications.
- D. MINIMUM SIZE: Conductors smaller than No. 12 AWG shall not be used for light or power.
- E. COLOR CODE: Wires shall have a phase color code, and multiple conductor cables shall be color coded.
- F. CABLE DATA: The Contractor shall submit for approval the following information for each size and type of cable to be furnished.
 - 1. Manufacture of Cable Location of Plant.
 - 2. Minimum insulation resistance at standard test temperature.
 - 3. Days required for delivery to site of work after order to proceed with manufacture.
- G. ORIGINAL REELS: Cable and wire shall be delivered to the site of the work on original sealed factory reels.

H. WIRE INSTALLATION:

- INSTALL WIRES AFTER PLASTERING Feeder and branch circuits wiring shall not be installed in conduit before the rough plastering work is completed. No conductors shall be pulled into floor conduits before floor is poured.
- 2. CONDUIT SECURED IN PLACE No conductor shall be pulled into any conduit run before all joints are made up tightly and the entire run rigidly secured in place.
- 3. WIRE ENDS All wires shall be left with sufficiently long ends for proper connection and stowing.
- 4. PULLING COMPOUNDS When required to ease the pulling-in of wires into conduit, only approved compounds as recommended by cable manufacturers shall be used.
- 5. PRESSURE CONNECTORS for wires shall be of the cast copper or forged copper pressure plate type. Connectors shall be O.Z., Burndy, National Electric Products or approved equal.
- 6. Splices and feeder taps in the gutters of panel boxes shall be made by means of pressure plate type connectors encased in composition covers as manufactured by O.Z., Burndy, National Electric Products or approved equal.
- 7. Splices in branch wiring for sound systems and fire systems, shall be first made mechanically secure, then soldered and taped.
- 8. In lieu of soldered splices (except for sound and Fire Systems, which must have soldered splices) the following alternates are acceptable for operating temperatures up to 105 degrees C., for fluorescent fixtures and for the splicing of branch circuit wiring up to No. 8 AWG wire:
 - a. Mechanical splices made with mechanical connectors as manufactured by the Minnesota Manufacturing Company "Scotchlock" or approved equal. Mechanical connectors requiring a special tool (pressure connectors, insulators and locking rings) by Buchanan or approved equal. The tool used for connector application shall be as approved by the connector manufacturer.

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- For wire and cable No. 6 AWG and larger for branch circuit wiring the seamless tubular b. connector will only be accepted. Application of this connector shall be with a tool recommended by the connector manufacturer.
- TAGS: All feeders and risers shall be tagged at both ends, and in all pull and junction boxes and 9. gutter spaces through which they pass. Such tags shall be of fiber and have the feeder designation and size stamped thereon.

10. **BRANCH CIRCUIT WIRING:**

- The Contractor installing branch circuit wiring shall test the work for correct connections and leave all loop splices in the fixture outlet boxes properly spliced and taped. The Contractor shall provide wire ends long enough for convenient connection to device.
- NEUTRALS: No common neutrals shall be used except for lighting branch circuits. b. neutral wire shall be terminated separately on a neutral busbar in the panelboard. No common neutrals will be permitted for convenience receptacle branch circuits.

TERMINATIONS 1.

- LUGS: All lugs for all devices and all cable terminations shall be copper. AL/CU rated lugs will not 1. be permitted. The only exception to this requirement is when the particular device is not manufactured with copper lugs by any manufacturer. Lugs for No. 6 AWG cable and larger shall be cast copper or forged copper pressure plate type. Lugs for 1/0 and larger shall be fastened with two (2) bolts.
- All lugs shall be of the proper size to accept the cable connected to them. Any subcontractor 2. furnishing a device containing lugs is to coordinate with the Contractor to insure that the devia terminations are adequate for the wire or cable (whose size may be larger than expected due voltage drop considerations) connected to the device.

REFER TO THE ADDENDUM FOR THE APPLICABILITY OF SUB-SECTION 3.5

CIRCUIT PROTECTIVE DEVICES: 3.5

This Section sets forth the circuit protective devices such as circuit breakers and safety switches, used in connection with Motor Control Equipment, Distribution Centers, Panel boards and Service Entrance.

CIRCUIT BREAKERS: A.

- CIRCUIT BREAKERS: shall be operable in any position and shall be of the quick-make, quick-break type on manual operation. The handle shall be trip free, preventing contacts from being held in closed position against abnormal overloads or short circuits. Positive visual indication of automatic tripped position of breaker shall be provided, in addition to the "On" and "Off" indication. All circuit breakers shall be of the bolted type.
- TRIP RATING: Circuit breakers shall be provided with the required number of trip elements, 2. calibrated at 40 degrees C., ambient temperature, in accordance with wire sizes or motor currents as shown on Contract Drawings or indicated in the Specifications.
- POLE BARRIER: Multipole pole breakers shall be designed to break all poles simultaneously. 3. They shall be provided with barriers between poles and arc suppressing devices.
- ELEMENTS: Multipole circuit breakers shall have frames of not less than a 100 Ampere rating. 4. Multipole circuit breakers for 480 volts AC operation shall have an NEMA interrupting rating of 18,000 Amperes, unless a higher rating is specified in the Specific Requirements or indicated on the Contract Drawings.



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- 5. For circuit breakers with frame size up to and including 225 Amperes, the breakers may be provided with non-interchangeable trip elements. For frame ratings above 225 Amperes, the breakers shall be provided with interchangeable trip elements, which can be replaced readily.
- 6. Single pole circuit breakers for branch circuits shall have a frame size of no less than 100 Amperes, and shall be rated at 125 volt A.C. with a NEMA interrupting rating of 10,000 Amperes, unless a higher rating is specified in the Specifications or indicated on the Contract Drawings.
- 7. INVERSE TIME ACTION: The circuit breakers shall be dual element type, one (1) element with time limit characteristics, so that tripping will be prevented on momentary overloads, but will occur before dangerous values are reached and the other with instantaneous trip action. Inverse time delay action shall be effective between a minimum tripping point of 125% of rating of breaker and an instantaneous tripping point between 600% and 700% of rated current.
- 8. CONSTANCY OF CALIBRATION: The tripping elements shall insure constant calibration and be capable of withstanding excessive short circuit conditions without injury.
- 9. CONTACTS: shall be non-welding under operating conditions and of the silver to silver type.
- 10. TEMPERATURE RISE: Current carrying parts, except thermal elements, shall not rise in temperature in excess of 30 degrees C. while carrying rated current at rated frequency.
- 11. NUMBERING: Each circuit breaker shall be distinctly numbered when installed in a group with other breakers. The calibration of trip element shall be indicated on each breaker.

B. SAFETY SWITCHES:

NEMA TYPE HD: When safety switches are permitted to be used for service entrance, motor disconnecting means or to control other types of electrical equipment, they shall be of the type HD of a rating not less than 30 Amperes. Enclosures shall be provided with means for locking. For ratings above 60 Amperes terminals shall have double studs.

REFER TO THE ADDENDUM FOR THE APPLICABILITY OF SUB-SECTION 3.6

3.6 DISTRIBUTION CENTERS:

This Section sets forth the construction and installation procedure for Switchboards, Panel boards and Cabinets.

- A. PANELBOARDS-GENERAL TYPE: The panel boards shall be of the automatic circuit breaker type with individual breakers for each circuit, removable without disturbing the other units. Circuit breakers shall be in accordance with the requirements outlined under "Circuit Protective Devices."
- B. NUMBER AND RATING OF CIRCUIT BREAKERS: The Contract Drawings show a layout of each panel, giving the number, frame, size and trip setting of circuit breakers and number of branch circuits and spare breakers. Each branch circuit shall be distinctly numbered.
- C. BUS-BAR CONSTRUCTION AND SUPPORT: Panel Boards shall be of the dead front type and shall have bus bars and branch circuits designed to suit the system and voltage. Current carrying parts, exclusive of circuit breakers shall be copper and based on a maximum density of 1,000 Amperes per square inch. Bus bars for the main switchboard shall be designed for the frame rating of the Service Breaker. Bus bars shall run up the center of the panel, unless otherwise indicated, and shall have connected thereto the various branch circuits. Unless otherwise specified, bus bars for each panel board shall be equipped with main lugs only and capacity as required on Contract Drawings. Where main protection is required, automatic circuit breakers shall be used. A neutral bus of at least the same capacity as a live bus bar shall be provided for the connection of all neutral conductors. Each terminal shall be identified. All current carrying parts, exclusive of circuit breakers, shall be of copper with a minimum number of joints. The bus bar structure shall be a self-supporting unit, firmly fastened to a ½



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inch plastic board, extending the full length and width of assembly which shall serve to insulate the bus structure from the back of panel box. Other methods affording equally effective bus structure support and insulation will be given consideration. An insulating barrier shall separate neutral bus from other parts of panel.

- D. CIRCUIT BREAKER ASSEMBLY: The entire circuit breaker and bus bar assembly shall be mounted on an adjustable metal base or pan and secured to the back of panel box. The panel shall have edges flanged for rigidity.
- E. PANEL MOUNTING: The panel shall be centered in the panel box to line up with door openings and set level and plumb so that no live parts are exposed with the door open.

F. PANEL CABINET:

- 1. PANEL CABINET INSTALLATION: When installed surface mounted in panel closets they shall be mounted on Kindorf channel.
- Where cabinets cannot be set entirely flush due to shallow walls or partitions or where cabinet is
 extra deep, the protruding sides of cabinet shall be trimmed with a metal or hardwood return
 molding of approved design and fastened to cabinet so as to conceal the intersection between the
 wall and cabinet.
- G. NAMEPLATES: Nameplates where required, shall be made of engraved Lamicoid sheet, or approved equal. Letters and numbers shall be engraved white on a black background (except for Firehouse projects which shall have white letters on a red background). The Contractor shall submit an engraved sample for approval as to design and style of lettering before proceeding with the manufacture of the nameplate. Nameplates shall be of suitable size and shall also be provided at the top of the switchboard or section thereof and on the trim at the top of all lighting and power panels. Similar nameplates shalls be provided for each distribution circuit breaker giving the breaker number, the number of the feeder, and the name of the equipment fed.
- H. SHOP DRAWINGS: showing all details of boxes, panels, etc., shall be submitted for approval.
- I. DIRECTORIES: A directory shall be fastened with brass screws and consist of a noncorrosive metal frame with dimensions not less than five (5) inches x eight (8) inches and a transparent window of Plasticile, Plexiglass, Lucite, Polycarbonate or approved equal that is not less than 1/16 inch thick over cardboard or heavy paper. The directory shall be typewritten and show the number of each circuit, the name of circuit and lighting or equipment supplied. The size of riser feeder shall be as indicated on directory. The dimensions of directory shall be submitted for approval for each size of panel.

J. CONSTRUCTION

- 1. FINISH: Panel boxes, doors and trim for installation in dry locations, shall be zinc coated after fabrication by the hot-dip galvanizing or electroplate process on inside and outside surfaces. In damp locations, panel boards shall be enclosed and gasketed NEMA 3R type. Panel boards located outdoors or exposed to the weather shall be NEMA 3X type.
- 2. PAINTING: Panel boxes, doors and trim shall receive a coat of approved priming paint and a second coat of approved paint in the field after installation. Paint shall be applied to the inside and outside of boxes and on both sides of trim. Panel trims and doors shall receive a third or finishing coat on the outside after installation. Approval as to texture and color must be obtained before the final coat is applied.



REFER TO THE ADDENDUM FOR THE APPLICABILITY OF SUB-SECTION 3.7

3.7 MOTORS:

This Section sets forth the general design, construction and performance requirements, which shall apply to all motors furnished in the Contract.

- A. MOTOR DESIGN: All motors shall be designed to comply with the New York State Energy Conservation Construction Code and the New York City Energy Conservation Code. In the event of any conflict or inconsistency between such codes, the New York City Energy Conservation Code shall prevail. Motors shall have standard NEMA frames and shall have nameplate ratings adequate to meet the specified conditions of operation. Motor performance under variable conditions of voltage and frequency shall be within the limits set in NEMA standards, unless modified in the Specifications. Motors shall be expressly designed for the hazard duty load, voltage and frequency as specified in the Contract. All motor windings shall be copper. All motors intended to operate on a 208 volt system shall be designed and rated for 200 volts.
- B. STANDARDS OF COMPARISON: In the absence of specific motor specifications, in general, the best standard products of the leading motor manufacturers shall be considered as a standard for comparison. The requirements of the NEMA standards for motors and generators shall be deemed to contain the minimum requirements of performance and design.
- C. OBJECTIONABLE NOISES: Objectionable noises will not be tolerated and exceptionally quiet motors may be required for certain specified locations. Noise control tests as per the New York City Construction Codes may be performed as directed by the Commissioner. Such motors shall bear a nameplate lettered "Quiet Motor." Springs and slip rings shall be of approved non-ferrous material.

D. BEARINGS:

- Bearings, unless specified otherwise, shall be of the ball or roller type. Motors one (1) horsepower and larger that are equipped with ball roller bearings shall also have lubrication of the pressure-relief greasing type. The Contractor furnishing four (4) or more such motors shall also furnish, as part of the Contract, a pressure grease gun of rugged design, of approximately 10 ounce capacity, complete with necessary adapters. The Contractor shall also provide 10 pounds of approved gun grease.
- 2. For any particular unit where sleeve bearings are deemed desirable, permission for their use may be granted by the Commissioner. Motors one (1) horsepower and larger that are equipped with sleeve type bearings shall in addition to having protected accessible fittings for oiling be provided with visible means for determining normal oil level. Lubrication shall be positive, automatic and continuous.
- E. MOTOR TERMINALS AND BOXES: Each motor shall be furnished with flexible leads of sufficient length to extend for a distance of not less than three (3) inches beyond the face of the conduit terminal box. This box shall be furnished of ample size to make and house motor connections. These requirements shall be met irrespective of any other standards or practices. Size of cable terminals and conduit terminal box holes shall be subject to approval. For motors five (5) horsepower, or larger, each terminal shall come with two (2) cast or forged copper pressure type connectors with bolts, nuts and washers. For motors of smaller ratings, connectors of other acceptable types may be furnished. For installations exposed to the weather or moist locations, terminal boxes shall be of cast iron with threaded hubs and gasketed covers. Cover screws shall be of non-corrosive material.
- F. MOTOR TEMPERATURE RISES: The motor nameplate temperature rises for the various types of motor enclosures shall be as listed below:

1. Open Frame

40 degrees C.

2. Totally enclosed and enclosed fan cooled

55 degrees C.



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3. Explosion proof and submersible

55 degrees C.

4. Partially enclosed and drip proof

40 degrees C.

The temperature of the various parts of a motor shall meet the requirements of NEMA standards for the size and type of the motors. Tests for heating shall be made by loading the motor to its rated horsepower and keeping it so loaded for the rated time interval or until the temperature becomes constant.

- G. SPECIAL CODE INSTALLATIONS: Electrical installations covered by special publications of NBFU and by special City rulings and regulations shall comply in design and safety features with such applicable codes, regulations and rulings, and shall be furnished and installed complete with all accessories and safety devices as therein specified.
- H. MOTORS ON LIGHTING PANELS: The largest A.C. motor permitted on branch circuits of lighting panels shall not exceed 1/4 horsepower.
- I. MOTORS RATED: 1/2 horsepower and larger shall be polyphase.

REFER TO THE ADDENDUM FOR THE APPLICABILITY OF SUB-SECTION 3.8

3.8 MOTOR CONTROL EQUIPMENT:

This Section sets forth the requirements for motor controllers and associated devices. Such requirements are applicable to all motor control equipment furnished or installed.

- A. MANUFACTURER: All control equipment furnished under the Contract shall be the product of a single manufacturer. Exceptions to this rule may be granted in the case of controllers for fractional horsepower motors driving special equipment, the various units of which have been engineered to obtain speciperformance.
- B. CONTROL ITEMS REQUIRED: The Contractor furnishing motors shall also furnish therewith complete disconnecting, starting and control equipment as required by the detailed Specifications, the various code authorities and for the successful operation of the driven equipment. These items include circuit breaker, magnetic starter with overload protection and low voltage release or protection, push button stations, pilot lights and alarms, float, pressure, temperature and limit switches, load transfer switches, devices for manual operation and speed controllers, etc. The Contractor shall furnish as many of these items as are required for the successful operation of the driven unit.
 - 1. Where a motor is to be located out of sight of the controller, the Contractor shall furnish an approved disconnecting means to be mounted near motor.

C. TYPES OF STARTERS:

- 1. SQUIRREL CAGE: A.C. motors of the squirrel cage type, rated from one (1) to 30 horsepower, shall have magnetic across the line starters; motors rated above 30 horsepower shall be furnished with reduced voltage (autotransformer type) starter or part winding start with time delay to reduce inrush current. Size of starters shall be based on 200V operation.
- 2. SLIP RING: A.C. Motors of the slip-ring type shall be furnished with primary across the line starters interlocked with secondary starting and regulating equipment. The interlocking feature shall prevent starting of the motor when the secondary controller is off the initial starting point.
- 3. MAGNETIC: For fractional horsepower motors, magnetic type starters are not required unless the particular method of controlling the driven equipment makes them necessary. Where individual single phase fractional horsepower motors or the sum of fractional horsepower motors controlled by an automatic device are ½ horsepower or more, magnetic starters and circuit breakers shall be used. Single phase A.C. motors smaller than ½ horsepower or three-phase A.C. motors smaller than one (1) horsepower where manual control is specified may be furnished with starters of tog

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switch or push button type with inbuilt thermal protection. No additional disconnecting means is required to be furnished with this type of starter. This type of starter may also be used in series with automatic control devices such as thermostats, float and pressure switches, provided the individual motor or the sum of fractional horsepower motors is less than ½ horsepower. Means for manual operation shall be provided.

- DISCONNECTING BREAKER: All motor starters, unless otherwise specified, shall be provided with a disconnecting means in the form of a circuit breaker of the type specified under Article 3.5 CIRCUIT D. PROTECTIVE DEVICES. This disconnecting means shall be contained in the same housing with the starter and shall be operable from outside. Means shall be provided for locking the handle of the circuit breaker in the "OFF" position if it is desired to take the equipment out of service and prevent unauthorized starting.
- CONTROL CABINET: DRY LOCATIONS All starters shall be furnished with general purpose, NEMA E. Type 1, sheet metal enclosures with hinged covers and baked enamel finish.
- CONTROL CABINET WATERTIGHT: In wet locations, cast iron watertight enclosures with threaded F. hubs, galvanized and gasketed hinged covers shall be provided.
- PANELS: Motor control devices and appliances shall be mounted on approved insulating slabs with G. 1. all wiring and connections made on the back of the slabs.
 - WIRING AND TERMINALS: Wiring connections for currents of 100 Amperes or less may be 2. made with copper wire or cable with special flameproof insulating coverings. Such wires shall be installed in a neat workmanlike manner, flat against the slab, and held in place by clips. Connections shall be made with pressure connectors for No. 8 AWG and larger wires, and with grommets for small stranded wires. Except for incoming and outgoing main leads, all connections shall terminate on approved connector blocks, which may be installed on the face of the slab. For small, across the line starters, the above requirements may be modified if satisfactory connections are provided.
 - COPPER BUS: For currents exceeding 100 Amperes, copper bus shall be used in place of wires. 3. The bus shall be constructed of copper rods, tubing or flat strap, bent and shaped properly and securely attached to the slab in a neat and workmanlike manner. The cross section of copper shall provide sufficient areas to keep current density at not more than 1,000 Amperes per square inch.
- COOPERATION: The Contractor's subcontractor(s) who furnish electrically operated equipment shall give H. to the Contractor and the Contractor's electrical subcontractor full information relative to sizes and locations of apparatus furnished by them which require electrical connections.

SPARE PARTS: ١.

- FURNISH: The Contractor shall furnish the following spare parts pertaining to equipment furnished 1. by each subcontractor.
 - One (1) set of contact fingers and springs and thermal elements for each three (3) (or fraction) of each size of magnetic contactor starter.
 - One (1) holding coil for each three (3) (or fraction) of each size of magnetic contactor starter.
- WRAPPER MARKING: All parts shall be delivered to the Resident Engineer neatly wrapped and 2. boxed and plainly tagged and marked for identification and reordering.



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SECTION 01 35 26 SAFETY REQUIREMENTS PROCEDURES

PART I - GENERAL

1.1 RELATED DOCUMENTS:

- A. The following documents apply to all required work for the Project: (1) the Contract Drawings, (2) the Specifications, (3) the General Conditions, (4) the Addendum, and (5) the Contract [City of New York Standard Construction Contract].
- B. The Contractor shall comply with the requirements of "The City of New York Department of Design and Construction Safety Requirements". This document is included in the Information for Bidders.

1.2 SUMMARY:

- A. This Section includes administrative and general procedural requirements for Safety and Health Requirements, including:
 - 1. Definitions
 - 2. Required Safety Meeting
 - 3. Compliance with Regulations
 - 4. Submittals
 - 5. Personnel Protective Equipment
 - 6. Hazardous Materials
 - 7. Emergency Suspension of Work
 - 8. Protection of Personnel
 - 9. Environmental Protection

1.3 DEFINITIONS:

- A. Refer to Article 2 of the Contract for definition of terms, words and expressions used in the General Conditions not otherwise defined herein.
- B. Design Consultant: "Design Consultant" shall mean the entity responsible for providing design services for the Project, including without limitation, preparing the construction documents (drawings and specifications) and providing services in connection with such documents during construction. The entity serving as the "Design Consultant" may be a corporation, firm, partnership, joint venture, individual or combination thereof. Such entity may be either an employee(s) of the City or an entity engaged by the City to provide such services.

1.4 REQUIRED SAFETY MEETINGS:

- A. Prior to commencing construction, the Resident Engineer will schedule and hold a preconstruction kick-off meeting either at DDC's main office or at the Project site with representatives of the Contractor, including the principal on-site project representative and one or more safety representatives, Commissioner's designated representatives and other concerned parties for the purpose of reviewing the Contract Safety requirements. The Contractor's safety requirements shall be reviewed, and implementation of safety provisions pertinent to the Work shall be discussed.
- B. The Contractor is responsible for conducting weekly documented jobsite safety meetings, given to all jobsite personnel including all subcontractors on the project, with the purpose of discussing safety topics and job specific requirements at the DDC worksite.



COMPLIANCE WITH REGULATIONS:

- The Work, including contact with or handling of hazardous materials, disturbance or dismantling of A. structures containing hazardous materials, and disposal of hazardous materials, shall comply with the applicable requirement for CFR Parts 1910 and 1926, and 40 CFR, Parts 61, 261, 761 and 763.
- Work involving disturbance or dismantling of asbestos or asbestos containing materials, demolition B. of structures containing asbestos and removal of asbestos, shall comply with 40 CFR Part 61. Subparts A and M, and 40 CFR Part 763, as applicable.
- Work shall additionally comply with all applicable federal, state and local safety and health C. regulations.
- In case of a conflict between applicable regulations, the more stringent requirements shall apply. D.
- All workers working on the DDC project site are required by NYC Local Law 41 to complete the E. OSHA 10 -hour training course.

SUBMITTALS: 1.6

- The Contractor shall submit, to the Resident Engineer, copies of the Safety Program, Site Safety A. Plan and other required documentation in accordance with the "New York City Department of Design and Construction Safety Requirements."
- Permits: If hazardous materials are disposed of off-site submit copies of shipping manifests and B. permits from applicable federal, state or local authorities and disposal facilities, and submit certificates that the material has been disposed of in accordance with regulations to the Resident Engineer.
- Accident Reporting: Submit a copy of each accident report to the Resident Engineer in accordance C. with the "New York City Department of Design and Construction Safety Requirements."
- All Asbestos and Lead project regulatory notifications are to be submitted to DDC's Bureau of D. Environmental and Geotechnical Services (BEGS) through the Resident Engineer.
- Request for Subcontractor Approval: Any subcontractor performing environmental work shall submit F. required documentation for approval to perform such work as required by DDC's BEGS.

PART II - PRODUCTS

PERSONNEL PROTECTIVE EQUIPMENT: 2.1

Special facilities, devices, equipment and similar items used by the Contractor in execution of the Work shall comply with 29 CFR Part 1910, subpart I, Part 1926, subpart E and other applicable regulations.

HAZARDOUS MATERIALS: 2.2

- The Contractor shall bring to the attention of the Commissioner, any material encountered during A. execution of the Work that the Contractor suspects to be hazardous.
- The Commissioner shall determine whether the Contractor shall perform tests to determine if the B. material is hazardous. A change to the Contract price may be provided, subject to the applicable provisions of the Contract.
- If the material is found to be hazardous, the Commissioner may direct the Contractor to remediate C. the hazard and a change to the Contract price may be provided, subject to the applicable provisions of the Contract.

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PART III - EXECUTION

3.1 EMERGENCY SUSPENSION OF WORK:

- A. When the Contractor is notified by the Commissioner of noncompliance with the safety provisions of the Contract, the Contractor shall immediately, unless otherwise instructed, correct the unsafe condition, at no additional cost to the City.
- B. If the Contractor fails to comply promptly, all or part of the Work may be stopped by notice from the Commissioner.
- C. When, in the opinion of the Commissioner, the Contractor has taken satisfactory corrective action, the Commissioner shall provide written notice to the Contractor that work may resume.
- D. The Contractor shall not be allowed any extension of time or compensation for damages in connection with a work stoppage for an unsafe condition.

3.2 PROTECTION OF PERSONNEL:

- A. The Contractor shall take all necessary precautions to prevent injury to the public, occupants, or damage to property of others. The public and occupants includes all persons not employed by the Contractor or a subcontractor.
- B. Whenever practical, the work area shall be fenced, barricaded or otherwise blocked off from the Public or occupants to prevent unauthorized entry into the work area, in compliance with the requirements of Section 01 50 00, TEMPORARY FACILITIES, SERVICES AND CONTROLS, and including, without limitation, the following:
 - 1. Provide traffic barricades and traffic control signage where construction activities occur in vehicular areas.
 - Corridors, aisles, stairways, doors and exit ways shall not be obstructed or used in a manner to encroach upon routes of ingress or egress utilized by the public or occupants, or to present an unsafe condition to the public or occupants.
 - 3. Store, position and use equipment, tools, materials, scraps and trash in a manner that does not present a hazard to the public or occupant by accidental shifting, ignition or other hazardous activity.
 - 4. Store and transport refuse and debris in a manner to prevent unsafe and unhealthy conditions for the public and occupants. Cover refuse containers, and remove refuse on a frequent regular basis acceptable to the Resident Engineer. Use tarpaulins or other means to prevent loose transported materials from dropping from trucks or other vehicles.

3.3 ENVIRONMENTAL PROTECTION:

- A. Dispose of solid, liquid and gaseous contaminants in accordance with local codes, laws, ordinances and regulations.
- B. Comply with applicable federal, state and local noise control laws, ordinances and regulations, including but not limited to 29 CFR 1910.95, 29 CFR 1926.52 and NYC Administrative Code Chapter 28 of Title 15.



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SECTION 01 35 91 HISTORIC TREATMENT PROCEDURES

REFER TO THE ADDENDUM FOR APPLICABILITY OF THIS SECTION 01 35 91

PART I - GENERAL

RELATED DOCUMENTS:

The following documents apply to all required work for the Project: (1) the Contract Drawings, (2) the A. Specifications, (3) the General Conditions, (4) the Addendum, and (5) the Contract [City of New York Standard Construction Contract].

SUMMARY: 1.2

- This Section includes administrative and procedural requirements for the treatment of Landmark A. Structures and Landmark Quality Structures, as identified in the Addendum. Specific requirements are indicated in other sections of the Specifications.
- This Section includes, without limitation, the following: B.
 - Storage and protection of existing historic materials 1.
 - Temporary protection of historic materials during construction 2.
 - 3. **General Protection**
 - Protection during use of heat-generating equipment 4.
 - Photographic Documentation 5.
 - NYC Landmarks Preservation Commission Final Approval signoffs 6.

RELATED SECTIONS: include without limitation the following:

A.	Section 01 10 00	SUMMARY
B.	Section 01 32 33	PHOTOGRAPHIC DOCUMENTATION
C.	Section 01 33 00	SUBMITTAL PROCEDURES
D.	Section 01 77 00	CLOSEOUT PROCEDURES
F.	Section 01 78 39	CONTRACT RECORD DOCUMENTS

DEFINITIONS:

- Refer to Article 2 of the Contract for definition of terms, words and expressions used in the General A. Conditions not otherwise defined herein.
- Design Consultant: "Design Consultant" shall mean the entity responsible for providing design services B. for the Project, including without limitation, preparing the construction documents (drawings and specifications) and providing services in connection with such documents during construction. The entity serving as the "Design Consultant" may be a corporation, firm, partnership, joint venture, individual or combination thereof. Such entity may be either an employee(s) of the City or an entity engaged by the City to provide such services.
- Landmark Structure or Site: Any building or site which has been designated as a landmark, or any C. building or site within a landmark district, as designated by the New York City Preservation Commission or the New York State Historic Preservation Office.





- D. Landmark Quality Structure: Any building which has been determined by the City to be of landmark quality and/or historical significance.
- E. Preservation: To apply measures necessary to sustain the existing form, integrity, and materials of a historic property. Work may include preliminary measures to protect and stabilize the property.
- F. Rehabilitation: To make possible a compatible use for a property through repair, alterations, and additions while preserving those portions or features that convey its historical, cultural, or architectural values.
- G. Restoration: To accurately depict the form, features, and character of a property as it appeared at a particular period of time by means of the removal of features from other periods in its history and the reconstruction of missing features from the restoration period.
- H. Reconstruction: To reproduce in the exact form and detail a building, structure, or artifact as it appeared at a specific period in time.
- I. Stabilize: To apply measures designed to reestablish a weather-resistant enclosure and the structural reinforcement of an item or portion of the building while maintaining the essential form as it exists at present.
- J. Protect and Maintain: To remove deteriorating corrosion, reapply protective coatings, and install protective measures such as temporary guards; to provide the least degree of intervention.
- K. Repair: To stabilize, consolidate, or conserve; to retain existing materials and features while employing as little new material as possible. Repair includes patching, piecing-in, splicing, consolidating, otherwise reinforcing or upgrading materials. Within restoration, repair also includes limited replacement in kind, rehabilitation, and reconstruction, with compatible substitute materials for deteriorated or missing parts of features when there are surviving prototypes.
- L. Replace: To duplicate and replace entire features with new material in kind. Replacement includes the following conditions:
 - Duplication: Includes replacing elements damaged beyond repair or missing. Original material is indicated as the pattern for creating new duplicated elements.
 - 2. Replacement with New Materials: Includes replacement with new material when original material is not available as patterns for creating new duplicated elements.
 - 3. Replacement with Substitute Materials: Includes replacement with compatible substitute materials. Substitute materials are not allowed, unless otherwise indicated.
- M. Remove: To detach items from existing construction and legally dispose of them off-site, unless indicated to be removed and salvaged or removed and reinstalled.
- N. Remove and Salvage: To detach items from existing construction and deliver them to the City ready for reuse.
- O. Remove and Reinstall: To detach items from existing construction, repair and clean them for reuse, and reinstall them where indicated.
- P. Existing to Remain or Retain: Existing items of construction that are not to be removed and that are not otherwise indicated to be removed and salvaged, or removed and reinstalled.



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Q. Material in Kind: Material that matches existing materials, as much as possible, in species, cut, color, grain, and finish.

1.5 SUBMITTALS:

- A. Historic Treatment Program: Submit a written plan for each phase or process, including protection of surrounding materials during operations. Describe in detail materials, methods, and equipment to be used for each phase of work.
- B. Alternative Methods and Materials: If alternative methods and materials to those indicated are proposed for any phase of work, submit for Commissioner's approval a written description including evidence of successful use on other comparable projects, and program of testing to demonstrate effectiveness for use on this Project.
- C. Qualification Data: For historic treatment specialists as specified and required by individual sections of the project specifications.
- D. Photographs for Designated Landmark Structures: Submit photographs in accordance with Section 01 32 33, PHOTOGRAPHIC DOCUMENTATION and as described in this section.
- E. Record Documents: Include modifications to manufacturer's written instructions and procedures, as documented in the historic treatment preconstruction conference and as the Work progresses.

1.6 QUALITY ASSURANCE:

- A. Special Experience Requirements: Special Experience Requirements may apply to the firm that will provide Historic Treatment Services. If applicable, such Special Experience Requirements are set forth in the Bid Booklet and the Addendum.
- B. Historic Treatment Preconstruction Conference: The Resident Engineer will schedule and hold a preconstruction meeting at the site in accordance with Section 01 31 00, PROJECT MANAGEMENT AND COORDINATION.
 - 1. Review manufacturer's written instructions for precautions and effects of products and procedures on building materials, components, and vegetation.
 - Record procedures established as a result of the review and distribute to affected parties.

1.7 STORAGE AND PROTECTION OF HISTORIC MATERIALS:

- A. Removed and Salvaged Historic Materials: As specified and required by individual sections of the project specifications.
- B. Removed and Reinstalled Historic Materials: As specified and required by individual sections of the project specifications.
- C. Existing Historic Materials to Remain: Protect construction indicated to remain against damage and soiling during historic treatment. When permitted by the Commissioner, items may be removed to a suitable, protected storage location during historic treatment and reinstalled in their original locations after historic treatment operations are complete.
- D. Storage and Protection: When removed from their existing location, store historic materials, at a location acceptable to the Commissioner, within a weather tight enclosure where they are protected from wetting by rain, snow, or ground water, and temperature variations. Secure stored materials to protect from theft.
 - 1. Identify removed items with an inconspicuous mark indicating their original location.

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PART II - PRODUCTS (Not Used)

PART III - EXECUTION

3.1 PROTECTION, GENERAL:

- A. Comply with manufacturer's written instructions for precautions and effects of products and procedures on adjacent building materials, components, and vegetation.
- B. Ensure that supervisory personnel are present when work begins and during its progress.
- C. Temporary Protection of Historic Materials during Construction:
 - 1. Protect existing materials during installation of temporary protections and construction. Do not deface or remove existing materials.
 - 2. Attachments of temporary protection to existing construction shall be approved by the Commissioner prior to installation.
- D. Protect landscape work adjacent to or within work areas as follows:
 - 1. Provide barriers to protect tree trunks.
 - 2. Bind spreading shrubs.
 - Use coverings that allow plants to breathe and remove coverings at the end of each day. Do not cover plant material with a waterproof membrane for more than 8 hours at a time.
 - 4. Set scaffolding and ladder legs away from plants.
- E. Existing Drains: Prior to the start of work or any cleaning operations, test drains and other water removal systems to ensure that drains and systems are functioning properly. Notify Commissioner immediately of drains or systems that are stopped or blocked. Do not begin Work of this Section until the drains are in working order.
 - Provide a method to prevent solids, including stone or mortar residue, from entering the drains or drain lines. Clean out drains and drain lines that become blocked or filled by sand or any other solids because of work performed under this Contract.
 - 2. Protect storm drains from pollutants. Block drains or filter out sediments, allowing only clean water to pass.

3.2 PROTECTION DURING USE OF HEAT-GENERATING EQUIPMENT:

- A. No roofing work requiring the use of an open flame shall be permitted on any Landmark Structure or any Landmark Quality Structure, whose roof or wall structure is made of wood or primarily of wood.
- B. Comply with the following procedures while performing work with heat-generating equipment, including welding, cutting, soldering, brazing, paint removal with heat, and other operations where open flames or implements utilizing heat are used:
 - 1. Obtain Commissioner's approval for operations involving use of open-flame or welding equipment. Notification shall be given for each occurrence and location of work with heat-generating equipment.
 - 2. As far as practical, use heat-generating equipment in shop areas or outside the building.
 - 3. Before work with heat-generating equipment commences, furnish personnel to serve as a fire watch (or watches) for location(s) where work is to be performed.



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- 4. Do not perform work with heat-generating equipment in or near rooms or in areas where flammable liquids or explosive vapors are present or thought to be present. Use a combustible gas indicator test to ensure that the area is safe.
- 5. Remove and keep the area free of combustibles, including, rubbish, paper, waste, etc., within area of operations.
- 6. If combustible material cannot be removed, provide fireproof blankets to cover such materials.
- 7. Where possible, furnish and use baffles of metal or gypsum board to prevent the spraying of sparks or hot slag into surrounding combustible material.
- 8. Prevent the extension of sparks and particles of hot metal through open windows, doors, holes, and cracks in floors, walls, ceilings, roofs, and other openings.
- 9. Inspect each location of the day's work not sooner than 30 minutes after completion of operations to detect hidden or smoldering fires and to ensure that proper housekeeping is maintained.
- C. Where sprinkler protection exists and is functional, maintain it without interruption while operations are being performed. If operations are performed close to automatic sprinkler heads, shield the individual heads temporarily with guards.

3.3 PHOTOGRAPHIC DOCUMENTATION:

Photographs for Designated Landmark Structures: Show existing conditions prior to any historic treatments, including one overall photograph and two close-up photographs of all areas of work affected. Show one overall photograph and two close-up photographs of all areas of work after the successful execution of all historical treatments.

3.4 NEW YORK CITY LANDMARKS PRESERVATION COMMISSION FINAL APPROVALS SIGNOFF:

For all projects involving a Landmark Structure or Site, the Contractor, at the completion of the work, shall submit to the Commissioner, in accordance with Section 01 78 39, CONTRACT RECORD DOCUMENTS, all documentation concerning the successful execution of all historic treatments. This shall include, but not be limited to, copies of all before and after photographs of historic treatments, one copy of the Contractor's as-built drawings, copies of testing and analysis results, including cleaning, mortar analysis, pointing mortars and all other information pertaining to work performed under the New York City Landmarks Preservation Commission jurisdiction.

END OF SECTION 01 35 91



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No Text



SECTION 01 40 00 QUALITY REQUIREMENTS

PARTI - GENERAL

1.1 RELATED DOCUMENTS:

A. The following documents apply to all required work for the Project: (1) the Contract Drawings, (2) the Specifications, (3) the General Conditions, (4) the Addendum, and (5) the Contract [City of New York Standard Construction Contract].

1.2 SUMMARY:

- A. This Section includes the following:
 - a. Definitions
 - b. Conflicting Requirements
 - c. Quality Assurance
 - d. Quality Control
 - e. Approval of Materials
 - f. Special Inspections (Controlled Inspection)
 - g. Inspections by Other City Agencies
 - h. Certificates of Approval
 - i. Acceptance Tests
 - j. Repair and Protection
- B. This Section includes administrative and procedural requirements for quality control to assure compliance with quality requirements specified in the Contract Documents.
- C. Testing and inspecting services are required to verify compliance with requirements specified or indicated. These services do not relieve Contractor of responsibility for compliance with the Contract Document requirements.
- D. Specified tests, inspections, and related actions do not limit Contractor's other quality-assurance and control procedures that facilitate compliance with the Contract Document requirements.
- E. Provisions of this Section do not limit requirements for the Contractor to provide quality-assurance and control services required by the Commissioner or authorities having jurisdiction.
- F. Specific test and inspection requirements are specified in the individual sections of the Specifications.
- G. LEED: Refer to the Addendum to identify whether this project is designed to comply with a Certification Level according to the U.S. Green Building Council's Leadership in Energy & Environmental Design (LEED) Rating System, as specified in Section 01 81 13, "SUSTAINABLE DESIGN REQUIREMENTS FOR LEED BUILDINGS."
- H. COMMISSIONING: Refer to the Addendum to identify whether this project will be Commissioned by an independent third party under separate contract with the City of New York. Commissioning shall be in accordance with ASHRAE and USGBC LEED-NC procedures, as described in Section 01 91 13, GENERAL COMMISSIONING REQUIREMENTS. The Contractor shall cooperate with the commissioning agent and provide whatever assistance is required.



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1.3 RELATED SECTIONS: Include without limitation the following:

A. Section 01 10 00 SUMMARY

B. Section 01 31 00 PROJECT MANAGEMENT AND COORDINATION

C. Section 01 32 00 CONSTRUCTION PROGRESS DOCUMENTATION

D. Section 01 33 00 SUBMITTAL PROCEDURES

E. Section 01 77 00 CLOSEOUT PROCEDURES

F. Section 01 78 39 CONTRACT RECORD DOCUMENTS

1.4 **DEFINITIONS**:

- A. Refer to Article 2 of the Contract for definition of terms, words and expressions used in the General Conditions not otherwise defined herein.
- B. Design Consultant: "Design Consultant" shall mean the entity responsible for providing design services for the Project, including without limitation, preparing the construction documents (drawings and specifications) and providing services in connection with such documents during construction. The entity serving as the "Design Consultant" may be a corporation, firm, partnership, joint venture, individual or combination thereof. Such entity may be either an employee(s) of the City or an entity engaged by the City to provide such services.
- C. Commissioning: A Total Quality Assurance process that includes checking the design and installation of equipment, as well as performing functional testing of the same to confirm that the installed equipment is operating and in conformance with the Contract Documents and the City's requirements.

1.5 CONFLICTING REQUIREMENTS:

- A. General: If compliance with two or more standards is specified and the standards establish different or conflicting requirements for minimum quantities or quality levels, the Contractor shall comply with the most stringent requirement as determined by the Commissioner. The Contractor shall refer any uncertainties and/or conflicting requirements to the Commissioner for a decision before proceeding.
- B. Minimum Quantity or Quality Levels: The quantity or quality level shown or specified shall be the minimum provided or performed. The actual installation may comply exactly with the minimum quantity or quality specified, or it may exceed the minimum within reasonable limits. To comply with these requirements, indicated numeric values are minimum or maximum, as appropriate, for the context of requirements. The Contractor shall refer any uncertainties to the Commissioner for a decision before proceeding.

1.6 QUALITY ASSURANCE:

- A. General: Qualifications paragraphs in this Article establish the minimum qualification levels required. Individual Specification Sections specify additional requirements.
- B. Installer Qualifications: Special Experience Requirements may apply to the firm that will install, erect or assemble specified work required for the Project. If applicable, such Special Experience Requirements are set forth in the Bid Booklet and the Addendum.
- C. Manufacturer Qualifications: Special Experience Requirements may apply to the firm that will manufacture equipment, products or systems specified for the Project. If applicable, such Special Experience Requirements are set forth in the Bid Booklet and the Addendum.



D. Fabricator Qualifications: Special Experience Requirements may apply to the firm that will fabricate material, products or systems specified for the Project. If applicable, such Special Experience Requirements are set forth in the Bid Booklet and the Addendum.

- E. Professional Engineer Qualifications: A professional engineer who is licensed to practice in the State of New York and who is experienced in providing engineering services of the kind indicated. Engineering services are defined as those performed for installations of the system, assembly, or products that are similar to those indicated for this Project in material, design, and extent.
- F. Factory-Authorized Service Representative Qualifications: An authorized representative of manufacturer who is trained and approved by manufacturer to inspect installation of manufacturer's products that are similar in material, design, and extent to those indicated for this Project.
- G. Mockups: Before installing portions of the Work requiring mockups, build mockups for each form of construction and finish required to comply with the following requirements, using materials indicated for the completed Work:
 - 1. Build mockups in location and of size indicated or, if not indicated, as directed by the Resident Engineer.
 - 2. Notify Resident Engineer seven (7) days in advance of dates and times when mockups will be constructed.
 - 3. Demonstrate the proposed range of aesthetic effects and workmanship.
 - 4. Obtain Design Consultant's approval of mockups before starting work, fabrication, or construction.
 - 5. Maintain mockups during construction in an undisturbed condition as a standard for judging the completed Work.
 - 6. Demolish and remove mockups when directed, unless otherwise directed or indicated.

1.7 QUALITY CONTROL:

- A. City's Responsibilities: Where quality-control services are indicated as the City's responsibility in the Specifications, the City will engage a qualified testing agency to perform these services.
 - 1. COST OF TESTS BORNE BY THE CITY: Where the City directs tests to be performed to determine compliance with the Specifications regarding materials or equipment, and where such compliance is ascertained as a result thereof, the City will bear the cost of such tests.
 - 2. The City will furnish the Contractor with names, addresses, and telephone numbers of testing entities engaged and a description of the types of testing and inspecting they are engaged to perform.
 - 3. Costs for retesting and re-inspecting construction that replaces or is necessitated by work that failed to comply with the Contract Documents will be charged to the Contractor.
- B. Contractor's Responsibility: Tests and inspections not explicitly assigned to the City are the Contractor's responsibility. Unless otherwise indicated, the Contractor shall provide quality-control services as set forth in the Specifications and those required by Authorities having jurisdiction. The Contractor shall provide quality-control services required by Authorities having jurisdiction, whether specified or not.
 - 1. COST OF TESTS BORNE BY CONTRACTOR In the case of tests which are specifically called for in the Specifications to be provided by the Contractor or tests which are required by any Authority having jurisdiction, but are not indicated as the responsibility of the City, the cost thereof shall be borne by the Contractor and shall be deemed to be included in the Contract price. The Contractor shall reimburse the City for expenditures incurred in providing tests on materials and equipment submitted by the Contractor as the equivalent of that specifically named in the Specifications and rejected for non-compliance.
 - 2. Where services are indicated as Contractor's responsibility, the Contractor shall engage a qualified testing agency to perform these quality-control services. Any testing agency engaged by the Contractor to perform quality control services is subject to prior approval by the Commissioner.



3. The Contractor shall not employ same entity engaged by the City, unless agreed to in writing by the Commissioner.

4. The Contractor shall notify testing agencies and the Resident Engineer at least 72 hours in advance of the date and time for the performance of Work that requires testing or inspecting.

5. Where quality-control services are indicated as Contractor's responsibility, the Contractor shall submit a certified written report, in triplicate to the Commissioner, of each quality-control service.

6. Testing and inspecting requested by the Contractor and not required by the Contract Documents are Contractor's responsibility.

7. The Contractor shall submit additional copies of each written report directly to authorities having jurisdiction, when they so direct.

- C. Manufacturer's Field Services: Where indicated, the Contractor shall engage a factory-authorized service representative to inspect field-assembled components and equipment installation, including service connections. Results shall be submitted in writing as specified in Section 01 33 00 SUBMITTAL PROCEDURES.
- D. Retesting/Re-inspecting: Regardless of whether the original tests or inspections were the Contractor's responsibility, the Contractor shall provide quality-control services, including retesting and re-inspecting, for construction that replaced Work that failed to comply with the Contract Documents.
- E. Associated Services: The Contractor shall cooperate with entities performing required tests, inspections, and similar quality-control services, and shall provide reasonable auxiliary services as requested. The Contractor shall notify the testing agency sufficiently in advance of operations to permit assignment of personnel. Provide the following:
 - 1. Access to the Work.
 - 2. Incidental labor and facilities necessary to facilitate tests and inspections.
 - Adequate quantities of representative samples of materials that require testing and inspecting.
 Assist testing entity in obtaining samples.
 - 4. Facilities for storage and field curing of test samples.
 - 5. Delivery of samples to testing entities.
 - 6. Design mix proposed for use for material mixes that require control by the testing entity.
 - Security and protection for samples and for testing and inspecting equipment at the Project site.
- F. Coordination: Coordinate sequence of activities to accommodate required quality-assurance and -control services with a minimum of delay and to avoid necessity of removing and replacing construction to accommodate testing and inspecting.
 - 1. Schedule times for tests, inspections, obtaining samples, and similar activities.
 - 2. Coordinate and cooperate with the Commissioning Authority/Agent as applicable for start-up, inspection and functional testing in the implementation of the Commissioning Plan.
- G. Manufacturer's Directions: Where the Specifications provide that the manufacturer's directions are to be used, such printed directions shall be submitted to the Commissioner.
- H. Inspection of Material: In the event that the Specifications require the Contractor to engage the services of an entity to witness and inspect any material especially manufactured or prepared for use in or part of the permanent construction, such entity shall be subject to prior written approval by the Commissioner.
 - 1. NOTICE The Contractor shall give notice in writing to the Commissioner sufficiently in advance of its intention to commence the manufacture or preparation of materials especially manufactured or prepared for use in or as part of the permanent construction. Such notice shall contain a request for inspection, the date of commencement and the expected date of completion of the manufacture or preparation of materials. Upon receipt of such notice, the Commissioner will arrange to have a representative present at such times during the manufacture as may be necessary to inspect the materials, or the Commissioner will notify the Contractor that the inspection will be made at a policy.



other than the point of manufacture, or the Commissioner will notify the Contractor that inspection will be waived.

- I. No Shipping Before Inspection: The Contractor shall comply with the foregoing before shipping any material.
- J. Certificate of Manufacture: When the Commissioner so requires, the Contractor shall furnish to the Commissioner authoritative evidence in the form of Certificates of Manufacture that the materials to be used in the work have been manufactured and tested in conformity with the Specifications. These certificates shall include copies of the results of physical tests and chemical analyses where necessary, that have been made directly on the product, or on similar products being fabricated by the manufacturer. This may include such approvals as B.S.A., M.E.A., B.E.C. Advisory Board, etc.
- K. Acceptance: When materials or manufactured products shall comprise such quantity that it is not practical to make physical tests or chemical analyses directly on the product furnished, a certificate stating the results of such tests or analyses of similar materials which were concurrently produced may, at the discretion of the Commissioner, be considered as the basis for the acceptance of such material or manufactured product.
- L. Testing Compliance: The testing personnel shall make the necessary inspections and tests, and the reports thereof shall be in such form as will facilitate checking to determine compliance with the Specifications, indicating thereon all analyses and/or test data and interpreted results thereof.
- M. Reports: Six (6) copies of the reports shall be submitted and authoritative certification thereof must be furnished to the Commissioner as a prerequisite for the acceptance of any material or equipment.
- N. Rejections: If, in making any test, it is ascertained by the Commissioner that the material or equipment does not comply with the Specifications, the Contractor will be notified thereof, and will be directed to refrain from delivering said materials or equipment, or to promptly remove it from the site or from the work and replace it with acceptable material at no additional cost to the City.
- O. Furnish Designated Materials: Upon rejection of any material or equipment submitted as the equivalent of that specifically named in the Specifications, the Contractor shall immediately proceed to furnish the designated material or equipment.

1.8 APPROVAL OF MATERIALS:

- A. Local Laws: All materials, appliances and types or methods of construction shall be in accordance with the Specifications and shall in no event be less than that necessary to conform to the requirements of the New York City Construction Codes, Administrative Code and Charter of the City of New York.
- B. Approval of Manufacturer: The names of proposed manufacturers, material suppliers, and dealers who are to furnish materials, fixtures, equipment, appliances or other fittings shall be submitted to the Commissioner for approval, as early as possible, to afford proper review and analysis. No manufacturer will be approved for any materials to be furnished under the Contract unless it shall have a plant of ample capacity and shall have successfully produced similar products. All approvals of materials or equipment that are legally required by the New York City Construction Codes and other governing Authorities must be obtained prior to installation.
- C. All Materials: Fixtures, fittings, supplies and equipment furnished under the Contract shall be new and unused, except as approved by the Commissioner, and of standard first-grade quality and of the best workmanship and design. The City of New York encourages the use of recycled products where practical.
- D. INFORMATION TO SUPPLIERS In asking for prices on materials under any item of the Contract, the Contractor shall provide the manufacturer or dealer with such complete information from the



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Specifications and Contract Drawings as may in any case be necessary, and in every case the Contractor shall inform the manufacturer or dealer of all the General Conditions and requirements herein contained.

1.9 **SPECIAL INSPECTIONS:**

A. SPECIAL INSPECTIONS:

Inspection of selected materials, equipment, installation, fabrication, erection or placement of components and connections made during the progress of the Work to ensure compliance with the Contract Documents and provisions of the New York City Construction Codes, shall be made by a Special Inspector. The City of New York will retain the services of the Special Inspector and bear the costs for the performance of Special Inspections in compliance with NYC Construction Codes requirements or as additionally may be called for in the project specifications, except as noted below for Form TR-3: Technical Report for Concrete Design Mix. The Special Inspector shall be an entity compliant with the requirements of the New York City Construction Codes. The Contractor shall notify the relevant Special Inspector in writing at least 72 hours before the commencement of any work requiring special inspection.

Form TR3: Technical Report Concrete Design Mix: The contractor shall be responsible for, and 2. bear all costs associated with the filing and securing of approvals, if any, for Form TR3: Technical Report Concrete Design Mix, including, but not limited to, engaging the services of a New York City licensed Concrete Testing Lab for the review and approval of concrete design mix, testing, signatures and professional seals, etc., compliant with NYC Department of Buildings requirements,

for each concrete design mix.

The Contractor shall notify the relevant Special Inspector in writing at least 72 hours before the 3. commencement of any work requiring Special Inspection. The contractor shall be responsible for, and bear related costs to assure that all construction or work shall remain accessible and expose for inspection purposes until the required inspection is completed.

Inspections and tests performed under "Special Inspection" shall not relieve the Contractor of the 4. responsibility to comply with the Contract Documents, and that there is no warranty given to the Contractor by the City of New York in connection with such inspection and tests or certifications made under "Special Inspections".

The contractor must coordinate with the Resident Engineer or DDC Project Manager to provide 5. access and schedule the work for inspection by the Special Inspector.

1.10 INSPECTIONS BY OTHER CITY AGENCIES:

- Letter of Completion: Just prior to substantial completion of this Project, the Commissioner will file with A. the Department of Buildings, an application for a Letter of Completion or a Certificate of Occupancy for the structure.
- Final Inspections: In connection with the above mentioned application for a Letter of Completion or a B. Certificate of Occupancy and before certificates of final payments are issued, the Contractor will be required to arrange for all final inspections by the inspection staff of the Department of Buildings, Fire Department or other Governmental Agencies having jurisdiction, and secure all reports, sign offs, certificates, etc., by such inspection staff or other governmental agencies, in order that a Letter of Completion or Certificate of Occupancy can be issued promptly.

1.11 CERTIFICATES OF APPROVAL:

- Responsibility: The Contractor shall be responsible for and shall obtain all final approvals for the work A. installed under the Contract in the form of such certificates that are required by all governmental agencies having jurisdiction over the work of the Contract.
- B. Transmittal: All such certificates shall be forwarded to the Commissioner through the Resident Engineer





1.12 ACCEPTANCE TESTS:

- A. Government Agencies: All equipment and appliances furnished and installed under the Contract shall conform to the requirements of the Specifications, and shall in no event be less than that necessary to comply with the minimum requirements of the law and all of the governmental agencies having jurisdiction.
- B. Notice of Tests: Whenever the Specifications and/or any governmental agency having jurisdiction requires the acceptance test, the Contractor shall give written notice to all concerned of the time when these tests will be conducted.
- C. Energy: The City will furnish all energy, fuel, water and light required for tests.
- Labor and Materials: The Contractor shall furnish labor and all other material and instruments necessary to conduct the acceptance tests at no additional cost to the City.
- E. Certificates: The final acceptance by the Commissioner shall be contingent upon the Contractor delivering to the Commissioner all necessary certificates evidencing compliance in every respect with the requirements of the regulatory agencies having jurisdiction.
- F. Results: If the results of tests and Special Inspections indicate that the material or procedures do not meet requirements as set forth on the Contract Drawings or in the Specifications or are otherwise unsatisfactory, the Contractor shall only proceed as directed by the Resident Engineer. Additional costs resulting from retesting, re-inspecting, replacing of material and/or damage to the work and any delay caused to the schedule shall be borne by the Contractor.

PART II - PRODUCTS (Not Used)

PART III - EXECUTION

3.1 REPAIR AND PROTECTION

A. General: On completion of testing, inspecting, sample taking, and similar services, the Contractor shall repair damaged construction and restore substrates and finishes.

 Provide materials and comply with installation requirements specified in other Specification Sections. Restore patched areas and extend restoration into adjoining areas with durable seams that are as invisible as possible.

END OF SECTION 01 40 00



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No Text



SECTION 01 42 00 REFERENCES

PART I - GENERAL

1.1 RELATED DOCUMENTS:

A. The following documents apply to all required work for the Project: (1) the Contract Drawings, (2) the Specifications, (3) the General Conditions, (4) the Addendum, and (5) the Contract [City of New York Standard Construction Contract].

1.2 DEFINITIONS:

REFER TO THE ADDENDUM, Article IX, FOR ADDITIONAL DEFINITIONS AND REVISIONS TO THE CONTRACT AND SPECIFICATIONS

- A. Refer to Article 2 of the Contract for definition of terms, words and expressions used in the General Conditions not otherwise defined herein.
- B. "APPROVED," ETC. "Approved," "acceptable," "satisfactory," and words of similar import shall mean and intend approved, acceptable or satisfactory to the Commissioner.
- C. Design Consultant: "Design Consultant" shall mean the entity responsible for providing design services for the Project, including without limitation, preparing the construction documents (drawings and specifications) and providing services in connection with such documents during construction. The entity serving as the "Design Consultant" may be a corporation, firm, partnership, joint venture, individual or combination thereof. Such entity may be either an employee(s) of the City or an entity engaged by the City to provide such services.
- D. "DIRECTED," "REQUIRED," ETC.- Wherever reference is made in the Contract to the work or its performance, the terms "directed," "required," "permitted," "ordered," "designated," "prescribed," "determined," and words of similar import shall, unless expressed otherwise, imply the direction, requirements, permission, order, designation or prescription of the Commissioner.
- E. "Indicated": Requirements expressed by graphic representations or in written form on Drawings, in Specifications, and in other Contract Documents. Other terms including "shown," "noted," "scheduled," and "specified" have the same meaning as "indicated."
- F. "Furnish": Supply and deliver to Project site, ready for unloading, unpacking, assembly, installation, and similar operations.
- G. "Install": Operations at Project site including unloading, temporarily storing, unpacking, assembling, erecting, placing, anchoring, applying, working to dimension, finishing, curing, protecting, cleaning, and similar operations.
- H. "Provide": Furnish and install, complete and ready for the intended use.
- I. "Project Site": Space available for performing construction activities. The extent of Project site is shown on Drawings.



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1.3 CODES, AGENCIES AND REGULATIONS:

A.D.A.A.G.

Americans with Disabilities Act (ADA) - Architectural Barriers Act (ABA)

B.G. & E.

Bureau of Gas and Electricity of the City of New York

B.S. & A.

New York City Board of Standards and Appeals

DOE

Department of Energy

E.C.C.C.N.Y.S.

Energy Conservation Construction Code of New York State

EPA

Environmental Protection Administration

N.Y.C.C.C.

New York City Construction Codes - includes:

New York City Plumbing Code New York City Building Code

New York City Mechanical Code

New York City Fuel Gas Code

N.Y.S.D.O.L

New York State Department of Labor

N.Y.C.D.E.P

New York City Department of Environmental Protection

N.Y.C.E.C.

New York City Electrical Code

N.Y.C.E.C.C

New York City Energy Conservation Code

N.Y.C.F.C

New York City Fire Code

N.Y.S...D.E.C.

New York State Department of Environmental Conservation

O.S.H.A.

Occupational Safety & Health Administration

1.4 INDUSTRY STANDARDS:

- A. STANDARD REFERENCES Unless otherwise specifically indicated in the Contract Documents, whenever reference is made to the furnishing of materials or testing thereof that conforms to the standards of any technical society, organization or body, it shall be construed to mean the latest standard, code, specification adopted and published by that technical society, organization or body, as of the date of the bid opening, Unless the provisions of the New York City Construction Codes adopts a different or earlier dated version of such standard.
- B. APPLICABILITY OF STANDARDS: Unless the Contract Documents include more stringent requirements, applicable construction industry standards have the same force and effect, to the extent referenced, as if bound or copied directly into the Contract Documents. Such standards are made a part of the Contract Documents by reference.
- C. CONFLICTING REQUIREMENTS: Where compliance with two or more standards is specified and the standards establish different or conflicting requirements for minimum quantity or quality, comply with the most stringent requirements. Immediately refer uncertainties, and requirements that are different but apparently equal, to the Commissioner in writing for a decision before proceeding.
- D. STANDARD SPECIFICATIONS When no reference is made to a code, standard or specification, the Standard Specifications of the ASTM or the AIEE, as the case may be, shall govern.
- E. REFERENCES Reference to a technical society, organization or body may be made in the Specifications by abbreviations. Abbreviations and acronyms used in the Specifications and other Contract Documents mean the associated name. The following names are subject to change and are



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believed, but are not assured, to be accurate and up-to-date as of the Issue Date of the Contract Documents.

AA Aluminum Association, Inc. (The)

AAADM American Association of Automatic Door Manufacturers

AABC Associated Air Balance Council

AAMA American Architectural Manufacturers Association

AASHTO American Association of State Highway and Transportation Officials

AATCC American Association of Textile Chemists and Colorists (The)

ABAA Air Barrier Association of America

ABMA American Bearing Manufacturers Association

ACPA American Concrete Pipe Association

AEIC Association of Edison Illuminating Companies, Inc. (The)

AF&PA American Forest & Paper Association

AGA American Gas Association

AGC Associated General Contractors of America (The)

AGMA American Gear Manufacturer Association

AHA American Hardboard Association (Now part of CPA)

AHAM Association of Home Appliance Manufacturers

Al Asphalt Institute

AIA American Institute of Architects (The)

AIEE American Institute of Electrical Engineers

AISC American Institute of Steel Construction

AISI American Iron and Steel Institute

AITC American Institute of Timber Construction

ALCA Associated Landscape Contractors of America

(Now PLANET - Professional Landcare Network)



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ALSc American Lumber Standard Committee, Incorporated

ALI Automotive Lift Institute

AMCA Air Movement and Control Association International, Inc.

ANSI American National Standards Institute

AOSA Association of Official Seed Analysts, Inc.

APA APA - The Engineered Wood Association

APA Architectural Precast Association

API American Petroleum Institute

ARI Air-Conditioning & Refrigeration Institute

ARMA Asphalt Roofing Manufacturers Association

ASA American Standards Association

ASAE American Society of Agricultural Engineers

ASCE/SEI American Society of Civil Engineers, Structural Engineering Institute

ASHRAE American Society of Heating, Refrigerating and Air-Conditioning

Engineers

ASME American Society of Mechanical Engineers

ASSE American Society of Sanitary Engineering

ASTM ASTM International

(American Society for Testing and Materials International)

AWCI AWCI International

(Association of the Wall and Ceiling Industry International)

AWCMA American Window Covering Manufacturers Association (Now WCSC)

AWI Architectural Woodwork Institute

AWPA American Wood-Preservers' Association

AWSC American Welding Society

AWWA American Water Works Association

BHMA Builders Hardware Manufacturers Association

BIA Brick Industry Association (The)



BICSI

BICSI

BIFMA

BIFMA International

(Business and Institutional Furniture Manufacturer's Association

International)

BISSC

Baking Industry Sanitation Standards Committee

CIBSE

Charted Institute of Building Services Engineers

CCC

Carpet Cushion Council

CDA

Copper Development Association

CEA

Canadian Electricity Association

CFFA

Chemical Fabrics & Film Association, Inc.

CGA

Compressed Gas Association

CGSB

Canadian General Standards Board

CIMA

Cellulose Insulation Manufacturers Association

CIPRA

Cast Iron Pipe Research Association

CISCA

Ceilings & Interior Systems Construction Association

CISPI

Cast Iron Soil Pipe Institute

CLFMI

Chain Link Fence Manufacturers Institute

CPA

Composite Panel Association

CPPA

Corrugated Polyethylene Pipe Association

CPSC

Consumer Product Safety, Commission

CRI

Carpet & Rug Institute (The)

CRSI

Concrete Reinforcing Steel Institute

CSA

Canadian Standards Association

CSI

Cast Stone Institute

CSI

Construction Specifications Institute (The)

CSSB

Cedar Shake & Shingle Bureau

CTI

Cooling Technology Institute (Formerly: Cooling Tower Institute)



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DASMA Door and Access Systems Manufacturer's Association International

DHI Door and Hardware Institute

DOC U.S. Department of Commerce - National Institute of Standards and

Technology

EIA Electronic Industries Alliance

DOJ U.S. department of Justice

EIMA EIFS Industry Members Association

DOL U.S. Department of labor

EJCDC Engineers Joint Contract Documents Committee

DOTn U.S. Department of Transportation

EN European Committee of Standards

EJMA Expansion Joint Manufacturers Association, Inc.

ESD Association

EVO Efficiency Valuation Organization

FEME Federal Emergency Management Agency

FIBA Federation Internationale de Basketball Amateur

(The International Basketball Federation)

FIVB Federation Internationale de Volleyball

(The International Volleyball Federation)

FMG FM Global (Formerly: FM - Factory Mutual System)

FMRC Factory Mutual Research (Now FMG)

FRSA Florida Roofing, Sheet Metal & Air Conditioning Contractors Association,

Inc.

FSA Fluid Sealing Association

FSC Forest Stewardship Council

GA Gypsum Association

GANA Glass Association of North America

GRI (Now GSI)

GS Green Seal

GSI Geosynthetic Institute



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HI Hydraulic Institute

HI Hydronics Institute

HMMA Hollow Metal Manufacturers Association (Part of NAAMM)

HPVA Hardwood Plywood & Veneer Association

HPW H. P. White Laboratory, Inc.

HUD U.S. Department of Housing and Urban Development

IAPMO International Association of Plumbing and Mechanical Officials

IAS International Approval Services (Now CSA International)

IBF International Badminton Federation

ICC International Code Council, Inc.

ICEA Insulated Cable Engineers Association, Inc.

ICRI International Concrete Repair Institute, Inc.

IEC International Electrotechnical Commission

IEEE Institute of Electrical and Electronics Engineers, Inc. (The)

IESNA Illuminating Engineering Society of North America

IEST Institute of Environmental Sciences and Technology

IGCC Insulating Glass Certification Council

IGMA Insulating Glass Manufacturers Alliance

ILI Indiana Limestone Institute of America, Inc.

ISO International Organization for Standardization

ISSFA International Solid Surface Fabricators Association

ITS Intertek

ITU International Telecommunication Union

KCMA Kitchen Cabinet Manufacturers Association

LMA Laminating Materials Association (Now part of CPA)

LIGhtning Protection Institute

MBMA Metal Building Manufacturers Association



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MFMA Maple Flooring Manufacturers Association, Inc.

MFMA Metal Framing Manufacturers Association

MH Material Handling (Now MHIA)

MHIA Material Handling Industry of America

MIA Marble Institute of America

MPI Master Painters Institute

MSS Manufacturers Standardization Society of The Valve and Fittings

Industry Inc.

NAAMM National Association of Architectural Metal Manufacturers

NACE International

(National Association of Corrosion Engineers International)

NADCA National Air Duct Cleaners Association

NAGWS National Association for Girls and Women in Sport

NAIMA North American Insulation Manufacturers Association

NBGQA National Building Granite Quarries Association, Inc.

NCAA National Collegiate Athletic Association (The)

NCMA National Concrete Masonry Association

NCPI National Clay Pipe Institute

NCTA National Cable & Telecommunications Association

NEBB National Environmental Balancing Bureau

NECA National Electrical Contractors Association

NeLMA Northeastern Lumber Manufacturers' Association

NEMA National Electrical Manufacturers Association

NETA InterNational Electrical Testing Association

NFHS National Federation of State High School Associations

NFPA NFPA (National Fire Protection Association)

NFRC National Fenestration Rating Council





NGA National Glass Association

NHLA National Hardwood Lumber Association

NLGA National Lumber Grades Authority

NIS National Institute of Standards and Technology

NOFMA: The Wood Flooring Manufacturers Association

(Formerly: National Oak Flooring Manufacturers Association)

NRCA National Roofing Contractors Association

NRMCA National Ready Mixed Concrete Association

NSF International (National Sanitation Foundation International)

NSSGA National Stone, Sand & Gravel Association

NTMA National Terrazzo & Mosaic Association, Inc. (The)

NTRMA National Tile Roofing Manufacturers Association (Now TRI)

NWWDA National Wood Window and Door Association (Now WDMA)

OPL Omega Point Laboratories, Inc. (Acquired by ITS - Intertek)

PCI Precast / Pre-stressed Concrete Institute

PDCA Painting & Decorating Contractors of America

PDI Plumbing & Drainage Institute

PGI PVC Geomembrane Institute

PLANET Professional Landcare Network

(Formerly: ACLA - Associated Landscape Contractors of America)

PPS Power Piping Society

PTI Post-Tensioning Institute

RCSC Research Council on Structural Connections

RFCI Resilient Floor Covering Institute

RIS Redwood Inspection Service

RMI Rack Manufacturers Institute

RTI (Formerly: NTRMA - National Tile Roofing Manufacturers Association)

(Now TRI)



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SAE

SAE International

SCAQMD

South Coast Air Quality Management District

SCS

Scientific Certification System

SDI

Steel Deck Institute

SDI

Steel Door Institute

SEFA

Scientific Equipment and Furniture Association

SGCC

Safety Glazing Certification Council

SHBI

Steel Heating Boiler Institute

SIA

Security Industry Association

SIGMA

Sealed Insulating Glass Manufacturers Association (Now IGMA)

SJI

Steel Joist Institute

SMA

Screen Manufacturers Association

SMACNA

Sheet Metal and Air Conditioning Contractors' National Association

SMPTE

Society of Motion Picture and Television Engineers

SPFA

Spray Polyurethane Foam Alliance

(Formerly: SPI/SPFD - The Society of the Plastics Industry, Inc.; Spray Polyurethane Foam Division)

SPIB

Southern Pine Inspection Bureau (The)

SPRI

Single Ply Roofing Industry

SSINA

Specialty Steel Industry of North America

SSPC

SSPC: The Society for Protective Coatings

STI

Steel Tank Institute

SWI

Steel Window Institute

SWRI

Sealant, Waterproofing, & Restoration Institute

TCA

Tile Council of America, Inc.

TIA/EIA

Telecommunications Industry Association/Electronic Industries Alliance

TMS

The Masonry Society



TPI Truss Plate Institute, Inc.

TPI Turfgrass Producers International

TRI Tile Roofing Institute (Formerly: RTI - Roof Tile Institute)

UL Underwriters Laboratories Inc.

ULC Underwriters Laboratories of Canada

UNI Uni-Bell PVC Pipe Association

USAV USA Volleyball

USC United States Code

USGBC U.S. Green Building Council

USITT United States Institute for Theatre Technology, Inc.

WASTEC Waste Equipment Technology Association

WCLIB West Coast Lumber Inspection Bureau

WCMA Window Covering Manufacturers Association (Now WCSC)

WCSC Window Covering Safety Council

(Formerly: WCMA - Window Covering Manufacturers Association)

WDMA Window & Door Manufacturers Association

(Formerly: NWWDA - National Wood Window and Door Association)

WI Woodwork Institute (Formerly: WIC - Woodwork Institute of California)

WIC Woodwork Institute of California (Now WI)

WMMPA Wood Moulding & Millwork Producers Association

WRI Wire Reinforcement Institute, Inc.

USEPA United States Environmental Protection Agency

WSRCA Western States Roofing Contractors Association

WWPA Western Wood Products Association

PART II - PRODUCTS (Not Used)

PART III - EXECUTION (Not Used)

END OF SECTION 01 42 00



No Text



SECTION 01 50 00 TEMPORARY FACILITIES, SERVICES AND CONTROLS

PARTI- GENERAL

1.1 **RELATED DOCUMENTS:**

The following documents apply to all required work for the Project: (1) the Contract Drawings, (2) the Specifications, (3) the General Conditions, (4) the Addendum, and (5) the Contract [City of New York Standard Construction Contract].

1.2 **SUMMARY:**

- This section includes the following: A.
 - a. Temporary Water System
 - b. Temporary Sanitary Facilities
 - c. Temporary Electric Power, Temporary Lighting System, And Site Security Lighting
 - d. Temporary Heat
 - e. Dewatering Facilities And Drains
 - f. Temporary Field Office for Contractor
 - g. Resident Engineer's Office
 - h. Material Sheds
 - i. Temporary Enclosures
 - **Temporary Partitions**
 - k. Temporary Fire Protection
 - I. Work Fence Enclosure
 - m. Rodent and Insect Control
 - n. Plant Pest Control Requirements
 - o. Project Identification Signage
 - p. Security Guards/Fire Guards on Site
 - q. Project Sign and Rendering
 - r. Safety

RELATED SECTIONS: include without limitation the following: 1.3

- Section 01 10 00 SUMMARY A.
- Section 01 42 00 REFERENCES B.
- TEMPORARY ELEVATORS AND HOISTS Section 01 54 11 C.
- Section 01 54 23 TEMPORARY SCAFFOLDS AND SWING STAGING D.
- Section 01 77 00 CLOSE OUT PROCEDURES E.

DEFINITIONS:

- Refer to Article 2 of the Contract for definition of terms, words and expressions used in the General A. Conditions not otherwise defined herein.
- Permanent Enclosure: As determined by Commissioner, permanent or temporary roofing that is B. complete, insulated, and weather tight; exterior walls which are insulated and weather tight; and all openings that are closed with permanent construction or substantial temporary closures.



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C. Design Consultant: "Design Consultant" shall mean the entity responsible for providing design services for the Project, including without limitation, preparing the construction documents (drawings and specifications) and providing services in connection with such documents during construction. The entity serving as the "Design Consultant" may be a corporation, firm, partnership, joint venture, individual or combination thereof. Such entity may be either an employee(s) of the City or an entity engaged by the City to provide such services.

1.5 SUBMITTALS:

- Α. Show temporary facilities, utility hookups, staging areas, and parking areas for construction personnel.
- B. Reports: Submit reports of tests, inspections, meter readings and similar procedures for temporary use.

PROJECT CONDITIONS: 1.6

- Temporary Use of Permanent Facilities and Services: The Contractor shall be responsible for the operation, maintenance, and protection of each permanent facility and service during its use as a construction facility before Final Acceptance by the City, regardless of previously assigned responsibilities.
- В. Install, operate, maintain and protect temporary facilities, services and controls.
 - Keep temporary services and facilities clean and neat in appearance. 1.
 - 2. Operate temporary services in a safe and efficient manner.
 - 3. Relocate temporary services and facilities as needed as Work progresses.
 - Do not overload temporary services and facilities or permit them to interfere with progress. 4.
 - 5. Provide necessary fire prevention measures.
 - Do not allow hazardous, dangerous or unsanitary conditions, or public nuisances to develop or 6. persist on-site.

NON-REGULAR WORK HOURS (OVERTIME): 1.7

- The Contractor shall provide the temporary services, facilities and controls set forth in this Section during other than regular working hours if the Drawings and/or the Specifications indicate that the Work, or specific components thereof, must be performed during other than regular working hours. In such case, all costs for the provision of temporary services, facilities and controls during other than regular working hours shall be deemed included in the total Contract Price.
- B. The Contractor shall provide the temporary services, facilities and controls set forth in this Section during other than regular working hours if a change order is issued directing the Contractor to perform the Work, or specific components thereof, during other than regular working hours. In such case, compensation for the provision of temporary services, facilities and controls during other than regular working hours shall be provided through the change order.

SERVICES BEYOND COMPLETION DATE: 1.8

Α. The Contractor shall provide the temporary services, facilities and controls set forth in this Section until the date on which it completes all required work at the site, including all punch list work, as certified in writing by the Resident Engineer, or earlier if so directed in writing by the Commissioner. The Contractor shall provide such temporary services, facilities and controls even if completion of all required work at the site occurs after the time fixed for such completion in Schedule A.



PART II - PRODUCTS

2.1 MATERIALS:

- Provide undamaged materials in serviceable condition and suitable for use intended.
- B. Tarpaulins: Waterproof, fire-resistant UL labeled with flame spread rating of 15 or less. For temporary enclosures, provide translucent, nylon-reinforced, laminated polyethylene or polyvinyl chloride, fire-retardant tarpaulins.
- C. Water: Potable and in compliance with requirements of the Department of Environmental Protection.

2.2 EQUIPMENT:

- A. Provide undamaged equipment in serviceable condition and suitable for use intended.
- B. Water Hoses: Heavy-duty abrasive-resistant flexible rubber hoses, 100 feet (30 m) long with pressure rating greater than the maximum pressure of the water distribution system. Provide adjustable shutoff nozzles at hose discharge.
- C. Electric Power Cords: Grounded extension cords.
 - 1. Provide hard-service cords where exposed to abrasion or traffic.
 - 2. Provide waterproof connectors to connect separate lengths of electric cords where single lengths will not reach areas of construction activity.
 - 3. Do not exceed safe length-voltage ratio.
- D. Fire Extinguishers: Portable, UL rated; with class and extinguishing agent as required by locations and classes of fire exposures.

PART III -EXECUTION:

3.1 INSTALLATION, GENERAL:

- A. Locate facilities where they will serve the Project adequately and result in minimum interference with performance of the Work. Relocate and modify facilities as required by progress of the Work.
- B. Provide each facility ready for use when needed to avoid delay. Do not remove until facilities are no longer needed or are replaced by authorized use of completed permanent facilities as approved by the Resident Engineer.

3.2 TEMPORARY WATER SYSTEM:

REFER TO THE ADDENDUM FOR THE APPLICABILITY OF SUB-SECTION 3.2 A

- A. TEMPORARY WATER SYSTEM NEW FACILITIES: During construction, the Contractor shall furnish a Temporary Water System as set forth below.
 - 1. Immediately after the Commissioner has issued an order to start work, the Contractor shall file an application with the Dept. of Environmental Protection for the schedule of charges for water use during construction. The Contractor will be responsible for payment of water charges.
 - 2. Immediately after the Commissioner has issued an order to start work, the Contractor shall file an application with the Department of Environmental Protection's Bureau of Water Supply and obtain a permit to install the temporary water supply system. The system shall be installed and maintained for the use of the Contractor and its subcontractors. A copy of the above mentioned permit shall be filed with the Commissioner. The Contractor shall provide temporary water main, risers and waste stacks as directed and install on each floor, outlets with two (2) 3/4" hose valve connections over a barrel installed on a steel pan. The Contractor shall provide drains from the pans to the stack and house sewer and hose bibs to drain the water supply



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risers and mains. During winter months, the Contractor shall take the necessary precautions to prevent the temporary water system from freezing. The Contractor shall provide repairs to the temporary water supply system for the duration of the project until said temporary system is dismantled and removed.

3. Disposition of Temporary Water System: The Contractor shall be responsible for dismantling the temporary water system when no longer required for the construction operations, or when replaced by the permanent water system installed for the project, or as otherwise directed by the Resident Engineer. All repair work resulting from the dismantling of the temporary water system shall be the responsibility of the Contractor.

REFER TO THE ADDENDUM FOR THE APPLICABILITY OF SUB-SECTION 3.2 B

- B. TEMPORARY WATER SYSTEM - PROJECTS IN EXISTING FACILITIES:
 - When approved by the Commissioner, use of existing water system will be permitted for temporary water service during construction, as long as the system is cleaned and maintained in a condition acceptable to the Commissioner. At Substantial Completion, the Contractor shall restore the existing water system to conditions existing before initial use.
 - 2. The Contractor shall be responsible for all repairs to the existing water system permitted to be used for temporary water service during construction. The Contractor shall be responsible to maintain the existing system in a clean condition on a daily basis, acceptable to the Commissioner.
 - 3. The Contractor will be responsible for payment of water charges as directed by the Commissioner. Billing will be in accordance with the Department of Environmental Protection schedule of charges for Building Purposes.
- WASH FACILITIES: The Contractor shall install wash facilities supplied with potable water at convenient locations for personnel involved in handling materials that require wash-up for a healthy and sanitary condition.
 - 1. Dispose of drainage properly.
 - 2. Supply cleaning compounds appropriate for each condition.
 - 3. Include safety showers, eyewash fountains and similar facilities for the convenience, safety and sanitation of personnel.
- DRINKING WATER FACILITIES: The Contractor shall provide drinking water fountains or containerized tap-dispenser bottled-drinking water units, complete with paper cup supplies. Where power is accessible, provide electric water coolers to maintain dispensed water temperature at 45 to 55 deg. F (7 to 13 deg. C).

TEMPORARY SANITARY FACILITIES: 3.3

The Contractor shall provide toilets, wash facilities and drinking water fixtures in compliance with regulations and health codes for type, number, location, operation and maintenance of fixtures and Provide toilet tissue, paper towels, paper cups and similar disposable materials as appropriate for each facility, and provide covered waste containers for used materials.

BEFER TO THE ADDENDUM FOR THE APPLICABILITY OF SUB-SECTION 3.3 B

- B. **SELF-CONTAINED TOILET UNITS:**
 - The Contractor shall provide temporary single-occupant toilet units of the chemical, aerated recirculation, or combustion type for use by all construction personnel. Units shall be properly vented and fully enclosed with a glass-fiber-reinforced polyester shell or similar nonabsorbent material. Quantity of toilet units shall comply with the latest OSHA regulations.
 - 2. Toilets: Install separate self-contained toilet units for male and female personnel. Shield toilets to ensure privacy.



REFER TO THE ADDENDUM FOR THE APPLICABILITY OF SUB-SECTION 3.3 C

C. EXISTING TOILETS:

- TOILET FACILITIES: When approved by the Commissioner, the Contractor shall arrange for the use of existing toilet facilities by all personnel during the execution of the work. The Contractor shall be responsible to clean and maintain facilities in a condition acceptable to the Resident Engineer and, at completion of construction, to restore facilities to their condition at the time of initial use.
- 2. MAINTENANCE The Contractor shall maintain the temporary toilet facilities in a clean and sanitary manner and make all necessary repairs.
- 3. NUISANCES The Contractors shall not cause any sanitary nuisance to be committed by its employees or the employees of its subcontractors in or about the work, and shall enforce all sanitary regulations of the City and State Health Authorities.

3.4 TEMPORARY ELECTRIC POWER, TEMPORARY LIGHTING SYSTEM, AND SITE SECURITY LIGHTING:

- A. SCOPE: This Section sets forth the General Conditions and procedures relating to Temporary Electric Power, Temporary Lighting System and Site Security Lighting during the construction period.
- B. TEMPORARY ELECTRIC POWER:

The Contractor shall provide and maintain a Temporary Electric Power service and distribution system of sufficient size, capacity and power characteristics required for construction operations for all required work by the Contractor and its subcontractors, including but not limited to power for the Temporary Lighting System, Site Security Lighting, construction equipment, hoists, temporary elevators and all field offices. Temporary Electric Power shall be provided as follows:

REFER TO THE ADDENDUM FOR THE APPLICABILITY OF SUB-SECTION 3.4 B (1)

- 1. CONNECTION TO UTILITY LINES:
 - a. Temporary Electric Power Service for use during construction shall be provided as follows: The Contractor shall make all necessary arrangements with the Public Utility Company and pay all charges for the Temporary Electric Power system. The Contractor shall include in its total Contract Price any charges for Temporary Electric Power, including charges that may be made by the Public Utility Company for extending its electrical facilities, and for making final connections. The Contractor shall make payment directly to the Public Utility Company.
 - b. APPLICATIONS FOR METER: The Contractor shall make application to the Public Utility Company and sign all documents necessary for, and pay all charges incidental to, the installation of a watt hour meter or meters for Temporary Electric Power. The Contractor shall pay to the Public Utility Company, all bills for Temporary Electric energy used throughout the work, as they become due.
 - c. SERVICE AND METERING EQUIPMENT The Contractor shall furnish and install, at a suitable location on the site, approved service and metering equipment for the Temporary Electric Power System, ready for the installation of the Public Utility Company's metering devices. The temporary service mains to and from the metering location shall be not less than 100 Amperes, 3-phase, 4-wire and shall be of sufficient capacity to take care of all demands for all construction operations and shall meet all requirements of the NYCEC.



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REFER TO THE ADDENDUM FOR THE APPLICABILITY OF SUB-SECTION 3.4 B (2)

2. CONNECTION TO EXISTING ELECTRICAL POWER SERVICE:

- a. When approved by the Commissioner, electrical power service for the Temporary Lighting System and for the operation of small tools and equipment less than ½ horsepower may be taken from the existing electric distribution system if the existing system is of adequate capacity for the temporary power load. The Contractor shall cooperate and coordinate with the facility custodian, so as not to interfere with the normal operation of the facility.
- b. There will be no charge to the Contractor for the electrical energy consumed.
- c. The Contractor shall provide, maintain and pay all costs for separate temporary electric power for any temporary power for equipment larger than 1/4 horsepower. When directed by the Commissioner, the Contractor shall remove its own temporary power system.

REFER TO THE ADDENDUM FOR THE APPLICABILITY OF SUB-SECTION 3.4 B (3)

3. ELECTRICAL GENERATOR POWER SERVICE:

- a. When connection to Utility Lines or existing facility electric service is not available or is not adequate to supply the electric power need for construction operations, the Contractor shall provide self-contained generators to provide power beyond that available.
- b. Pay for all energy consumed in the progress of the Work, exclusive of that available from the existing facility or Utility Company.
- c. Provide for control of noise from the generators.
- d. Comply with the Ultra Low Sulfur Fuel in Non-Road Vehicles requirements as set forth in Article 5.4 of the Contract.

C. USE OF COMPLETED PORTIONS OF THE ELECTRICAL WORK:

- 1. USE OF MAIN DISTRIBUTION PANEL: As soon as the permanent electric service feeders and equipment, metering equipment and main distribution panel are installed and ready for operation, the Contractor shall have the temporary lighting and power system changed over from the temporary service points to the main distribution panel.
- COST OF CHANGE OVER The Contractor shall be responsible for all costs due to this
 change over of service and it shall also make application to the Public Utility Company for a
 watt hour meter to be set on the permanent meter equipment.
- 3. The requirements for temporary electric power service specified herein shall be adhered to after change over of service until final acceptance of the project.
- 4. NO EXTRA COST The operation of the service and switchboard equipment shall be under the supervision of the Contractor, but this shall in no way be interpreted to mean the acceptance of such part of the installation or relieve the Contractor from its responsibility for the complete work or any part thereof. There shall be no additional charge for supervision by the Contractor.

REFER TO THE ADDENDUM FOR THE APPLICABILITY OF SUB-SECTION 3.4 D.

D. TEMPORARY LIGHTING SYSTEM:

1. The Contractor shall provide adequate service for the temporary lighting system, or a minimum of 100 Amperes, 3-phase, 4-wire service for the temporary lighting system, whichever is





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greater, and make all necessary arrangements with the Public Utility Company and pay all charges by them for the Temporary Lighting System

- The Contractor shall furnish and connect to the metered service point, a Temporary Lighting 2. System to illuminate the entire area where work is being performed and points adjacent to the work, with separately fused circuits for stairways and bridges. Control switches for stairway circuits shall be located near entrance on ground floor.
- ITEMS: The Temporary Lighting System provided by the Contractor shall consist of wiring, 3. fixtures, left-hand double sockets, (one (1) double socket for every 400 square feet, with one (1) lamp and one (1) three-prong outlet) lamps, fuses, locked type guards, pigtails and any other incidental material. Additional details may be outlined in the detailed Specifications for the Electrical Work. Changes may be made, provided the full equivalent of those requirements is maintained.
- The Temporary Lighting System shall be progressively installed as required for the 4. advancement of the work under the Contract.
- RELOCATION: The cost for the relocation or extension of the original Temporary Lighting 5. System, required by the Contractor or its subcontractors, that is not required due to the normal advancement of the work, as determined by the Resident Engineer, shall be borne by the
- PIGTAILS: shall be furnished with left-hand sockets with locked type guards and 40 feet of 6. rubber covered cable. The Contractor shall furnish and distribute a minimum of three (3) complete pigtails to each subcontractor. See the detailed Electrical Specifications for possible additional pigtails required.
- LAMPS: The Contractor shall furnish and install one (1) complete set of lamps, including those 7. for the trailers. Broken and burned out lamps in the temporary lighting system, DDC field office and construction trailers, shall be replaced by the Contractor. All lamps shall be compact fluorescent.
- CIRCUIT PROTECTION: The Contractor shall furnish and install GFI protection for the 8. Temporary Lighting and Site Security Lighting Systems.
- MAINTENANCE OF TEMPORARY LIGHTING SYSTEM: 9.
 - The Contractor shall maintain the Temporary Lighting System in good working order during the scheduled hours established.
 - The Contractor shall include in its total Contract Price all costs in connection with the b. Temporary Lighting System, including all costs for installation, maintenance and electric
- REMOVAL OF TEMPORARY LIGHTING SYSTEM: The temporary lighting system shall be 10. removed by the Contractor when authorized by the Commissioner.
- HAND TOOLS: The temporary lighting system shall not be used for power purposes, except that light hand tools not larger than 1/4 horsepower may be operated from such system by the Contractor and its subcontractors.

REFER TO THE ADDENDUM FOR THE APPLICABILITY OF SUB-SECTION 3.4 E

SITE SECURITY LIGHTING (FOR NEW CONSTRUCTION ONLY): E.

- The Contractor shall furnish, install and maintain a system of site security lighting, as herein specified, to illuminate the construction site of the project, and it shall be connected to and energized from the Temporary Lighting System. All costs in connection with site security lighting shall be deemed included in the total Contract Price.
- It is essential that the site security lighting system be completely installed and operating, at the 2... earliest possible date. The Contractor shall direct its subcontractors to cooperate, coordinate and exert every effort to accomplish an early complete installation of the site security lighting system. After the system is installed and in operation, if a part of the system interferes with the work of any trade, the Contractor shall be completely responsible for the expense of removing,



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relocating and replacing all equipment necessary to reinstate the system to proper operating conditions.

- 3. The system shall consist of flood lighting by pole mounted guarded sealed-beam units. Floodlight units shall be mounted 16 feet above grade. Floodlights shall be spaced around the perimeter of the site to produce an illumination level of no less than one (1) foot candle around the perimeter of the site, as well as in any potentially hazardous area or any other area within the site that might be deemed by the Resident Engineer to require security illumination. The system shall be installed in a manner acceptable to the Resident Engineer. The first lighting unit in each circuit shall be provided with a photoelectric cell for automatic control. The photoelectric cell shall be installed as per manufacturer's recommendations.
- 4. All necessary poles shall be furnished and installed by the Contractor.
- 5. The site security lighting shall be kept illuminated at all times during the hours of darkness. The Contractor shall, at its own expense, shall keep the system in operation, and shall furnish and install all material necessary to replace all damaged or burned out parts.
- 6. The Contractor shall be on telephone call alert for maintaining the system during the operating period stated above.
- 7. All materials and equipment furnished under this section shall remain the property of the Contractor and shall be removed and disposed of by the Contractor when authorized in writing by the Resident Engineer.

REFER TO THE ADDENDUM FOR THE APPLICABILITY OF SUB-SECTION 3.5

3.5 TEMPORARY HEAT:

A. GENERAL:

- 1. Definition: The provision of Temporary Heat shall mean the provision of heat in order to permit construction to be performed in accordance with the Progress Schedule during all seasons of the year and to protect the work from the harmful effects of low temperature. In the event the building, or any portion thereof, is occupied during construction, the provision of Temporary Heat shall include the provision of heat to permit normal operations in such occupied areas.
 - a. The provision of Temporary Heat shall be in accordance with the temperature requirements set forth in Sub-Section 3.5 C herein.
 - b. The provision of Temporary Heat shall include the provision of: 1) all fuel necessary and required, 2) all equipment necessary and required, and 3) all operating labor necessary and required. Operating labor shall mean that minimum force required for the safe day to day operation of the system for the provision of Temporary Heat and shall include, without limitation, heating maintenance labor and/or Fire Watch as required by NYC Fire Department regulations. Operating labor may be required seven (7) days per week and during other than normal working hours, for the period of time required by seasonal weather conditions.
 - c. In the event the building, or any portion thereof, is occupied and the Project involves the replacement, modification and/or shut down of the permanent heating system, or any key component thereof; and such system is a combined system which furnishes domestic hot water for the building occupants, the provision of Temporary Heat shall include the provision of domestic hot water at the same temperature as the system which is being replaced. Domestic hot water shall be provided in accordance with the phasing requirements set forth in the Contract Documents.
- 2. Responsibility: The Contractor's responsibility for the provision of Temporary Heat, including all expenses in connection therewith, shall be as set forth below:
 - a. Projects Involving Enclosure of the Building:



- 1) Prior to Enclosure Until the Commissioner determines that the building has been enclosed, as set forth in Sub-Section 3.5 B; the Contractor shall be responsible for the provision of Temporary Heat.
- Post Enclosure Once the Commissioner determines that the building, or any portion thereof, has been enclosed, as set forth in Sub-Section 3.5 B, the Contractor shall be responsible for the provision of Temporary Heat by one or more of the following means: 1) by an existing heating system (if any), 2) by a permanent heating system which is being installed as part of the Project, or 3) by a temporary heating system(s).
- 3) The Contractor shall, within two (2) weeks of the kick-off meeting, submit to DDC for review its proposed plan to provide Temporary Heat. Such plan is subject to approval by the Resident Engineer. The Contractor shall provide Temporary Heat in accordance with the approved plan until written acceptance by the Commissioner of the work of all Contractors, including punch list work, unless directed otherwise in writing by the Commissioner. The responsibility of the Contractor provided for herein is subject to the exception set forth in Sub-Section 3.5 A.2 (b) herein.
- b. Projects not involving Enclosure of the Building:
 - If the Project involves the installation of a new permanent heating system if one did not exist previously, or the replacement, modification and/or shut down of the existing permanent heating system, or any key component thereof, the Contractor shall be responsible for the provision of Temporary Heat, except as otherwise provided in Sub-Section 3.5 H.3(b).2 herein.
 - 2) If the Project does not involve the installation of a new permanent heating system if one did not exist previously, or the replacement, modification and/or shut down of the existing permanent heating system, or any key component thereof; there is no Contractor responsibility of the provision of Temporary Heat, unless otherwise specified in the Contract Documents. However, if the Commissioner, pursuant to Sub-Section 3.5 H.3 (b).1 herein, determines that the provision of Temporary Heat is necessary due to special and/or unforeseen circumstances, the Contractor shall be responsible for the provision of Temporary Heat and shall be paid for the same in accordance with Sub-Section 3.5 H.3 (b).1 herein.

B. ENCLOSURE OF STRUCTURES:

- 1. Notification: The Contractor shall notify all its subcontractors and the Resident Engineer at least 30 days prior to the anticipated date that the building(s) will be enclosed.
- 2. Commissioner Determination: The Commissioner shall determine whether the building, or any portion thereof, has been enclosed. As indicated in Sub-Section 3.5 A.2 above, once the building has been enclosed, the Contractor shall be responsible for the provision of Temporary Heat. The Commissioner's determination with respect to building enclosure shall be based upon all relevant facts and circumstances, including without limitation, 1) whether the building meets the criteria set forth in Paragraph 3 below, and 2) whether the openings in the building, such as doorways and windows, have been sufficiently covered so as to provide reasonable heat retention and protection from the elements.
- 3. Criteria for enclosure:
 - a. Roof Area:
 - 1) A building shall be considered to be roofed when the area to be roofed is covered by a permanent structure and all openings through the permanent structure are covered and protected by temporary covers as described in Paragraph (c) below.
 - 2) Intermediate floor structures of multi-floor buildings shall be considered to be roofed subject to the same requirements of the building roof.



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3) The final roofing system need not be in place for the building or structure to be determined to be enclosed; provided, however, all openings through the permanent structure covering the roof must be covered and protected by temporary covers, as described in Paragraph (c) below.

b. Walls: For the walls to be determined to be enclosed permanent exterior wall elements or facing material must be in place and all openings must be covered and protected by temporary covers, as described in Paragraph (c) below.

c. Temporary Covers: In order to be acceptable, temporary covers must be securely fixed to prevent the entrance of rain, snow and direct wind. The minimum material requirements for temporary covers are as follows: 1) minimum 10 mil. Plastic 2) minimum 12 ounce waterproof canvas tarpaulins, or 3) a minimum three-eighths (3/8) inch thickness exterior grade plywood.

d. Temporary covers for openings shall be the responsibility of the Contractor and such work shall be deemed included in the Contract price.

C. TEMPERATURE REQUIREMENTS:

- 1. Unoccupied Buildings: The temperature requirement for the provision of Temporary Heat in unoccupied buildings shall be the GREATER of the following: 1) 50 degrees Fahrenheit, or 2) the temperature requirement for the particular type of work set forth in the Contract Documents.
- 2. Occupied Buildings: The temperature requirement for the provision of Temporary Heat in occupied buildings, or portions thereof, shall be the GREATER of the following: 68 degrees Fahrenheit or the temperature requirement for the particular type of work set forth in the Contract Documents.

D. DURATION:

- 1. The Contractor shall be required to provide Temporary Heat until the date on which it completes all required work at the site, including all punch list work, as certified in writing by the Resident Engineer, or earlier if so directed in writing by the Commissioner. The Contractor shall be responsible for the provision of Temporary Heat for the time specified herein, regardless of any delays in completion of the Project, including delays that result in the commencement of the provision of Temporary Heat during a season that is later than that which may have been originally anticipated. The Contractor shall include in its Total Contract Price all expenses in connection with the provision of Temporary Heat in accordance with the requirements specified herein.
- 2. The total Contract duration is set forth in consecutive calendar days in Schedule A of the Addendum. The Table set forth below indicates the number of full heating seasons that are deemed included in various contract durations, which are specified in consecutive calendar days (ccd)s. At a minimum, a full heating season shall extend from October 15th to April 15th.

Contract Duration up to 360 ccds 360 to 720 ccds more than 720 ccds Full Heating Seasons Required

1 full heating season 2 full heating seasons 3 full heating seasons

E. METHOD OF TEMPORARY HEAT:

- The method of temporary heat shall be in conformance with the New York City Fire Code and with all applicable laws, rules and regulations. Prior to implementation, such method shall be subject to the written approval of the Commissioner.
- 2. The method of temporary heat shall:
 - a. Not cause the deposition of dirt or smudges upon any finished work or cause any defacement or discoloration to the finished work.
 - b. Not be injurious or harmful to people or materials.



- c. Portable fueled heating devises or equipment SHALL NOT BE ALLOWED for use as temporary heat other than construction-related curing or drying in conformance with the NYC Fire Code.
- 3. No open fires will be permitted.

F. TEMPORARY HEATING SYSTEM:

1. The temporary system for the provision of Temporary Heat provided by the Contractor following enclosure of the building shall be complete including, subject to provisions of paragraph E above, boilers pumps, radiators, space heaters, water and heating piping, insulation and controls. The temporary system for the provision of Temporary Heat shall be capable of maintaining the minimum temperature requirements set forth in Paragraph C above.

G. COORDINATION:

1. The Contractor, in the provision of Temporary Heat, shall coordinate its operations in order to insure sufficient and timely performance of all required work, including work performed by trade subcontractors. The Contractor shall supply and pay for all water required and used in the building for the operation of the heating system(s) for the purpose of Temporary Heat. The Contractor shall include all expenses in connection with the supply of water for Temporary Heat in its Total Contract Price. During the period in which Temporary Heat in an enclosed building is being furnished and maintained, the Contractor shall provide proper ventilating and drying, open and close the windows and other openings when necessary for the proper execution of the work and also when directed by DDC. The Contractor shall maintain all permanent or temporary enclosures at its own expense.

H. USE OF PERMANENT HEATING SYSTEMS:

- Use of Permanent Heating System for Temporary Heat after Building Enclosure
 - a. The Contractor shall provide all labor and materials to promptly furnish and set all required equipment and convectors and/or radiators, piping, valves, fitting, etc., in ample time for their use for the provision of Temporary Heat after enclosure of the building.
 - b. New portions of the permanent heating system that are used for furnishing Temporary Heat shall be left in near perfect condition when delivered to the City for operation. Any repairs required, other than for ordinary wear and tear on the equipment, shall be made by the Contractor at his/her expense. The starting date for the warranty or guarantee period for such equipment shall be the date of Substantial Completion acceptance.
 - c. In the event that the Contractor does not advance the installation of the permanent heating system in sufficient time to permit its use for Temporary Heat as determined by DDC, the Contractor shall furnish and install a separate system for the provision of Temporary Heat as required to maintain the minimum temperature requirements set forth in Paragraph C above.
- 2. All equipment for the system for the provision of Temporary Heat shall be placed so as to comply with the requirements specified hereinbefore, and shall be connected, disconnected and suitably supported and located so as to permit construction work, including finish work such as wall plastering and painting, to proceed. The installation of the system for the provision of Temporary Heat by the Contractor, including the placing of ancillary system equipment, shall be coordinated with the operations of all trade subcontractors so as to insure sufficient and timely performance of the work. Once the permanent heating system is operating properly, the Contractor shall remove all portions of the system for Temporary Heat not part of the permanent heating system.
- 3. Temporary Heat Allowance for Special Conditions or and/or Unforeseen Circumstances.
 - a. The City may establish an allowance in the Contract for payment of costs and expenses in connection with the provision of Temporary Heat as set forth herein. If established, the City will include an amount for such allowance on the Bid Form, and the Contractor shall



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include such allowance amount in its Total Contract Price. The Contractor shall only be entitled to payment from this allowance under the conditions and in accordance with the requirements set forth below. In the event this allowance or any portion thereof remains unexpended at the conclusion of the Contract, such allowance shall remain the sole property of the City. Should the amount of the allowance be insufficient to provide payment for the expenses specified below, the City will increase the amount of the allowance.

- The allowance set forth herein may be utilized only under the conditions set forth below. b.
 - In the event the Project does not involve the installation of a new permanent heating system if one did not exist previously, or the replacement, modification and/or shut down of the existing permanent heating system, or any key component thereof, and the Commissioner determines that the provision of Temporary Heat is necessary due to special and/or unforeseen circumstances, the Contractor shall be responsible for the provision of Temporary Heat, as directed by the Commissioner. The City shall pay such Contractor for all costs for labor, material, and equipment necessary and required for the same. Payment shall be made in accordance with Article 26 of the Contract, except that the cost of fuel shall be as set forth in Paragraph (c) below.
 - In the event the Commissioner determines that there is a need for maintenance of 2. the permanent heating system by the Contractor after written acceptance by the Commissioner of the work, and that the need for such maintenance is not the fault of the Contractor, the Contractor shall provide the required maintenance of the permanent heating system for the period of time directed by the Commissioner. The City shall pay the Contractor for the cost of direct labor and fuel necessary and required in connection with such maintenance, excluding the cost of any foremen or other supervision. Payment shall be made in accordance with Article 26 of the Contract, except that the cost of fuel shall be as set forth in Paragraph (c) below.
- Payment for Fuel Costs Payment from the allowance set forth herein for the cost of fuel necessary and required to operate the system for the provision of Temporary Heat or to maintain the permanent heating system under the conditions set forth in Paragraph b above shall be limited to the direct cost of such fuel. The Contractor shall not be entitled to any overhead and/or profit for such fuel costs. In order to receive payment for such fuel costs, the Contractor must present original invoices for the same. DDC reserves the right to furnish the required fuel.

RELATED ELECTRICAL WORK:

- The Contractor shall be responsible for providing the items set forth below and shall include all expenses in connection with such items in its Total Contract Price. The Contractor shall provide such items promptly when required and shall in all respects coordinate its work with the work performed by trade subcontractors in order to facilitate the provision of Temporary Heat.
 - The Contractor shall provide all labor, materials, equipment and power necessary and required to furnish and maintain any temporary or permanent electrical connections to all equipment specified to be connected as part of the work of his Contract.
 - The Contractor shall supply and pay for all power necessary and required for the b. operation of the system for the provision of Temporary Heat and/or the permanent heating system used for Temporary Heat. Such power shall be provided by the Contractor for the duration the Contractor is required to provide Temporary Heat, as set forth in Sub-section 3.5 D herein.
- In providing the items set forth in Paragraph 1 above, the Contractor is advised that labor may 2. be required seven (7) days a week and/or during other than normal working hours for the period of time required by seasonal weather conditions.



J. RELATED PLUMBING WORK:

- 1. The Contractor shall be responsible for providing all labor, materials and equipment necessary and required to furnish and maintain all temporary or permanent connections to all equipment or plumbing outlets specified to be provided as part of the work of this Contract. The Contractor shall include all expenses in connection with such items of work in its Total Contract Price. The Contractor shall provide such items of work promptly when required and shall in all respects coordinate its work with the work performed by trade subcontractors in order to facilitate the provision of Temporary Heat.
- 2. In the event portions of the permanent plumbing equipment furnished by the Contractor as part of the work of this Contract are used for the provision of Temporary Heat either during construction or prior to acceptance by the City of the complete plumbing system, the Contractor shall be responsible to provide such plumbing equipment to the City in near perfect condition and shall make any repairs required, other than for ordinary wear and tear on the equipment, at his expense. The starting date for warranty and/or guarantee period for such plumbing equipment shall be the date of Substantial Completion acceptance by the City.
- 3. For Projects requiring the installation of new and/or modified gas service, as well as associated meter installations, the Contractor shall promptly perform all required filings and coordination with the Utility Companies in order to expedite the installation, testing, and approval of the gas service and associated meter(s).

3.6 STORM WATER CONTROL, DEWATERING FACILITIES AND DRAINS:

A. PUMPING:

- Comply with requirements of authorities having jurisdiction. Maintain Project site, excavations, and construction free of water. Provide barriers in and around excavations and subgrade construction to prevent flooding by runoff of storm water from heavy rainfall.
- Contractor shall furnish and install all necessary automatically operated pumps of adequate capacity with all required piping to run-off agencies, so as to maintain the excavation, cellar floor, pits and exterior depressions and excavations free from accumulated water during the entire period of construction and up to the date of final acceptance of work of the Contract.
- 3. All pumps shall be maintained at all times in proper working order.
- 4. Dispose of rainwater in a lawful manner that will not result in flooding Project or adjoining properties nor endanger permanent Work or temporary facilities.
- 5. Remove snow and ice as required to minimize accumulations.

3.7 TEMPORARY FIELD OFFICE FOR CONTRACTOR:

- A. The Contractor shall establish a temporary field office for its own use at the site during the period of construction, at which readily accessible copies of all Contract Documents shall be kept.
- B. The field office shall be located where it will not interfere with the progress of any part of the work or with visibility of traffic control devices.
- C. CONTRACTOR'S REPRESENTATIVE: In charge of the office there shall be a responsible and competent representative of the Contractor, duly authorized to receive orders and directions and to put them into effect.
- D. Arrangements shall be made by the Contractor whereby its representative may be readily accessible by telephone.
- E. All temporary structures shall be of substantial construction and neat appearance, and shall be painted a uniform gray unless otherwise directed by the Commissioner.
- F. CONTRACTOR'S SIGN The Contractor shall post and keep posted, on the outside of its field office, office or exterior fence or wall at site of work, a legible sign giving full name of the company, address of the company and telephone number(s) of responsible representative(s) of the firm who can be reached in event of an emergency at any time.



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G. ADVERTISING PRIVILEGES - The City reserves the right to all advertising privileges. The Contractor shall not cause any signs of any kind to be displayed at the site unless specifically required herein or authorized by the Commissioner.

3.8 DDC FIELD OFFICE:

REFER TO THE ADDENDUM FOR THE APPLICABILITY OF SUB-SECTION 3.8 A

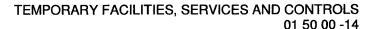
A. OFFICE SPACE IN EXISTING BUILDING:

- The Resident Engineer will arrange for office space for sole use in the building where work is in progress. The Contractor shall provide and install a lockset for the door to secure the equipment in the room. The Contractor shall provide two (2) keys to the Resident Engineer. After completion of the project the Contractor shall replace the original lockset on the door and ensure its proper operation.
- 2. In addition to equipment specified in Sub-Section 3.8 D, the Contractor shall provide, for exclusive use of the DDC Field Office, the following:
 - a. Two (2) single pedestal desks, 42" x 32"; two (2) swivel chairs with arms and three (3) side chairs without arms to match desk. Two metal (2) lockers, single units, 15" x 18" x 78" overall including 6" legs. Lockers to have flat key locks with two (2) keys each, General Steel products or approved equal. Two (2) full ball bearing suspension four (4) drawer vertical legal filing cabinets with locks, approximately 52"H x 28 ½"D x 18"W.
 - b. One (1) 9000 B.T.U air conditioner or as directed by Commissioner. Wiring for the air conditioner shall be minimum No. 12 AWG fed from individual circuits in the fuse box.
 - c. One (1) folding conference table, 96" x 30" and ten (10) folding chairs.
 - d. Two (2) metal wastebaskets.
 - e. One (1) fire extinguisher, one (1) quart vaporizing liquid type, brass, wall mounted by Pyrene No. C21 or approved equal.
 - f. One (1) Crystal Springs water cooler with bottled water, Model No. LP14058 or approved equal to be furnished for the duration of the project as required.
- 3. The Contractor shall provide one (1) telephone, where directed and shall pay all costs for telephone service for calls within the New York City limits for the duration of the project.
- 4. All furniture and equipment, except computer equipment specified in Sub-Section 3.8 D.3, shall remain the property of the Contractor.
- 5. Computer Workstation quantities shall be provided as specified in Sub-Section 3.8 B 3-a for DDC Managed Projects, or Sub-Section 3.8 B 3-b for CM Managed Projects.

REFER TO THE ADDENDUM FOR THE APPLICABILITY OF SUB-SECTION 3.8 B

B. DDC FIELD OFFICE TRAILER:

- 1. GENERAL: The Contractor shall, for the time frame specified herein, provide and maintain at its own cost and expense a DDC Construction Field Office and all related items as specified herein [hereinafter collectively referred to as the "DDC Field Office"] for the exclusive use of the Resident Engineer. The DDC Field Office shall be located at the Project site and shall be solely dedicated to the Project. Provision of the DDC Field Office shall commence within THIRTY (30) days from Notice to proceed and shall continue through forty-five (45) days after Substantial Completion of the required construction at the Project site. The Contractor shall remove the DDC Field Office forty-five (45) days after Substantial Completion of the required construction, or as otherwise directed in writing by the Commissioner.
- 2. TRAILER: The Contractor shall provide at its own cost and expense a mobile office trailer for use as the DDC Field Office. The Contractor shall install and connect all utility services to the





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trailer within thirty (30) days from Notice to Proceed. The trailer shall have equipment in compliance with the minimum requirements hereinafter specified. Any permits and fees required for the installation and use of said trailer shall be borne by the Contractor. The trailer including furniture and equipment therein, except computer equipment specified in Sub-Section 3.8D.3 herein, shall remain the property of the Contractor.

Trailer shall be an office type trailer of the size specified herein, with exterior stairs at entrance. 3. Trailer construction shall be minimum 2 x 4 wall construction fully insulated with paneled interior walls, pre-finished gypsum board ceilings and vinyl tile floors.

REFER TO THE ADDENDUM FOR THE APPLICABILITY OF SUB-SECTION 3.8.B.3a or சாமா த று கூடியால் ஹெரிஆர் அடிகள்களிர் **SUB-SECTION 3.8.B.3b.** அடைகளில் மேண்டும். . . டிரி

- DDC Managed Project Trailer: DDC Field Office Trailer Size, Layout and a. Computer Workstation:
 - Overall length: 32 Feet 1) Overall width: 10 Feet
 - Interior Layout: 2) Provide one (1) general office/conference room area and one (1) private office at one end of the trailer. Provide equipment and amenities as specified in Sub-Section 3.8.B herein.
 - Computer Workstation: Provide one (1) complete computer workstation, as 3) specified in Sub-Section 3.8.D herein, in the private office area as directed by the Resident Engineer.
- CM Managed Project Trailer: DDC Field Office Trailer Size, Layout and b. Computer Workstation:
 - Overall length: 50 Feet Overall width: 10 Feet
 - Interior Layout: 2) Provide one (1) large general office/conference room in the center of the trailer and two (2) private offices, one (1) each at either end of the trailer. Provide equipment and amenities as specified in Sub-Section 3.8.B herein.
 - Computer Workstation: 3) Provide three (3) complete computer workstations as specified in Sub-Section 3.8.D herein. Provide one (1) each complete computer workstation in each private office and one (1) complete computer workstation at the secretarial position as directed by the Resident Engineer.
- The exterior of the trailer shall be lettered with black block lettering of the following heights with 4. white borders:

2-1/2" CITY OF NEW YORK 3-3/4" DEPARTMENT OF DESIGN AND CONSTRUCTION 3-1/2" **DIVISION OF PUBLIC BUILDINGS** 2-1/2" **DDC FEILD OFFICE**

NOTE: In lieu of painting letters on trailer the Contractor may substitute a sign constructed of a good quality weatherproof material with the same type and size of lettering above.

All windows and doors shall have aluminum insect screens. Provide wire mesh protective 5. guards at all windows.

The interior shall be divided by partitions into general and private office areas as specified 6. herein. Provide a washroom located adjacent to the private office and a built-in wardrobe closet opposite the washroom. Provide a built-in desk in the private office(s) with fixed overhead shelf and clearance below for two (2) file cabinets.

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- 7. Provide a built-in drafting or reference table, located in the general office/conference room, at least 60 inches long by 36 inches wide with cabinet below and wall type plan rack at least 42 inches wide.
- 8. The washroom shall be equipped with a flush toilet, wash basin with two (2) faucets, medicine cabinet, complete with supplies and a toilet roll tissue holder. Plumbing and fixtures shall be approved house type, with each appliance trapped and vented and a single discharge connection. Five (5) gallon capacity automatic electric heater for domestic hot water shall be furnished.
- HVAC: The trailer shall be equipped with central heating and cooling adequate to maintain a temperature of 72 degrees during the heating season and 75 degrees during the cooling season when the outside temperature is 5 degrees F. winter and 89 degrees F. summer.
- 10. Lighting shall be provided via ceiling mounted fluorescent lighting fixtures to a minimum level of 50 foot candles in the open and private office(s) along with sufficient lighting in the washroom. Broken and burned out lamps shall be replaced by the Contractor. A minimum of four (4) duplex convenience outlets shall be provided in the open office and two (2) each in the private office(s). These outlets shall be in addition to special outlet requirements for computer stations, copiers, HVAC unit, etc.
- 11. Electrical service switch and panel shall be adequately sized for the entire trailer load. Provide dedicated circuits for HVAC units, hot water heater, copiers and other equipment as required. All wiring and installation shall conform to the New York City Electrical Code.
- 12. The following movable equipment shall be furnished:
 - Two (2) single pedestal desks, 42" x 32"; two (2) swivel chairs with arms and three (3) side chairs without arms to match desk. Two (2) full ball bearing suspension four (4) drawer vertical legal filing cabinets with locks and two (2) full ball bearing two (2) drawer vertical legal filing cabinets in each private office located below built-in desk.
 - b. One (1) folding conference table, 96" x 30" and ten (10) folding chairs.
 - c. Three (3) metal wastebaskets.
 - One (1) fire extinguisher one (1) quart vaporizing liquid type, brass, wall mounted by Pyrene No. C21 or approved equal.
 - e. One (1) Crystal Springs water cooler with bottled water, Model No. LP14058 or approved equal to be furnished for the duration of the Contract as required.
- 13. TRAILER TEMPORARY SERVICE: Plumbing and electrical work required for the trailer will be furnished and maintained as below.
 - a. PLUMBING WORK: The Contractor shall provide temporary water and drainage service connections to the DDC Field Office trailer for a complete installation. Provide all necessary soil, waste, vent and drainage piping.

Contractor to frost-proof all water pipes to prevent freezing.

- 1) REPAIRS, MAINTENANCE: The Contractor shall provide repairs for the duration of the project until the trailer is removed from the site.
- DISPOSITION OF PLUMBING WORK: At the expiration of the time limit set forth in Sub-Section 3.8 B 1 herein, the temporary water and drainage connections and piping to the DDC Field Office trailer shall be removed by the Contractor and shall be plugged at the mains. All piping shall become the property of the Contractor for Plumbing Work and shall be removed from the site, all as directed. All repair work due to these removals shall be the responsibility of the Contractor.

b. ELECTRICAL WORK:

- The Contractor shall furnish, install and maintain a temporary electric feeder to the DDC Field Office trailer immediately after it is placed at the job site.
- The temporary electrical feeder and service switch/fuse shall be adequately sized based on the trailer load and installed per the New York City Electrical Code and complying with utility requirements.

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Make all arrangements and pay all costs to provide electric service. 3)

The Contractor shall pay all costs for current consumed and for maintenance of the 4) system in operating condition, including the furnishing of the necessary bulb replacements lamps, etc., for the duration of the project and for a period of fortyfive (45) days after the date of Substantial Completion.

Disposition of Electric Work: At the expiration of the time limit set forth, the 5) temporary feeder, safety switch, etc., shall be removed and disposed of as

directed.

All repair work due to these removals shall be the responsibility of the Contractor. 6)

MAINTENANCE C.

The Contractor shall provide and pay all costs for regular weekly janitor service and furnish toilet paper, sanitary seat covers, cloth towels and soap and maintain the DDC Field Office in first-class condition, including all repairs, until the trailer is removed from the site.

Supplies: The Contractor shall be responsible for providing (a) all office supplies, 2) including without limitation, pens, pencils, stationery, filtered drinking water and sanitary supplies, and (b) all supplies in connection with required computers and printers, including without limitation, an adequate supply of blank CD's/DVD's, storage boxes for blank CDs/DVDs, and paper and toner cartridges for the printer.

Risk of Loss: The entire risk of loss with respect to the DDC Field Office and 3) equipment shall remain solely and completely with the Contractor. The Contractor shall be responsible for the cost of any insurance coverage determined by the

Contractor to be necessary for the Field Office.

At forty-five (45) days after the date of Substantial Completion, or sooner as 4) directed by the Commissioner, the Contractors shall have all services disconnected and capped to the satisfaction of the Commissioner. All repair work due to these removals shall be the responsibility of the Contractor.

TELEPHONE SERVICE: The Contractor shall provide and pay all costs for the following d. telephone services for the DDC Field Office trailer:

Separate telephone lines for one (1) desk phone in each private office. 1)

One (1) wall phone (with six (6) foot extension cord) at plan table. 2)

Separate telephone lines for the fax machine and internet access in each private 3) office. Telephone service shall include voice mail.

A remote bell located on outside of trailer 4)

The telephone service shall continue until the trailer is removed from the site.

- PERMITS: The Contractor shall make the necessary arrangements and obtain all permits e. and pay all fees required for this work.
- RENTED SPACE: The Contractor has the option of providing, at its cost and expense, rented office C. or store space in lieu of trailer. Said space shall be in the immediate area of the Project and have adequate plumbing, heating and electrical facilities. Space chosen by the Contractor for the DDC Field Office must be approved by the Commissioner before the area is rented. All insurance, maintenance and equipment, including computer workstations specified in Sub-Section 3.8 D in quantities required as specified in Sub-Section 3.8 B 3 for the DDC Field Office trailer, shall also apply to rented spaces.

REFER TO THE ADDENDUM FOR THE APPLICABILITY OF SUB-SECTION 3.8 D

ADDITIONAL EQUIPMENT FOR THE DDC FIELD OFFICE: D.

The Contractor shall provide a high volume copy machine (50 copies per minute) for paper sizes 8½ x 11, 8½ x 14 & 11 x 17. Copier shall remain at job site until the DDC Field office trailer is removed from the site.



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- 2. The Contractor shall furnish a fax machine and a telephone answering machine at commencement of the project for the exclusive use of the DDC Field Office. All materials shall be new, sealed in manufacturer's original packaging and shall have manufacturers' warrantees. All items shall remain the property of the City of New York at the completion of the project.
- COMPUTER WORKSTATION: The Contractor shall provide one complete computer 3. workstation, in quantities specified in Sub-Section 3.8.B.4, as specified herein:
 - Hardware/Software Specification:
 - Computer Equipment Computers shall be provided for all contracts that have a 1) Total Consecutive Calendar Days for construction duration as set forth in Schedule "A" of 180 CCD's or greater. Contracts of lesser duration shall not require computers.
 - Computers furnished by the Contractor for use by City Personnel, for the 2) duration of the contract, shall be in accordance with Specific Requirements, contained herein, shall remain the property of the City of New York at the completion of the project and shall meet the following minimum requirements:
 - Personal Computer(s) Each Workstation Configuration. 3)
 - a) Make and Model: Dell; HP; Gateway; Acer; or, an approved

equivalent. (Note: an approved equivalent requires written approval of the Assistant Commissioner of

ITS.)

Processor: i5-2400 (6MB Cache, 3.1GHz) or faster computer -

Single Processor.

System RAM: Minimum of 4GB (Gigabytes) Dual Channel DDR3

SDRAM at 1333MHz - 2 DIMMSs

Hard Disk Drive(s): 500 GB (Gigabytes) Serial ATA (7200RPM)

w/DataBurst Cache, or larger.

e) CD-RW: Internal CD-RW, 48x Speed or faster.

f) 16xDVD+/-RW DVD Burner (with double layer write capability) 16x

Speed or faster

I/O Ports: Must have at least one (1) Serial Port, one (1)

Parallel Port, and three (3) USB Ports.

Video Display Card: HD Graphics (VGA, HDMI) with a minimum of 64 MB

of RAM.

i) Monitor: 22" W, 23.0 Inch VIS, Widescreen, VGA/DVI LCD

Monitor.

Available Exp. Slots: System as configured above shall have at least two

(2) full size PCI Slots available.

Network Interface: Integrated 10/100/1000 Ethernet card.

I) Other Peripherals: Optical scroll Mouse, 101 Key Keyboard, Mouse

Pad and all necessary cables.

m) Software Requirement: Microsoft Windows 7 Professional SP1, 32 bit;

Microsoft Office Professional 2010 or 2013; Microsoft Project 2010; Adobe Acrobat reader; Anti-Virus software package with 2 year updates subscription; and, either Auto Cad LT or Microsoft



Visio Standard Edition, as directed by the Resident Engineer.

4) DDC Field Office Specs: DDC Field Offices requiring computers shall be provided with the following:

a) One (1) broad-band internet service account. Wideband Internet connectivity at a minimum throughput of 15 Mbps download and 5 Mbps upload is required at each field office location with 1-5 staffers. For larger field offices see table below for minimum required upload speeds. Telephone service should be bundled together with Internet connectivity. Because of throughput requirements Verizon FIOS is the preferred connectivity provider where available.

Office Personnel #	Upload Speeds (<i>Minimum</i>)
1-5	5 Mbps
6-10	10 Mbps
11 – 15	15 Mbps
16 – 20	20 Mbps

This account will be active for the life of the project. The e-mail name for the account shall be the DDC Field Office/project Id (e.g. <u>FLD K HWK666</u> McGuinness@earthlink.com).

- One (1) 600 DPI HP Laser Jet Printer (twelve (12) pages per minute or faster) with one (1) Extra Paper (Legal Size)
- c) All necessary cabling for equipment specified herein.
- d) Storage Boxes for Blank CD's
- e) Printer Table
- f) UPS/Surge Suppressor combo
- 5) All computers required for use in the Engineer's Field Office shall be delivered, installed, and setup in the Field Office by the Contractor.
- 6) All Computer Hardware shall come with a three (3) year warranty for on-site repair or replacement. Additionally, and notwithstanding any terms of the warranty to the contrary, the Contractor is responsible for rectifying all computer problems or equipment failures within one (1) business day.
- 7) An adequate supply of blank CDs/DVDs, and paper and toner cartridges for the printer shall be provided by the Contractor, and shall be replenished by the Contractor as required by the Resident Engineer.
- 8) It is the Contractor's responsibility to ensure that electrical service and phone connections are also available at all times; that is, the Field Office Computer(s) is to be powered and turned on twenty-four (24) hours each day.
- 9) Broadband connectivity is preferred at each field office location. Please take into consideration that an extra phone line dedicated to the modern must be ordered as part of the contract unless Internet broadband connectivity, via Cable or DSL, is available at the planned field office location. Any questions regarding this policy should be directed to the Assistant Commissioner of Information Technology Services at 718-391-1761.
- Ownership: The equipment specified above shall, unless otherwise directed by the Commissioner, be the sole property of the City of New York upon delivery to the DDC Field Office. The Contractor shall prepare and maintain an accurate inventory of all equipment which it purchases for the DDC Field Office. Such inventory shall be provided to the City of New York. Upon completion of the



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required services, as directed by the Commissioner, the Contractor shall turn such equipment over to the City of New York.

E. **HEAD PROTECTION (HARD HATS):**

- The Contractor shall provide a minimum of 10 standard protective helmets for the exclusive use of Department of Design and Construction personnel and their visitors. Helmets shall be turned over to the Resident Engineer and kept in the DDC Field Office.
- Upon completion of the project, the helmets shall become the property of the Contractor. 2.

3.9 **MATERIAL SHEDS:**

- Material sheds used by the Contractor for the storage of its materials shall be kept at locations which Α. will not interfere at any time with the progress of any part of the work or with visibility of traffic control devices.
- B. Store combustible materials apart from the facility.

3.10 TEMPORARY ENCLOSURES:

- Provide temporary enclosures for protection of construction, in progress and completed, from exposure, foul weather, other construction operations, and similar activities. Provide temporary weather tight enclosure for building exterior.
- B. Where heating or cooling is needed and permanent enclosure is not complete, insulate temporary enclosures.

3.11 TEMPORARY PARTITIONS:

- A. Provide floor-to-ceiling dustproof partitions to limit dust and dirt migration and to separate occupied tenant areas from fumes and noise.
 - 1. Construct dustproof partitions with gypsum wallboard with joints taped on occupied side, and fireretardant plywood on construction operations side.
 - 2. Construct dustproof partitions with 2 layers of 3-mil (0.07-mm) polyethylene sheet on each side. Cover floor with 2 layers of 3-mil (0.07-mm) polyethylene sheet, extending sheets 18 inches (460 mm) up the sidewalls. Overlap and tape full length of joints. Cover floor with fire-retardant plywood.
 - Construct vestibule and airlock at each entrance through temporary partition with not less than 48 inches (1219 mm) between doors. Maintain water-dampened foot mats in vestibule.
 - 3. Insulate partitions to provide noise protection to occupied areas.
 - 4. Seal joints and perimeter. Equip partitions with dustproof doors and security locks.
 - 5. Protect air-handling equipment.
 - 6. Weather strip openings.
 - 7. Provide walk-off mats at each entrance through temporary partition.

3.12 TEMPORARY FIRE PROTECTION:

- A. Install and maintain temporary fire-protection facilities of types needed to protect against reasonably predictable and controllable fire losses. Comply with NFPA 241.
- B. Prohibit smoking in all areas.
- C. Supervise welding operations, combustion-type temporary heating units, and similar sources of fire ignition according to requirements of authorities having jurisdiction.



- D. Develop and supervise an overall fire-prevention and -protection program for personnel at Project site. Review needs with local fire department and establish procedures to be followed. Instruct personnel in methods and procedures. Post warnings and information.
- E. Provide temporary standpipes and hoses for fire protection. Hang hoses with a warning sign stating that hoses are for fire-protection purposes only and are not to be removed. Match hose size with outlet size and equip with suitable nozzles.

REFER TO THE ADDENDUM FOR THE APPLICABILITY OF SUB-SECTION 3.13

3.13 WORK FENCE ENCLOSURE:

- A. The Contractor shall furnish, erect and maintain a wood construction or chain-link fence to the extent shown on the drawings or required by the work enclosing the entire project on all sides. All materials used shall be new. Any permit required for the installation and use of said fence and costs shall be borne by the Contractor.
- B. WOOD FENCE shall be 7'-0" high with framing construction of yellow pine, using 4" x 4" approved preservative-treated posts on not more than 6'-0" centers, with three (3) rails of at least 2" x 4" size to which shall be secured minimum 1/2 inch thick exterior grade plywood. Posts shall be firmly fixed in the ground at least 30" and thoroughly braced. Top edge of fence shall be trimmed with a rabbeted edge mould. Provide on the street traffic sides of fence, observation openings as directed.
 - 1. GATES Provide an adequate number of double gates, complete with hardware, located as approved by the Resident Engineer. Double gates shall have a total clear opening of 14'-0" with two (2) 7'-0" hinged swinging sections. Hanging posts shall be 6" x 6" and shall extend high enough to receive and be provided with tension or sag rods for the swinging sections.
 - 2. PAINTING The fence and gates shall be entirely painted on the street and public sides with one (1) coat of exterior primer and one (1) top coat of exterior grade acrylic-latex emulsion paint. Black stenciled signs reading "POST NO BILLS" shall be painted on fence with three (3) inch high letters on 25 foot spacing for the entire length of fence on street traffic sides. Signs shall be stenciled five (5) feet above the sidewalk.
- C. CHAIN-LINK FENCING shall be minimum 2-inch thick, galvanized steel, chain-link fabric fencing; 8 feet high with galvanized steel pipe posts; minimum 2-3/8-inch OD line posts and 2-7/8-inch OD corner and pull posts, with 1-5/8-inch OD top and bottom rails. Fence shall be accurately aligned and plumb, adequately braced and complete with gates, locks and hardware as required. Under no condition shall fencing be attached or anchored to existing construction or trees.
- It shall be the obligation of the Contractor to remove all posters, advertising signs, and markings, etc., immediately.

2. Should the fencing be required to be relocated during the course of the Contract, it shall be done by the Contractor at no additional cost to the City.

3. Where sidewalks are used for "drive over" purposes for Contractor vehicles, a suitable wood mat or pad shall be provided for protection of sidewalks and curbs.

4. Where required, make provision for fire hydrants, lampposts, etc.

5. REMOVAL - When directed by the Resident Engineer, the fence shall be removed.

3.14 RODENT AND INSECT CONTROL:

A. DESCRIPTION: The Contractor shall provide all labor, materials, plant and equipment, and incidentals required to survey and monitor rodent activity and to control any infestation or outbreak of rodents, rats, mice, water beetles, roaches and fleas within the project area. Special attention should be paid to the following conditions or areas:



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- Wet areas within the project area, including all temporary structures.
- 2 All exterior and interior temporary toilet structures within the project area.
- All Field Offices and shanties within the project area of all subcontractors and DDC.
- Wherever there is evidence of food waste and/or discarded food or drink containers, in quantity, that would cause breeding of rodents or the insects herein specified.
- 5 Any other portion of the premises requiring such special attention.

B. MATERIALS:

All materials shall be approved by the New York State Department of Environmental Conservation and comply with the New York City Health Code, OSHA and the laws, ordinances and regulations of State and Federal agencies pertaining to such chemical and/or materials.

C. PERSONNEL:

All pest control personnel must be supervised by an exterminator licensed in categories 7A and 8.

D. METHODS:

- 1. Application and dosage of all materials shall be done in strict compliance with the manufacturer's recommendations.
- Any unsanitary conditions, such as uncollected garbage or debris, resulting from all Contractor's activities, which will provide food and shelter to the resident rodent population shall be corrected by the Contractor immediately after notification of such condition by the Resident Engineer.

E. RODENT CONTROL WORK:

- In wetlands, woodlands and areas adjacent to a stream, special precautions must be taken to protect water quality and to ensure the safety of other wildlife. To prevent poisoned bait from entering streams, no poisoned bait shall be used in areas within seventy-five (75) feet of all stream banks. Live traps must be used in these seventy-five (75) foot buffer zone areas and within wetland and woodland areas.
- In areas outside the seventy-five (75) foot zone of protection adjacent to streams, and in areas outside wetlands and woodlands, tamper proof bait stations with poisoned bait shall be placed during the period of construction and any consumed or decomposed bait shall be replenished as directed.
- At least one month prior to initiation of the construction work, and periodically thereafter, live traps and/or rodenticide bait in tamper proof bait stations, as directed above, shall be placed at locations that are inaccessible to pets, human beings, children and other non-target species, particularly wildlife (for example-birds) in the project area.
- The Contractor shall be responsible for collecting and disposing of all trapped and poisoned rodents found in live traps and tamper proof bait stations. The Contractor shall also be responsible for posting and maintaining signs announcing the baiting of each particular location.
 - The Contractor shall be responsible for the immediate collection and disposal of any visible rodent remains found on streets or sidewalks within the project area.
- It is anticipated that public complaints will be addressed to the Commissioner. The Contractor, where directed by the Commissioner, shall take appropriate actions, like baiting, trapping, proofing, etc., to remedy the source of complaint within the next six (6) hours of normal working time which is defined herein for the purposes of this section as 7 A.M. to 6 P.M. on Mondays through Saturdays.
- 6 Emergency service during the regular workday hours (Monday through Friday) shall be rendered within 24 hours, if requested by the Commissioner, at no additional cost to the City.



F. EDUCATION & NOTICES:

The Contractor shall post notices on all Construction Bulletin Boards advising workers, employees, and residents to call the Engineer's Field Office to report any infestation or outbreak of rodents, rats, mice, water beetles, roaches and fleas within the project area. The Contractor shall provide and distribute literature pertaining to IPM techniques of rodent control to affected businesses and superintendents of nearby residential buildings to ensure their participation in maintaining their establishments free of unsanitary conditions, harborage removal and rodent proofing.

Prior to application of any chemicals, the Contractor shall furnish to the Commissioner copies or sample labels for each pesticide, antidote information, and Material Data Safety Sheets

(MSDS) for each chemical used.

G. RECORDS

1. The Contractor shall keep a record of all rodent and waterbug infestation surveys conducted by him/her and make available, upon request, to the Commissioner. The findings of each survey shall include, but not be limited to, recommended Integrated Pest Management (IPM) techniques, like baiting, trapping, proofing, etc., proposed for rodent and waterbug pest control.

2. The Contractor shall maintain records of all locations baited along with the type and quantity of

rodenticide and insecticide bait used.

3.15 PLANT PEST CONTROL REQUIREMENTS and TREE PROTECTION REQUIREMENTS:

- A. Plant Pest Control Requirements: The Contractor and its subcontractors, including the Certified Arborist described below, shall comply with all Federal and New York State laws and regulations concerning Asian Longhorned Beetle (ALB) management, including protocols for ALB eradication and containment promulgated by the New York State Department of Agriculture and Markets (NYSDAM). The Contractor is referred to: (1) Part 139 of Title 1 NYCRR, Agriculture and Markets Law, Sections 18, 164 and 167, as amended, and (2) State Administrative Procedure Act, Section 202, as amended.
 - 1. All tree work performed within the quarantine areas must be performed by New York State Department of Agriculture and Markets (NYSDAM) certified entities. Transportation of all host material, living, dead, cut or fallen, inclusive of nursery stock, logs, green lumber, stumps, roots, branches and debris of a half inch or more in diameter from the quarantine areas is prohibited unless the Contractor or its sub-contractor performing tree work has entered into a compliance agreement with NYSDAM. The terms of said compliance agreement shall be strictly complied with. Any host material so removed shall be delivered to a facility approved by NYSDAM. For the purpose of this contract host material shall be ALL species of trees.
 - 2. Any host material that is infested with the Asian Longhorned Beetle must be immediately reported to NYSDAM for inspection and subsequent removal by either State or City contracts, at no cost to the Contractor.
 - 3. Prior to commencement of tree work, the Contractor shall submit to the Commissioner a copy of a valid Asian Longhorned Beetle compliance agreement entered into with NYSDAM and the Contractor or its sub-contractor performing tree work. If any host material is transported from the quarantine area the Contractor shall immediately provide the Commissioner with a copy of the New York State 'Statement of Origin and Disposition' and a copy of the receipt issued by the NYSDAM approved facility to which the host materials are transported.
 - 4. Quarantine areas, for the purpose of this contract shall be defined as all five boroughs of the City of New York. In addition, prior to the start of any tree work, the Contractor shall contact the



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NYC Department of Parks & Recreation's Director of Landscape Management at (718) 699-6724, to determine the limits of any additional quarantine areas that may be in effect at the time when tree work is to be performed. The quarantine area may be expanded by Federal and State authorities at any time and the Contractor is required to abide by any revisions to the quarantine legislation while working on this contract. For further information please contact: NYSDAM (631) 288-1751.

- Tree Protection Requirements: The Contractor shall retain a Certified Arborist, as defined by New B. York City Department of Parks and Recreation (NYCDPR) regulations, to provide the services described below.
 - 1. Surveys and Reports: The Certified Arborist shall, at the times indicated below, conduct a survey and prepare a plant material assessment report which includes: (1) identification, by species and pertinent measurements, of all plant material located on the project site, or in proximity to the project site, as described below, including all trees, significant shrubs and/or planting masses; (2) identification and plan for the containment of plant pests and pathogens, including the ALB, as described in paragraph A above; (3) evaluation of the general health and condition of any infected plant material.
 - 2. Frequency of Reports: The Certified Arborist shall conduct a survey and provide a plant material assessment report at two (2) points in time: (1) prior to the commencement of construction work; and (2) at the time of substantial completion. In addition, for projects exceeding 24 months in duration, the Certified Arborist shall conduct a survey and prepare a report at the midpoint of construction. Copies of each plant material assessment report shall be submitted to the Resident Engineer within two (2) weeks of the survey.
 - Proximity to Project Site: Off-site trees, significant shrubs and/or planting masses shall be 3. considered to be located in proximity to the project site under the circumstances described below.
 - The tree trunk, significant shrub, or primary cluster of stems in a planting mass is a. within 50 (fifty) feet of the project's Contract Limit Lines (CLLs) or Property Lines
 - b. Any part of the tree or shrub stands within 50 (fifty) feet of: (a) a path for site access for vehicles and/or construction equipment; or (b) scaffolding to be erected for construction activity, including façade remediation projects.
 - The Certified Arborist determines that the critical root zone (CRZ) of an off-site tree, C. significant shrub, or primary cluster of stems in a planting mass extends into the project site, whether or not that plant material is located within the 50-foot inclusionary perimeter as outlined above.
 - 4. Tree Protection Plan: The Certified Arborist shall prepare, and the Contractor shall implement, a Tree Protection Plan, for all trees that may be affected by any construction work, excavation or demolition activities, including without limitation, (1) on-site trees, (2) street trees, as defined below, (3) trees under NYCDPR jurisdiction as determined by the Department of Transportation, and (4) all trees that are located in proximity to the project site, as defined above. The Tree Protection Plan shall comply with the NYC DPR rules, regulations and specifications. The Contractor is referred to Chapter 5 of Title 56 of the Official Compilation of the Rules of the City of New York. Copies of the Tree Protection Plan shall be submitted to the Resident Engineer prior to the commencement of construction. Implementation of the Tree Protection Plan for street trees and trees under NYCDPR jurisdiction shall be in addition to any tree protection requirements specified or required for the project site. For the purpose of this article, a "street tree" means the following: (1) a tree that stands in a sidewalk, whether paved or unpaved, between the curb lines or lateral lines of a roadway and the adjacent property lines



of the project site, or (2) a tree that stands in a sidewalk and is located within 50 feet of the intersection of the project's site's property line with the street frontage property line.

C. <u>No Separate Payment</u>. No separate payment shall be made for compliance with Plant Pest Control Requirements or Tree Protection Requirements. The cost of compliance with Plant Pest Control Requirements and Tree Protection Requirements shall be deemed included in the Contractor's bid for the Project.

3.16 PROJECT IDENTIFICATION SIGNAGE:

- A. The Contractor shall provide, install and maintain Project identification and other signs where indicated to inform public and individuals seeking entrance to the Project.
- B. In order to properly convey notice to persons entering upon a City construction site, the Contractor shall furnish and install a sign at the entrance (gates) as follows:

NO TRESPASSING

AUTHORIZED PERSONNEL ONLY

- C. If no construction fence exists at the site, this notice shall be conveyed by incorporating the above language into safety materials (barriers, tape, and signs).
- D. Provide temporary, directional signs for construction personnel and visitors.
- E. Maintain and touch up signs so that they are legible at all times.

3.17 PROJECT CONSTRUCTION SIGN AND RENDERING:

- A. PROJECT SIGN:
 - 1 Responsibility: The Contractor shall produce and install one (1) project sign which shall be posted and maintained upon the site of the project at a place and in a position directed by the Commissioner. The Contractor shall protect the sign from damage during the continuance of work under the Contract and shall do all patching of lettering, painting and bracing thereof necessary to maintain the sign in first class condition and in proper position. Prior to fabrication, the Contractor shall submit an 8-1/2" x 11" color match print proof from the sign manufacturer of the completed sign for approval by the Commissioner.
 - Sign Quality: The Contractor shall provide all materials required for the production of the sign as specified herein. Workmanship shall be of the best quality, free from defects and shall be produced in a timely manner.
 - Schedule: Upon project mobilization, the Contractor shall commence production and installation of the sign.
 - 4 Removal: At the completion of all work under the Contract, the Contractor shall remove and dispose of the project sign away from the site.
 - 5 Sign construction:
 - a. Frame: The frame shall be from quality dressed 2"x2" pine, fire retardant, pressure treated lumber, that surrounds the inside back edge of the sign. The sign shall have one (1) intermediate vertical and two (2) diagonal supports, glued and screwed for rigidity. Frame shall be painted white with two (2) coats of exterior enamel paint, prior to mounting of sign panel.
 - b. Edging: U-shaped, 22 gauge aluminum edging, with a white enameled finish to match sign



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background, shall run around entire edging of sign panel and frame. Corners shall be mitered for a tight fit. Channel dimensions shall be 1" inch (overlap to sign panel face) x 1 3/4" (or as required across frame depth) x 1" (back overlap).

c. Sign Panel: 4' x 8' panel shall be constructed in one (1) piece of 14 gauge (.0785") 6061-T6 aluminum. This panel shall be pre-finished both sides with a glossy white baked-on enamel finish and be flush with edge of 2" x 2" wood frame. Samples must be submitted

for approval.

d. Fastening: Fasten sign panel to wood frame using cadmium plated no. 8 sheet metal screws at ½" below edge of panel and 8" on center. The U-shaped aluminum channel shall be applied over the wood frame edge and fastened with cadmium plated no. 8 sheet metal screws at 12" on center around the entire perimeter.

6 Sign Graphics:

- a. A digital file of the project sign will be provided to the Contractor by the Commissioner's representative for printing. The Commissioner's representative shall insert the project name and names and titles of personnel (3 or more) and any other required information associated with the project. All signs may include a second panel for a project rendering as described in Sub-Section 3.17.B herein.
- b. The digital file shall be reproduced at the Sign Panel size of 4' x 8' on 3M High Performance Vinyl or approved equal. The 3M High Performance Vinyl or equivalent shall be guaranteed for nine (9) years. Guarantee must cover fading, peeling, chipping or cracking. The sign manufacturer is required to maintain all specified Pantone Matching System (PMS) type and other composition elements represented in the digital file of the project sign.

REFER TO THE ADDENDUM FOR THE APPLICABILITY OF SUB-SETION 3:17 B

B. PROJECT RENDERING:

- 1. Responsibility: In addition to the Project Sign, the Contractor shall furnish and install one (1) sign showing a rendering of the project. A digital file of the project rendering will be provided to the Contractor by the Commissioner's representative. From an approved image file provided by DDC, the Project Rendering is to be sized, printed, and mounted in an identical manner as described in Sub-Section 3.17.A above for the Project Sign. A color match print proof from the sign manufacturer of the Rendering Sign printed from the supplied file is to be submitted to DDC for approval before fabrication. The Rendering Sign is to be posted at the same height as the Project Sign. Where possible, the Rendering Sign shall be mounted with a perfect match of the short sides of the rectangle so that the Rendering Sign and the Project Sign together will create one long rectangle.
- 2. Removal: At the completion of all work under the Contract, the Contractor shall remove and dispose of the project rendering away from the site.

REFER TO THE ADDENDUM FOR THE APPLICABILITY OF SUB-SECTION 3.18

3.18 SECURITY GUARDS/FIRE GUARDS ON SITE:

A. SECURITY GUARDS (WATCHMEN):

1. The Contractor shall provide competent Security Guard Service on the site, beginning on the date on which the Contractor commences actual construction work, or on such earlier date on which there is activity at the site related to the work, including without limitation, delivery of



materials or construction set-up. The Contractor shall continue to provide such Security Guard Service until the date on which it completes all required work at the site, including all punch list work, as certified in writing by the Resident Engineer, or earlier if so directed in writing by the Commissioner. Throughout the specified time period, there shall be no less than one (1) Security Guard on duty every day, including Saturdays, Sunday and Holidays, 24 hours a day, except between the hours of 8:00 A.M. and 4:00 P.M. on any day which is a regular working day for a majority of the trade subcontractors. This exception during the working day shall not apply after the finishing painting of the plaster work is commenced; thereafter, not less than one (1) Security Guard shall be on duty continuously, 24 hours a day.

- 2. Every Security Guard shall be required to hold a "Certificate of Fitness" issued by the Fire Department. Every Security Guard shall, during his/her tour of duty, perform the duties of Fire Guard in addition to his/her security obligations.
- 3. Should the Commissioner find that any Security Guard is unsatisfactory; such guard shall be replaced by the Contractor upon the written demand of the Commissioner.
- 4. Each Security Guard furnished by the Contractor shall be instructed by the Contractor to include in his/her duties the entire construction site including the Field Office, temporary structures, and equipment, materials, etc.
- 5. Should the Contractor or any other subcontractor consider the security requirements outlined above inadequate, the Contractor shall provide such additional security as it thinks necessary, after obtaining the written consent of the Commissioner. The additional cost of such approved increased protection will be paid by the Contractor.
- 6. Nothing contained in this Sub-Section shall diminish in any way the responsibility of the Contractor and each subcontractor for its own work, materials, tools, equipment, nor for any of the other risks and obligations outlined hereinbefore in this Article.
- B. COSTS The Contractor shall employ Security Guards/Fire Guards throughout the specified time period, except as otherwise modified by the detailed Specifications and as approved by the Commissioner, for the purpose of safeguarding and protecting the site. All costs for Security Guards/Fire Guards shall be borne by the Contractor.
- C. RESPONSIBILITY The Contractor and its subcontractors will be responsible for safeguarding and protecting their own work, materials, tools and equipment.

3.19 SAFETY:

A. The Contractor, in compliance with requirements of Section 01 35 26, SAFETY REQUIREMENTS PROCEDURES, shall provide and maintain all necessary temporary closures, guard rails, and barricades to adequately protect all workers and the public from possible injury. Any removal of these items, during the progress of the work, shall be replaced by the Contractor at no additional cost to the City.

END OF SECTION 01 50 00



No Text



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SECTION 01 54 11 TEMPORARY ELEVATORS AND HOISTS

PARTI- GENERAL

1.1 RELATED DOCUMENTS:

A. The following documents apply to all required work for the Project: (1) the Contract Drawings, (2) the Specifications, (3) the General Conditions, (4) the Addendum, and (5) the Contract [City of New York Standard Construction Contract].

1.2 SUMMARY:

- A. This section includes the following:
 - 1. Temporary Use, Operation and Maintenance of Elevators during Construction
 - a. For New buildings up to 15 Stories
 - b. For New buildings over 15 Stories
 - c. For Existing Buildings
 - 2. Temporary Construction Hoists and Hoist ways (For Material and Personnel)
- 1.3 RELATED SECTIONS: include without limitation the following:
 - A. Section 01 10 00 SUMMARY
 - B. Section 01 42 00 REFERENCES
 - C. Section 01 50 00 TEMPORARY FACILITIES AND CONTROLS
 - D. Section 01 54 23 TEMPORARY SCAFFOLDS AND SWING STAGING
 - E. Section 01 77 00 CLOSE OUT PROCEDURES

PART II - PRODUCTS (Not Used)

PART III - EXECUTION

REFER TO THE ADDENDUM FOR THE APPLICABILITY OF SUB-SECTION 3.1

3.1 TEMPORARY USE, OPERATION AND MAINTENANCE OF ELEVATORS DURING CONSTRUCTION FOR NEW BUILDINGS UP TO AND INCLUDING 15 STORIES:

- A. INSTALLATION: The Contractor shall install, complete, operate, and maintain in good working order, as indicated herein, one (1) selected main elevator for the transport of employees of the Contractor and/or its subcontractors, and representatives of the DDC and other Governmental Agencies having jurisdiction of work at the project. The Contractor shall furnish, install, and maintain such elevator in good working order, including all necessary hoisting ropes, governor cables, traveling conductor cables, operating devices, temporary hand reset target annunciators, temporary signal devices, and all other permanent or temporary parts. The installation, operation and maintenance of the temporary elevator and all equipment and/or parts utilized in connection therewith shall be in accordance with the rules and regulations of all agencies and/or entities having jurisdiction over elevators in temporary use.
- B. RESPONSIBILITY: The Contractor shall be responsible for any injury to persons or damage to property arising out of the temporary elevator and all equipment and/or parts utilized in connection therewith.



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- C. COSTS: The Contractor shall be responsible for all costs in connection with the temporary elevator, including without limitation: (1) installing and operating the temporary elevator, (2) maintaining the temporary elevator in clean, proper operating condition, including the cost of lubricants and/or parts for such maintenance, (3) performing all work in pits, shaft ways and machine rooms necessary for the operation of the temporary elevator, (4) replacing the temporary elevator or any equipment or parts utilized in connection therewith, if required, due to damage, destruction or excessive wear or corrosion, except for the replacement of hoisting ropes as set forth below, (5) performing all required electrical work in connection with the temporary elevator, (6) providing all electric power required to operate the temporary elevator, (7) providing all necessary conduit and wiring connections for the proper operation and signaling of the temporary elevator, and (8) providing all labor for the operation and maintenance of the temporary elevator, including on an overtime basis if necessary. The total Contract Price shall include all costs in connection with the temporary elevator, including without limitation, the costs specified herein.
- D. COMMENCEMENT OF SERVICE: The Contractor shall begin to provide temporary elevator service using the selected main passenger elevator no later than eight (8) weeks (40 working days) after the machine room roof slab, or that portion of it surrounding the elevator shaft, has been placed. No later than three (3) weeks (15 working days) after the machine room roof slab, or that portion of it surrounding the elevator shaft, has been placed the following work shall have been completed:
 - 1. The shaft shall have been completely enclosed by either the permanent or a temporary enclosure meeting the requirements of the law.
 - 2. The machine room shall have been made completely watertight either by permanent or temporary construction. Beams or other devices, either permanent or temporary shall be provided which will enable the safe and practicable hoisting of the elevator machinery for installation.
 - There shall have been installed on all floors at the shaft way entrances to the elevator, so substantial frames and either sliding or swing doors with substantial hardware and door locks a any necessary approved wire mesh barricades for adjacent shaft ways.
 - 4. There shall have been furnished and installed solid substantial enclosures at front, back, sides and top of car platform enclosure, with emergency exit at top of car, excepting that the portion of the front at the elevator entrance shall have been provided with a substantial temporary door or gate.
- E. ELECTRICAL INSTALLATION: The Contractor, not later than 20 calendar days after the machine room roof slab or that portion of its surrounding the elevator has been placed, shall have furnished and installed temporary or permanent power and light feeders as required for the elevator used for temporary service and shall have connected such feeders to the terminals on the starter panels or controllers in the machine room to the low voltage transformers and car light outlets in the center of shaft way and for the car control and signal traveling cables. The Contractor shall make all these required connections as soon as the equipment is declared ready for such connections by the Resident Engineer.
- F. REMOVAL: When elevators for permanent use have been installed and are in condition for service, and when directed by the Commissioner, the Contractor shall remove the temporary enclosures and all temporary elevator equipment and promptly proceed with the installation of the permanent equipment as required under the Contract.
- G. INSPECTION: Before temporary elevator equipment is removed, a joint inspection of the equipment shall be made by the Contractor and the Commissioner to determine the condition of this equipment upon the discontinuation of its temporary use. If this inspection deems it necessary, the Contractor shall furnish and install new governor and compensating ropes, new traveling cables and new controller parts, etc. The car and counterweight safeties shall be thoroughly cleaned of all dirt and all foreign matter, then properly lubricated and placed in good operating condition to the satisfaction of the Commissioner. If it is determined and ordered by the Commissioner that new hoist ropes are required, such ropes shall be installed and payment therefore will be made in accordance with Article 26 of the Contract.



- H. REPLACEMENT: The Contractor shall furnish and install new equipment or parts for any equipment or parts of the temporary elevator installation that have been damaged, destroyed, or that indicate excessive wear or corrosion, excepting the replacement of hoisting ropes. All shaft ways, pits, motor rooms and sheave spaces used for temporary operation of elevators shall be thoroughly cleaned. Where lubricated rails are used they shall be washed down. If roller guides are used, all rust, dirt, etc., must be moved from the rails. The full cost of parts replacement, cleaning, etc., shall be borne by the Contractor except for the replacement of hoisting ropes.
- I. LIMITATIONS ON USE: The temporary elevator shall not be used during its operation for the hoisting of materials or the removal of rubbish, but shall be limited only to the transportation of employees of the Contractor and/or its subcontractors, and representatives of DDC and other Governmental Agencies having jurisdiction of work at the project. However, the Resident Engineer may grant special permission at specified times to the Contractor and/or its subcontractors to hoist materials, which in the Resident Engineer's opinion will not overload or damage the elevator installation, but only after such times as all plastering has been completed from the second floor up. In the event of any damage to the temporary elevator, the Contractor shall notify the Resident Engineer within 24 hours after such damage has occurred. As indicated above, the Contractor shall be responsible for the replacement of any equipment or parts of the temporary elevator that have been damaged.
- J. LIQUIDATED DAMAGES: The Contractor will be charged at the rate of \$100 per day for each day it fails to provide the temporary elevator service described in this section beginning with the 41st working day after the machine room roof slab, or that portion of it surrounding the elevator shaft, has been placed and stripped. This charge will be deducted from any amount due and owing to the Contractor.

REFER TO THE ADDENDUM FOR THE APPLICABILITY OF SUB-SECTION 3.2

3.2 TEMPORARY USE, OPERATION AND MAINTENANCE OF ELEVATORS DURING CONSTRUCTION FOR NEW BUILDING OVER 15 STORIES:

- A. INSTALLATION: The Contractor shall install, complete, operate, and maintain in good working order, as indicated herein, two (2) selected main elevators for the transport of employees of the Contractor and/or its subcontractors, and representatives of the DDC and other Governmental Agencies having jurisdiction of work at the project. The Contractor shall furnish, install, and maintain such elevators in good working order, including all necessary hoisting ropes, governor cables, traveling conductor cables, operating devices, temporary hand reset target annunciators, temporary signal devices, and all other permanent or temporary parts. The installation, operation and maintenance of the temporary elevators and all equipment and/or parts utilized in connection therewith shall be in accordance with the rules and regulations of all agencies and/or entities having jurisdiction over elevators in temporary use. The two (2) elevators shall not be operated simultaneously.
- B. RESPONSIBILITY: The Contractor shall be responsible for any injury to persons or damage to property arising out of the temporary elevators and all equipment and/or parts utilized in connection therewith.
- C. COSTS: The Contractor shall be responsible for all costs in connection with the temporary elevators, including without limitation: (1) installing and operating the temporary elevators, (2) maintaining the temporary elevators in clean, proper operating condition, including the cost of lubricants and/or parts for such maintenance, (3) performing all work in pits, shaft ways and machine rooms necessary for the operation of the temporary elevators, (4) replacing the temporary elevators or any equipment or parts utilized in connection therewith, if required due to damage, destruction or excessive wear or corrosion, except for the replacement of hoisting ropes as set forth below, (5) performing all required electrical work in connection with the temporary elevators, (6) providing all electric power required to operate the temporary elevators, (7) providing all necessary conduit and wiring connections for the proper operation and signaling of the temporary elevators, and (8) providing all labor for the operation and maintenance of the temporary elevators, including on an overtime basis if necessary. The total Contract Price shall



include all costs in connection with the temporary elevators, including without limitation, the costs specified herein.

- D. LOW RISE ELEVATOR: The Contractor shall begin to provide temporary elevator service using one (1) selected main passenger elevator no later than six (6) weeks (30 working days) after the 12th Floor slab, or that portion of it surrounding the elevator shaft, has been placed and stripped. No later than one (1) week, five (5) working days, after the 12th Floor slab, or that portion of it surrounding the elevator shaft, has been placed and stripped the following work shall have been completed:
 - 1. The shaft shall have been completely enclosed up to the 12th Floor by either the permanent or a temporary enclosure meeting the requirements of the law.
 - 2. A temporary machine room enclosure shall have been provided at the 11th Floor and shall have been made completely watertight either by permanent or temporary construction. Beams or other devices, either permanent or temporary, shall be provided which will enable the safe and practicable hoisting of the elevator machinery for installation.
 - 3. There shall have been installed on all floors up to and including the 9th Floor at the shaft entrances to the elevator, solid substantial wood frames and either sliding or swing doors with substantial hardware and door locks, also any necessary approved wire mesh barricades for adjacent shaft ways.
 - 4. There shall have been furnished and installed solid substantial enclosures at front, back, sides and top of car platform enclosure, with an emergency exit at top of car, excepting that the portion of the front at the elevator entrance shall have been provided with a substantial temporary door or gate.
- E. ELECTRICAL INSTALLATION: The Contractor not later than 10 calendar days after the 12th Floor slab or that portion of it surrounding the elevator, has been poured and stripped, shall have furnished a installed temporary or permanent power and light feeders as required for the elevator used for temporary service and shall have connected such feeders to the terminals on the starter panels or controllers in the temporary machine room, to the low voltage transformers and car light outlets in the center of the shaftway and for the car control and signal traveling cables. The Contractor shall make all these required connections as soon as the Equipment is declared ready for such connections by the Resident Engineer.
- F. HIGH RISE ELEVATOR: The Contractor shall begin to provide temporary elevator service to all floors, using a selected main passenger elevator, no later than eight (8) weeks (40 working days) after the machine room roof slab, or that portion of it surrounding the elevator shaft, has been placed. No later than three (3) weeks (15 working days) after the machine room roof slab, or that portion of it surrounding the elevator shaft, has been placed, the following work shall have been completed:
 - 1. The shaft shall have been completely enclosed by either the permanent or temporary enclosure, meeting the requirements of the law.
 - 2. The machine room shall have been made completely watertight either by permanent or temporary construction. Beams or other devices, either permanent or temporary shall be provided which will enable the safe and practicable hoisting of the elevator machinery for installation.
 - There shall have been installed on all floors at the shaft way entrances to the elevator, solid substantial frames and either sliding or swing doors with substantial hardware and door locks, also any necessary approved wire mesh barricades for adjacent shaft ways.
 - 4. There shall have been furnished and installed, solid substantial enclosures at front, back, sides and top of car platform enclosure, with an emergency exit at top of car, excepting that the portion of the front at the elevator entrance shall have been provided with a substantial temporary door or gate.
- G. ELECTRICAL INSTALLATION: The Contractor, not later than 20 calendar days after the machine room slab or that portion of it surrounding the elevator shaft has been placed, shall have furnished and installed temporary or permanent power and light feeders as required for the high rise elevator to be used



temporary service and shall have connected such feeders to the terminals on the motor-generator starter panels or controllers in the machine room, to the signal circuits low voltage transformers for the annunciators and car light outlets in the center of shaft way. The Contractor shall make all these required connections as soon as the equipment is declared ready for such connections by the Resident Engineer.

- H. When the high rise elevator is completed and ready for temporary operation, the low rise temporary elevator shall be shut down.
- I. REMOVAL: When one (1) or more elevators for permanent use have been installed and are in condition for service, and when directed by the Commissioner, the Contractor shall remove the temporary enclosures and all temporary elevator equipment, and promptly proceed with the installation of the permanent equipment as required under the Contract.
- J. INSPECTION: Before temporary elevator equipment is removed, a joint inspection of the equipment shall be made by the Contractor and the Commissioner to determine the condition of this equipment upon the discontinuation of its temporary use. If this inspection determines it necessary, the Contractor shall furnish and install new governor and compensating ropes, new traveling cables, new controller parts, etc. The car and counterweight safeties shall be thoroughly cleaned of all dirt and all foreign matter, then properly lubricated and placed in good operating condition to the satisfaction of the Commissioner. If it is determined and ordered by the Commissioner that new hoist ropes are required, such ropes shall be installed and payment therefore will be made in accordance with Article 26 of the Contract.
- K. REPLACEMENT: The Contractor shall furnish and install new equipment or parts for any equipment or parts of the temporary elevator installations that have been damaged, destroyed, or that indicate excessive wear or corrosion, excepting the replacement of hoisting ropes. All shaft ways, pits, motor rooms and sheaves spaces used for temporary operation of elevators shall be thoroughly cleaned down. Where lubricated rails are used they shall be washed down, if roller guides are used, all rust, dirt, etc., must be removed from the rails. The full cost of parts replacement cleaning, etc., shall be borne by the Contractor except for the replacement of hoisting ropes.
- L. LIMITATIONS ON USE: The temporary elevators shall not be used during their operation for the hoisting of materials or the removal of rubbish, but shall be limited only to the transportation of employees of the Contractor and/or its subcontractors, and representatives of DDC and other Governmental Agencies having jurisdiction of work at the project. However, the Resident Engineer may grant special permission at specified times to the Contractor and/or its subcontractors to hoist materials, which in the Resident Engineer's opinion will not overload or damage the elevator installation, but only after such times as all plastering has been completed from the second floor up. In the event of any damage to the temporary elevator, the Contractor shall notify the Resident Engineer within 24 hours after such damage has occurred. As indicated above, the Contractor shall be responsible for the replacement of any equipment or parts of the temporary elevator that have been damaged.
- M. LIQUIDATED DAMAGES: The Contractor will be charged at the rate of \$100 per day for each day it fails to provide the temporary elevator service described in this Section beginning with the 31st working day after the 12th Floor slab, or that portion of the 12th Floor slab surrounding the elevator shaft, has been placed and stripped. This charge will be deducted from any amount due and owing to the Contractor.

REFER TO THE ADDENDUM FOR THE APPLICABILITY OF SUB-SECTION 3:3

3.3 TEMPORARY USE, OPERATION AND MAINTENANCE OF ELEVATORS DURING CONSTRUCTION FOR EXISTING BUILDINGS:

A. The Contractor may use, at the Commissioner's discretion, one (1) selected elevator in the building for temporary operation by the Contractor for the transportation of employees of the Contractor and/or its subcontractors, and representatives of DDC and other Governmental Agencies having jurisdiction over the work at the Project. The operation of the temporary elevator and all equipment and/or parts utilized in



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connection therewith shall be in accordance with the rules and regulations of all agencies and/or entities having jurisdiction over elevators in temporary use.

- RESPONSIBILITY: The Contractor shall be responsible for any injury to persons or damage to property B. arising out of the temporary elevator and all equipment and/or parts utilized in connection therewith.
- REPLACEMENT: The Contractor shall furnish and install new equipment or parts for any equipment or C. parts of the elevator for temporary operation that have been damaged, destroyed, or that indicate excessive wear or corrosion, excepting the replacement of hoisting ropes. All shaft ways, pits, motor rooms and sheave spaces used for temporary operation of elevators shall be thoroughly cleaned down. Where lubricated rails are used they shall be washed down, if roller guides are used, all rust, dirt, etc., must be moved from the rails. The full cost of parts replacement, cleaning, etc., shall be borne by the Contractor except for the replacement of hoisting ropes. If it is determined and ordered by the Commissioner that new hoist ropes are required, such ropes shall be installed and payment therefore will be made in accordance with Article 26 of the Contract.
- LIMITATIONS ON USE: The temporary elevator shall not be used during its operation for the hoisting of D. materials or the removal of rubbish, but shall be limited only to the transportation of employees of the Contractor and/or its subcontractors, and representatives of DDC and other Governmental Agencies having jurisdiction of work at the project. However, the Resident Engineer may grant special permission at specified times to the Contractor and/or its subcontractors to hoist materials, which in the Resident Engineer's opinion will not overload or damage the elevator installation. In the event of any damage to the temporary elevator, the Contractor shall notify the Resident Engineer within 24 hours after such damage has occurred. As indicated above, the Contractor shall be responsible for the replacement of any equipment or parts of the temporary elevator that have been damaged.
- LIQUIDATED DAMAGES: The Contractor will be charged at the rate of \$100 per day for each day it fail E. to provide elevator services described in this section beginning with 15 consecutive calendar days from Notice to Proceed. This charge will be deducted from any amount due and owing to the Contractor.

TEMPORARY HOISTS AND HOISTWAYS (FOR MATERIAL AND PERSONNEL): 3.4

- RESPONSIBILITY: The Contractor shall provide adequate numbers of material hoists for the most Α. expeditious performance of all parts of the work including the work of all its subcontractors. .
- B. LOCATIONS: No hoists shall be constructed at such locations as will interfere with, or affect the construction of, floor arches, or the work of subcontractors. The hoists may be located at the exterior sides of the structure or in the courtyard and extend upward adjacent to the line of window openings. The hoists shall be located a sufficient distance from the exterior walls and be so protected as to prevent any of the permanent work from being damaged, stained or marred.
- ELEVATOR SHAFT: Wherever possible, one or more of the permanent elevator shafts may be used as C. temporary hoist ways, providing such use complies with the requirements of the Building Code of the City of New York and has been approved by the Commissioner, and providing further it entails no interference with the progress of the work.
- PROTECTION FOR INTERIOR HOISTS: All interior material hoist ways shall be enclosed on each floor and shall be adequately protected with appropriate safety guards. In no event shall the protection be less than that required by law.

END OF SECTION 01 54 11



SECTION 01 54 23 TEMPORARY SCAFFOLDING AND PLATFORMS

PARTI- GENERAL

1.1 RELATED DOCUMENTS:

- A. The following documents apply to all required work for the Project: (1) the Contract Drawings, (2) the Specifications, (3) the General Conditions, (4) the Addendum, and (5) the Contract [City of New York Standard Construction Contract].
- B. Section 01 35 26: Safety Requirements Procedures.
- C. The Contractor shall comply with the requirements of "The City of New York Department of Design and Construction Safety Requirements". This document is included in the Information for Bidders.

1.2 SUMMARY:

- A. This Section includes administrative and general procedural requirements for Temporary Scaffolding and Platforms, including:
 - 1. Conformance
 - 2. Responsibility
 - 3. Jobsite Documentation and Submittals
 - 4. Inspections
- B. This Section governs ALL scaffold used on DDC project sites including, but not limited to, Suspended Scaffold, Supported Scaffold and Sidewalk Sheds.

1.3 CONFORMANCE:

A. Unless otherwise indicated, the Contractor is responsible for providing, erecting, installing and maintaining all temporary scaffolding and platforms which shall comply with requirements of Chapter 33 (Safeguards During Construction or Demolition) of the NYC Building Code, NYC Local Law 52 of 2005, OSHA Construction Standard 1926 Subpart L, and furnishing the items and personnel set forth in this section.

1.4 RESPONSIBILITY:

- A. Jobsite Safety Coordinator: The Contractor shall designate and employ a Jobsite Safety Coordinator, who shall be a competent person, who shall have a daily presence on the project site during scaffold use. This designee must possess and maintain a valid New York City Department of Buildings supported scaffold certificate of completion. An alternate shall also be designated, in the event that the Jobsite Safety Coordinator is absent. The Jobsite Safety Coordinator shall:
 - 1. Verify completeness of documentation and submittals (as described below).
 - 2. Verify that inspections are performed, including pull tests (see below), reports are filed and reported deficiencies are corrected.
 - 3. Monitor trades using scaffold.
 - 4. Limit access to scaffold areas that are tagged for non-use.
 - 5. Inform trades of scaffold load limitations.
 - 6. Monitor loading of decks.
 - 7. Verify that any ties that are temporarily removed are properly restored in the same shift.
 - 8. Verify that outriggers and planks that are moved are properly set up and secured.
 - 9. Verify that all scaffold decks in use have proper access/egress.
 - 10. Verify that all open sides of decks in excess of 14 inches have proper guardrails and toe-boards.



- Notify appropriate parties, including but not limited to the Resident Engineer, site safety coordinator / monitor, site safety consultant, scaffold users, contractor and the scaffold engineer, of misuses, non-conformances, hazards and accidents.
- Keep a log of significant actions and events connected with the scaffolding.
- B. The Contractor shall be responsible for erecting, maintaining and dismantling the scaffolding and/or sidewalk shed in conformance with requirements of the New York City Building Code, OSHA and the Contract documents, including the specifications. The Contractor shall also be guided by generally accepted standards of scaffold industry practice as promulgated by the Scaffold Industry Association.
- C. The Contractor shall require the subcontractor responsible for erecting the scaffolding to engage a Scaffold Engineer, licensed as a professional engineer by the State of New York. The Scaffold Engineer shall be responsible to ensure the following: (1) that the installation design is in compliance with requirements of the New York City Building Code and OSHA, (2) that the design comports with the capabilities of the components and the characteristics of the site, (3) that scaffold loads on the host building, including netting, have been properly considered, and (4) that the design documents provide accurate information for erectors and users.
- D. Scaffold users are trade contractors assigned to work on the scaffold. Training certificates from a New York City Department of Buildings approved training provider are mandatory. These users have the duty to become familiar with the New York City Building Code and OSHA requirements germane to users, to obey the instructions of the Jobsite Safety Coordinator and to inform the Jobsite Safety Coordinator of known hazards, non-conformances or violations.

1.5 **JOBSITE DOCUMENTATION AND SUBMITTALS:**

The Contractor shall prepare, obtain and submit the following to the Resident Engineer:

- NYC Department of Buildings permit(s) for scaffold and sidewalk sheds (as applicable) including filing A. applications signed and sealed by a Professional Engineer licensed in the State of New York;
- B. Site logistics plan / site safety plan;
- Installation drawing(s), design and product data to be provided for all scaffold(s) and shed(s) must C. include, at a minimum:
 - 1. Plan(s);
 - 2. Elevation(s);
 - 3. Duty load designation; "standard" (150 psf live load) or "heavy duty" (300 psf live load).
 - 4. Details including base support, anchors and ties:
 - 5. Notes and specifications including load limits, number of planked levels, tie spacing, netting, and sequence of installation and removal.
 - 6. Anchorage into sound material.
 - 7. Load limits based on pull tests;
 - 8. Specifications for pull test(s), method, proof load and the number of trials;
 - 9. Elevations, levels or heights, where anchorage is made into masonry;
 - 10. Specifications for frames, planks, screw jacks, anchors, and any other ancillary hardware:
 - 11. Samples for anchors, ties and netting:
 - 12. Sequence of operations for erection and demolition;
 - 13. Location plan, heights, widths, "jumps" over doorways and driveways:
 - 14. Specify size, maximum span and maximum spacing of headers and stringers:
 - 15. Specify legs, girts, braces, nailing and connections;
 - All sidewalk sheds shall be designed, engineered, signed and sealed by a Professional Engineer 16. licensed in the State of New York:
 - Generic (not job specific) engineering drawings are satisfactory for standard sheds and arrangements.





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b. Special engineering is required for custom sheds, site-specific problems or non-standard arrangements.

1.6 **INSPECTIONS:**

- Signed inspection reports shall be issued for each inspection and pull-test below, and shall be logged and A. maintained on site by the Jobsite Safety Coordinator for the duration of the project.
- B. Pull testing shall be required during design, and during or post erection, where anchorage is made into masonry. The Scaffold Engineer shall specify the test method, proof load and the number of trials.
- Sidewalk sheds shall be inspected after initial installation, major modification, or damage and thence C. every three months. Inspections shall be by a Scaffold Engineer for custom sheds and by a Competent Person employed by the Contractor for standard sheds.
- Scaffolds shall be inspected by the Scaffold Engineer during erection, post-erection and prior to use and D. thence every three months. The Scaffold Engineer shall repeat inspections after major alteration/modification, damage.
- A Qualified Person assigned by the Contractor shall inspect the progress of erection and dismantling, and E. the condition and integrity of the sidewalk sheds after high winds, major storms and at least once per month during usage.
- A Qualified Person assigned by the Contractor shall inspect the progress of erection and dismantling at F. least weekly, and the condition and integrity of the scaffold after high winds, major storms and at least once per month during usage.
- Scaffolds and Sidewalk Sheds shall be inspected daily by the Jobsite Safety Coordinator or alternate prior G. to use by scaffold users. The inspection results must be recorded in the maintenance log, and be available on-site at all times.
- H. At the completion of the project, submit all inspection documents as Miscellaneous Record Documents in accordance with Section 01 78 39, CONTRACT RECORD DOCUMENTS.

LADDERS AND STAIRS: 1.7

A. The Contractor shall provide and maintain ladders or temporary stairs extending from the street to the first story, and to and from every floor and roof level of the project.

ACCESS AND EXITS: 1.8

The ladders or temporary stairs shall be of acceptable size, number and location, so that proper and A. convenient access may be had by those required to proceed to and from all parts of the project.

PART II - PRODUCTS (Not Used)

PART III - EXECUTION (Not Used)

END OF SECTION 01 54 23



No Text



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SECTION 01 73 00 EXECUTION

PART I - GENERAL

1.1 RELATED DOCUMENTS:

A. The following documents apply to all required work for the Project: (1) the Contract Drawings, (2) the Specifications, (3) the General Conditions, (4) the Addendum, and (5) the Contract [City of New York Standard Construction Contract].

1.2 SUMMARY:

- A. This Section includes general procedural requirements governing execution of the Work including without limitation the following:
 - 1. Delivery of Materials
 - 2. 'Contractor's Superintendent
 - 3. Surveys
 - 4. Borings
 - 5. Examination
 - 6. Environmental Assessment
 - 7. Preparation
 - 8. Deferred Construction
 - 9. Installation
 - 10. Permits
 - 11. Transportation
 - 12. Sleeves and Hangers
 - 13. Sleeve and Hanger Drawings
 - 14. Cutting and Patching
 - 15. Location of Partitions
 - 16. Furniture and Equipment
 - 17. Removal of Rubbish and Surplus Material
 - 18. Cleaning
 - 19. Security And Protection of Work Site
 - 20. Maintenance of Site and Adjoining Property
 - 21. Maintenance of Project Site
 - 22. Safety Precautions for Control Circuits
 - 23. Obstructions in Drainage Lines

1.3 RELATED SECTIONS: Include without limitation the following:

Α.	Section 01 10 00	SUMMARY
B.	Section 01 31 00	PROJECT MANAGEMENT AND COORDINATION
C.	Section 01 33 00	SUBMITTAL PROCEDURES
D.	Section 01 74 19	CONSTRUCTION WASTE MANAGEMENT & DISPOSAL
E.	Section 01 77 00	CLOSEOUT PROCEDURES
F	Section 01 78 39	CONTRACT RECORD DOCUMENTS



1.4 DEFINITIONS:

- A. Refer to Article 2 of the Contract for definition of terms, words and expressions used in the General Conditions not otherwise defined herein.
- B. Design Consultant: "Design Consultant" shall mean the entity responsible for providing design services for the Project, including without limitation, preparing the construction documents (drawings and specifications) and providing services in connection with such documents during construction. The entity serving as the "Design Consultant" may be a corporation, firm, partnership, joint venture, individual or combination thereof. Such entity may be either an employee(s) of the City or an entity engaged by the City to provide such services.

1.5 QUALITY ASSURANCE:

A. Land Surveyor Qualifications: A professional land surveyor who is licensed in the State of New York and who is experienced in providing land-surveying services of the kind indicated.

PART II - PRODUCTS (Not Used)

PART III - EXECUTION

3.1 DELIVERY OF MATERIALS:

- A. Material Orders: The Contractor shall furnish to the Commissioner a copy of each material order indicating date of order and quantity of material, and shall also notify the Commissioner when material have been delivered to the site and in what quantities.
- B. Ample Quantities: The Contractor shall deliver materials in ample quantities to insure the most prompt and uninterrupted progress of the work so as to complete the work within the Contract time.
- C. Containers: The manufacturer's containers shall be delivered with unbroken seals and shall bear proper labels.
- D. Deliveries: The Contractor shall coordinate deliveries in order to avoid delaying or impeding the progress of the work.
- E. Handling: The Contractor shall provide equipment and personnel to handle products by methods to prevent soiling or damage.
 - 1. Promptly inspect shipments to assure products comply with requirements, quantities are correct, and products are undamaged.
 - 2. Promptly return damaged shipments or incorrect orders to manufacturer.
 - 3. For materials or equipment to be reused or salvaged, use special care in removal, storage and reinstallation to insure proper function in completed work.
- F. Storage: Store products in accordance with provisions of Article 3.1, and periodically inspect to assure that stored products are undamaged and are maintained under required conditions.
- G. Stacking: All materials shall be properly stacked in convenient places adjacent to the site, or where directed, and protected in a satisfactory manner. Stacked materials shall be so arranged as to not interfere with visibility of traffic control devices.
- H. Overloading: If authority is given to store materials in any part of the project area, they shall be so stored as to cause no overloading.



1. No Interference: If it becomes necessary to remove and restack materials to avoid impeding the progress of any part of the work or interfering with the work to be done by any trade subcontractor, the Contractor shall remove and restack such materials at no additional cost to the City.

3.2 CONTRACTOR'S CONSTRUCTION SUPERINTENDENT:

- A. Contractor's Construction Superintendent: The Contractor shall devote its time and personal attention to the work and shall employ and retain at the project site, from the commencement until the entire completion of the work, a Contractor's Construction Superintendent. The Contractor's Construction Superintendent shall be registered with the New York City Department of Buildings in compliance with the Construction Superintendent Rule of the City of New York and shall be competent and capable of maintaining proper supervision and care of the work and shall be acceptable to the Commissioner. The Construction Superintendent shall, in the absence of the Contractor, and irrespective of any superintendent or foreman employed by any subcontractor, shall see that the instructions of the Commissioner are carried out.
- B. Replacement: The Contractor's Construction Superintendent on the job shall not be changed or removed without the consent of the Commissioner.

REFER TO THE ADDENDUM FOR THE APPLICABILITY OF SUB-SECTION 3.3

3.3 SURVEYS:

- A. Line and Grade: The City will establish a baseline and bench mark near the site of the work for use of the Contractor in connection with the performance of the work.
- B. Responsibility: The Contractor shall establish all other lines and elevations required for its work and shall be solely responsible for the accuracy thereof.
- C. Safeguard All Points: The Contractor shall safeguard all points, stakes, grade marks and bench marks made or established by the Contractor on the work, shall re-establish same if disturbed and bear the entire expense of rectifying the work improperly installed due to not maintaining, not protecting or removing without authorization such established points, stakes, or marks.
- D. City Monuments and Markers: No work shall be performed near City monuments or marks so as to disturb them until the said monuments or marks have been referenced or reset or otherwise disposed of by the relevant Agency or party who installed them.
- E. Foundations: The Contractor shall furnish certification from a licensed Surveyor that all portions of the foundation work are located in accordance with the Contract Drawings and at the elevations required thereby. This certification shall show the actual locations and the actual elevations of all the work in relation to the locations and elevations shown on the Contract Drawings, including but not restricted to the following:
 - 1. The locations and elevations of all piles, if any.
 - 2. Elevations of tops of all spread footings, tops of pile caps, and tops of all foundation walls, elevator pit walls and ramp walls.
 - 3. Location of all footing centers and pier centers including those for exterior wall columns.
 - 4. Location of all foundation walls including wall columns, elevator pit walls and ramp walls.
- F. Wall Lines: After the first courses of masonry or stone have been laid, the Contractor shall establish the permanent lines of exterior walls. The Contractor shall furnish promptly, certification from a licensed Surveyor, in the form of signed original drawings showing the exact location of such wall lines, of all portions of all structures. Except at its own risk, the Contractor shall not proceed further with the erection of walls until the Surveyor's certification has been submitted and verified for correct location of wall lines.



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- G. Surveyor: The Surveyor selected for any of the purposes mentioned in Paragraph E and Paragraph F above, and Paragraph I below, shall be a land Surveyor licensed in the State of New York and shall be subject to the approval of the Commissioner. The Surveyor shall not be a regular employee of the Contractor, nor shall the Surveyor have any interest in the Contract. The Surveyor shall not be employed by the Contractor in laying out any work, it being intended that the Surveyor's certification shall represent an independent and disinterested verification of such layout. The Surveyor shall report to the Department of Design and Construction's Resident Engineer each time upon arrival to and departure from the site and review with the Resident Engineer the data required for the project.
- H. Final Certification: Final certification shall be submitted upon completion of the work or upon completion of any subdivision of the work as directed by the Commissioner. Any exceptions or deviations from the drawings shall be noted on the final certificate and there shall be included any maps, plates, notes, pertinent documents and data necessary, in the opinion of the Commissioner, to constitute a full and complete report.
- I. Final Survey: The Contractor shall submit to DDC for submission to the Department of Buildings a final Survey by the licensed Surveyor showing the location of the new Structure, before completion of the Structure. This Survey shall show the location of the first tier of beams or of the first floor; the finish grades of the open spaces on the plot; the established curb level and the location of all other Structures on the plan, together with the location and boundaries of the lot or plot upon which the Structure is constructed, curb cuts, all yard dimensions, etc.

REFER TO THE ADDENDUM FOR THE APPLICABILITY OF SUB-SECTION 3.4

3.4 BORINGS:

- A. The work of this article shall be the responsibility of the Contractor unless otherwise indicated.
- B. Reference Drawings: The Boring Drawings as listed on the title sheet are for information to the bidder and are to be used under the conditions as follows:
 - 1. Boring Logs: shown on the Boring Drawings, record information obtained under engineering supervision in the course of exploration carried out by or under the direction of forces of the Department of Design and Construction at the site.
 - 2. Soils and Rock Samples: All inferences are drawn from the indications observed as made by engineering and scientific personnel. All such inferences and all records of the work including soil samples and rock cores, if any, are available to bidders for inspection.
 - 3. Certification of Samples: The City certifies that the work was carried out as stated, and that the soil samples and rock cores, if any were referred to, were actually taken from the site at the times, places and in the manner indicated. The samples are available for inspection in the Department of Design and Construction Subsurface Exploration Section.
 - 4. Bidder's Responsibility: The bidder, however, is responsible for any conclusions to be drawn from the work. If the bidder accepts those of the City, it must do so at its own risk. If the bidder prefers not to assume such risk, the bidder is under the obligation of employing its own experts to analyze the available information, and must be responsible for any consequences of acting on their conclusions.
 - 5. Continuity Not Guarantee: The City does not guarantee continuity of conditions shown at actual boring locations over the entire site. Where possible, borings are located to avoid all obstructions and previous construction which can be found by inspection of the surface and the bidder is required to estimate the influence of such features from its own inspection of the site.





3.5 EXAMINATION:

- A. Existing Conditions: The existence and location of site improvements, utilities, and other construction indicated as existing are not guaranteed. Before beginning work, investigate and verify the existence and location of mechanical and electrical systems and other construction affecting the Work.
 - 1. Before construction, verify the location and points of connection of utility services.
- B. Existing Utilities: The existence and location of underground utilities and other construction indicated as existing are not guaranteed. Before beginning site work, investigate and verify the existence and location of underground utilities and other construction affecting the Work.
 - 1. Before construction, verify the location and invert elevation at points of connection of sanitary sewer, storm sewer, and water-service piping; and underground electrical services.
 - 2. Furnish location data for work related to Project that must be performed by public utilities serving Project site.
- C. Acceptance of Conditions: Examine substrates, areas, and conditions, with the subcontractor responsible for installation or application present where indicated, for compliance with requirements for installation tolerances and other conditions affecting performance. Record observations.
 - 1. Verify compatibility with and suitability of substrates, including compatibility with existing finishes or primers.
 - 2. Examine roughing-in for mechanical and electrical systems to verify actual locations of connections before equipment and fixture installation.
 - 3. Examine walls, floors, and roofs for suitable conditions where products and systems are to be installed.
 - 4. Proceed with installation only after unsatisfactory conditions have been corrected. Proceeding with the Work indicates acceptance of surfaces and conditions.

3.6 ENVIRONMENTAL ASSESSMENTS:

- A. City Responsibilities: An Environmental Assessment and survey is performed by the NYC DDC and its findings are included in the Contract Documents. In accordance with the NYC Administrative Code Title 15 Chapter 1 an asbestos survey is required to be performed by an Asbestos Investigator certified by the NYC Department of Environmental Protection (DEP) to identify the presence of asbestos containing material (ACM) prior to any alteration, renovation or demolition activity. The findings of such survey are required for the submission of approvals and permits issued by the NYC Department of Buildings (DOB). When the findings indicate that asbestos containing material is present and will be disturbed during the alteration, renovation or demolition activity then abatement design specifications will be incorporated into the contract documents. The Contractor shall comply with all federal, state and local asbestos regulations affecting the work for this Contract.
- B. Contractor Responsibility: The Contractor shall comply with all federal, state and local environmental regulations, including without limitation USEPA and OSHA regulations which require the Contractor to assess if lead based paint will be disturbed during the work in order to protect his/her workers and the building occupants from migration of lead dust into the air. The Contractor shall comply with all federal, state and local environmental waste disposal regulation which may be required during the work. The Contractor is required to hire licensed abatement and disposal companies for the requisite work.

3.7 PREPARATION:

- A. Field Measurements: The Contractor shall verify all dimensions and conditions on the job so that all work will properly join the existing work.
- B. The Contractor, before commencing work, shall examine all adjoining work on which its work is in any way dependent on good workmanship in accordance to the intent of the Specifications and the Contract



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Drawings. The Contractor shall report to the Commissioner any condition that will prevent it from performing work that conforms to the required standard.

- C. Existing Utility Information: Furnish information to the Commissioner that is necessary to adjust, move, or relocate existing utility structures, utility poles, lines, services, or other utility appurtenances located in or affected by construction. Coordinate with authorities having jurisdiction.
- D. Space Requirements: Verify space requirements and dimensions of items shown diagrammatically on Drawings.

3.8 DEFERRED CONSTRUCTION:

- A. Where necessity for deferred construction is certified by the Commissioner, in order to permit the installation of any item or items of equipment required to be furnished and installed concurrent with the time allowed for doing and completing the work of the Contract, the Contractor shall defer construction work limited to adequate areas as approved by the Commissioner.
- B. The Contractor shall confer with the affected trade subcontractors and ascertain arrangements, time and facilities necessary to be made by the Contractor in order to execute the provisions specified herein.

3.9 INSTALLATION:

- A. General: Locate the Work and components of the Work accurately, in correct alignment and elevation, as indicated.
 - 1. Make vertical work plumb and make horizontal work level.
 - Where space is limited, install components to maximize space available for maintenance and eas of removal for replacement.
 - 3. Conceal pipes, ducts, and wiring in finished areas, unless otherwise indicated.
- B. Comply with manufacturer's written instructions and recommendations for installing products in applications indicated.
- C. Install products at the time and under conditions that will ensure the best possible results. Maintain conditions required for product performance until Substantial Completion.
- D. Conduct construction operations so no part of the Work is subjected to damaging operations or loading in excess of that expected during normal conditions of occupancy.
- E. Tools and Equipment: Do not use tools or equipment that produce harmful noise levels.
- F. Templates: Obtain and distribute to the parties involved templates for work specified to be factory prepared and field installed. Check Shop Drawings of other work and work of trade subcontractors to confirm that adequate provisions are made for locating and installing products to comply with indicated requirements.
- G. Anchors and Fasteners: Provide anchors and fasteners as required to anchor each component securely in place, accurately located and aligned with other portions of the Work.
 - 1. Mounting Heights: Where mounting heights are not indicated, mount components at heights directed by the Design Consultant.
 - 2. Allow for building movement, including thermal expansion and contraction.
 - Coordinate installation of anchorages. Furnish setting drawings, templates, and directions for installing anchorages, including sleeves, concrete inserts, anchor bolts, and items with integral anchors, that are to be embedded in concrete or masonry. Deliver such items to Project site in time for installation.



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- H. Joints: Make joints of uniform width. Where joint locations in exposed work are not indicated, arrange joints for the best visual effect. Fit exposed connections together to form hairline joints.
- I. Hazardous Materials: Use products, cleaners, and installation materials that are not considered hazardous.

3.10 PERMITS:

A. The Contractor shall comply with all local, state and federal laws, rules and regulations affecting the Work of this Project, including, without limitation, (1) obtaining all necessary permits for the performance of the Work prior to commencement thereof, and (2) complying with all requirements for the disposal of demolition and/or construction debris, waste, etc., including disposal in City landfills. The Contractor shall be responsible for all costs in connection with such regulatory compliance, unless otherwise specified in the Contract.

3.11 TRANSPORTATION:

- A. Availability: It shall be the duty of the Contractor to determine the availability of transportation facilities and dockage for the use of its employees, equipment and material and the conditions under which such use will be permitted.
- B. Costs: If transportation facilities and dockage are available and are permitted to be used by the governmental agency having jurisdiction, the Contractor shall pay all necessary costs and expenses, and abide by all rules and regulations promulgated in connection therewith.
- C. Vehicles: With respect to the use of vehicles on highways and bridges, the Contractor's attention is directed to the limitations set forth in the Rules of the City of New York, Title 34, Chapter 4, Section 4-15.
- D. Continued Use: It is understood that the Commissioner makes no warranty as to the continued use by the Contractor of such facilities.

REFER TO THE ADDENDUM FOR THE APPLICABILITY OF SUB-SECTION 3.12

3.12 SLEEVES AND HANGERS:

- A. Coordinate with Progress Schedule: The Contractor shall promptly furnish and install conduits, outlets, piping sleeves, boxes, inserts and all other materials and equipment that is to be built into the work in conformity with the requirements of the project.
- B. Cooperation of Subcontractors: All subcontractors shall fully cooperate with each other in connection with the performance of the above work as "cutting in" new work is neither contemplated nor will it be tolerated.
- C. Timeliness: In the event that timely delivery of sleeves and other materials cannot be made, and to avoid delay, the Contractor may arrange to have boxes or other forms set at the locations where the piping or other material is to pass through or into the slabs, walls or other work. Upon the subsequent installation of the sleeves or other material, the Contractor shall fill around them with materials as required by the Contract. The necessary expenditures incurred for the boxing out and filling in shall be borne by the Contractor.
- D. Inserts: The Contractor is to install strip inserts four (4) foot on center and perpendicular to beams in ceiling slabs of boiler, machine and mechanical equipment rooms. Inserts are to be installed for strippable concrete slabs only.



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REFER TO THE ADDENDUM FOR THE APPLICABILITY OF SUB-SECTION 3.13

3.13 SLEEVE AND PENETRATION DRAWINGS:

A. As soon as practicable after the commencement of work and when the order in which concrete for the first slabs, walls, etc. to be poured is determined, the Contractor shall submit to the DDC a sketch indicating the location and size of all penetrations for sleeves, ducts, etc. which will be required to accommodate the mechanical trades, in order to determine if such penetrations will materially weaken the project's structure. The sketch shall be stamped and returned if approved and/or comments will be transmitted. The Contractor shall continue to submit sketches as the pouring schedule and the concrete work progresses and, until approvals for the penetration sketches have been given. The Contractor shall not predicate its layout work on unapproved sketches.

3.14 CUTTING AND PATCHING:

- A. Responsibility: The Contractor shall do all cutting, patching and restoration required by its work, unless otherwise particularly specified in the Specifications.
- B. Restore Work: The Contractor shall restore any work damaged during the performance of the work.
- C. Competent Workers: All restoration work shall be done to the satisfaction of the Commissioner by competent workers skilled in the trade required by such restoration. If, in the judgment of the Commissioner, workers engaged in restoration work are incompetent, they shall be replaced immediately by competent workers.
- Structural Elements: Do not cut and patch structural elements without the prior approval, in writing, of the D. Resident Engineer.
- E. Operational Elements: Do not cut and patch operating elements and related components.
- F. Visual Requirements: Do not cut and patch construction in a manner that results in visual evidence of cutting and patching. Do not cut and patch construction exposed on the exterior or in occupied spaces in a manner that would, in Commissioner's opinion, reduce the building's aesthetic qualities. Remove and replace construction that has been cut and patched in a visually unsatisfactory manner.
- Existing Warranties: Remove, replace, patch, and repair materials and surfaces cut or damaged during cutting and patching operations, by methods and with materials so as not to void existing warranties.
- Η. Removals: The Contractor must remove from the premises all demolished materials of every nature or description resulting from cutting, patching and restoration work, in accordance with the requirements hereinafter stipulated under Sub-Section 3.17 herein and as further required in Section 01 74 19, CONSTRUCTION WASTE MANAGEMENT AND DISPOSAL.

REFER TO THE ADDENDUM FOR THE APPLICABILITY OF SUB-SECTION 3.15

3.15 LOCATION OF PARTITIONS:

A. Within three (3) weeks after the concrete slabs have been poured on each floor level, the Contractor shall immediately locate accurately all of the partitions, including the door openings, on the floor slabs in a manner approved by the Resident Engineer.





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3.16 FURNITURE AND EQUIPMENT:

- A. Responsibility: The Contractor is responsible for moving all loose furniture and/or equipment in all areas where the location of such furniture and/or equipment interferes with the proper performance of its work.
- B. Protection: All such furniture and/or equipment must be adequately protected with dust cloths and returned to their original locations when directed to do so by the Resident Engineer.

3.17 REMOVAL OF RUBBISH AND SURPLUS MATERIALS:

- A. Of the waste that is generated during demolition, as many of the waste materials as economically feasible, and as stated here, shall be reused, salvaged, or recycled. Waste disposal in landfills shall be minimized. Comply with requirements of Section 01 74 19, CONSTRUCTION WASTE MANAGEMENT AND DISPOSAL.
- B. Rubbish: Rubbish shall not be thrown from the windows or other parts of the project. Mason's rubbish, dirt and other dust-producing material shall be wetted down periodically.
- C. Location: The Contractor shall clean Project site and work area daily and sweep up and deposit, at a location designated on each floor, all of its rubbish, debris and waste materials, as it accumulates and when directed by the Resident Engineer. Wood crating shall be broken up, neatly bundled, tied and stacked ready for removal and be deposited at a location designated on each floor.
 - Comply with requirements in NYC Fire Department for removal of combustible waste materials and debris.
 - 2. Do not hold materials more than 7 days during normal weather or 3 days if the temperature is expected to rise above 80 degrees F (27 degrees C).
 - 3. Containerize hazardous and unsanitary waste materials separately from other waste. Mark containers appropriately and dispose of legally, according to regulations.
- D. Laborers: The Contractor shall be responsible for the removal of all rubbish, etc., from the site. The Contractor shall remove from the designated locations all piles of rubbish, debris, waste material and wood crating as they accumulate and when directed by the Resident Engineer, and shall remove them from the site. The Contractor shall employ and keep engaged for this purpose an adequate number of laborers.
- E. Surplus Materials: The Contractor shall remove from the site all surplus materials when there is no further use for same.
- F. Tools And Materials: At the conclusion of the work, all erection plant, tools, temporary structures and materials belonging to the Contractor shall be promptly removed.
- G. Waste Disposal: Burying or burning waste materials on-site will not be permitted. Washing waste materials down sewers or into waterways will not be permitted.

3.18 CLEANING:

- A. The Contractor shall thoroughly clean all equipment and materials furnished and installed and shall deliver such materials and equipment undamaged in a clean and new appearing condition up to date of Final Acceptance.
- B. Site: Maintain Project site free of waste materials and debris.
- C. Installed Work: Keep installed work clean. Clean installed surfaces according to written instructions of manufacturer or fabricator of product installed, using only cleaning materials specifically recommended. If specific cleaning materials are not recommended, use cleaning materials that are not hazardous to health or property and that will not damage exposed surfaces.
- D. Concealed Spaces: Remove debris from concealed spaces before enclosing the space.

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- E. Exposed Surfaces in Finished Areas: Clean exposed surfaces and protect as necessary to ensure freedom from damage and deterioration up to date of Final Acceptance.
- F. During handling and installation, clean and protect construction in progress and adjoining materials already in place. Apply protective covering where required to ensure protection from damage or deterioration up to date of Final Acceptance.

3.19 SECURITY AND PROTECTION OF WORK SITE:

- A. Provide protection of installed work, including appropriate protective coverings and maintain conditions that ensure installed Work is without damage or deterioration up to date of Final Acceptance.
- B. Comply with manufacturer's written instructions for temperature and relative humidity.
- C. Secure and protect work and work site against damage, loss, injury, theft and/or vandalism.
- D. Maintain daily sign-in sheets of workers and visitors and make the sheets available to the Commissioner

3.20 MAINTENANCE OF SITE AND ADJOINING PROPERTY:

- A. The Contractor shall take over and maintain the Project site, after order to start work.
- B. The Contractor shall be responsible for the safety of the adjoining property, including sidewalks, paving, fences, sewers, water, gas, electric and other mains, pipes and conduits etc. until the date of Final Acceptance. The Contractor shall, at its own expense, except as otherwise specified, protect same and maintain them in at least as good a condition as that in which the Contractor finds them.
- C. All pavements, sidewalks, roads and approaches to fire hydrants shall be kept clear at all times, maintained and repaired to serviceable condition with materials to match existing.
- Provide and keep in good repair all bridging and decking necessary to maintain vehicular and pedestrial traffic.
- E. The Contractor shall also remove all snow and ice as it accumulates on the sidewalks within the Contract Limits Lines.

3.21 MAINTENANCE OF PROJECT SITE:

- A. The Contractor shall take over and maintain all project areas, after order to start work.
- B. Until the date of Final Acceptance, the Contractor shall be responsible for the safety of all project areas, including water, gas, electric and other mains and pipes and conduits and shall at the Contractor's own expense, except as otherwise specified, protect same and maintain them in at least as good condition as that in which the Contractor finds them.
- C. All pavements, sidewalks, roads and approaches to fire hydrants shall be kept clear at all times, maintained, and if damaged, repaired to serviceable conditions with materials to match existing.
- The Contractor shall keep the space for the Resident Engineer in a clean condition.

3.22 SAFETY PRECAUTIONS FOR CONTROL CIRCUITS:

A. Control circuits, the failure of which will cause a hazard to life and property, shall comply with the New York City Dept. of Buildings, Bureau of Electrical Control requirements.

3.23 OBSTRUCTIONS IN DRAINAGE LINES:

A. The Contractor shall be responsible for all obstructions occurring in all drainage lines, fittings and fixtures after the installations and cleaning of these drainage lines, fittings and fixtures as certified by the Resident Engineer. Roof drains shall be kept clear of any and all debris. Any stoppage shall be repaired immediately at the expense of the Contractor.

END OF SECTION 01 73 00



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SECTION 01 74 19 CONSTRUCTION WASTE MANAGEMENT AND DISPOSAL

PART I - GENERAL

1.1 RELATED DOCUMENTS:

A. The following documents apply to all required work for the Project: (1) the Contract Drawings, (2) the Specifications, (3) the General Conditions, (4) the Addendum, and (5) the Contract [City of New York Standard Construction Contract].

1.2 SUMMARY:

- A. This section includes administrative and procedural requirements for the management and disposal of construction waste and includes the following requirements:
 - 1. Waste Management Goals
 - 2. Waste Management Plan
 - 3. Progress Reports
 - 4. Progress Meetings
 - 5. Management Plan Implementation
- B. This Section includes:
 - 1. Definitions
 - 2. Waste Management Performance Requirements
 - 3. Reference Resources
 - 4. Submittals
 - 5. Quality Assurance
 - 6. Waste Plan Implementation
 - 7. Additional Demolition and Salvage Requirements
 - 8. Disposal

1.3 RELATED SECTIONS: Include without limitation the following:

- A. Section 01 10 00 SUMMARY
- B. Section 01 31 00 PROJECT MANAGEMENT AND COORDINATION
- C. Section 01 32 00 CONSTRUCTION PROGRESS DOCUMENTATION
- D. Section 01 73 00 EXECUTION
- E. Section 01 77 00 CLOSEOUT PROCEDURES
- F. Section 01 78 39 CONSTRUCTION RECORD DOCUMENTS
- G. Section 01 81 13 SUSTAINABLE DESIGN REQUIREMENTS FOR LEED BUILDINGS

1.4 **DEFINITIONS**:

- A. Refer to Article 2 of the Contract for definition of terms, words and expressions used in the General Conditions not otherwise defined herein.
- B. Design Consultant: "Design Consultant" shall mean the entity responsible for providing design services for the Project, including without limitation, preparing the construction documents (drawings and specifications) and providing services in connection with such documents during construction. The entity serving as the "Design Consultant" may be a corporation, firm, partnership, joint venture, individual or combination thereof. Such entity may be either an employee(s) of the City or an entity engaged by the City to provide such services.
- C. Clean: Untreated and unpainted; not contaminated with oils, solvents, caulk or the like.



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- D. Construction and Demolition Waste: Solid wastes typically including building materials, trash debris and rubble resulting from remodeling, repair and demolition operations. Hazardous materials and land clearing waste are not included.
- E. Diversion from Landfill: To remove, or have removed, from the site for recycling, reuse or salvage, material that might otherwise be sent to a landfill.
- F. Recyclable: The ability of a product or material to be recovered at the end of its life cycle and remanufactured into a new product.
- G. Recycle (recycling): To sort, separate, process, treat or reconstitute solid waste and other discarded materials for the purpose of redirecting such materials into the manufacture of useful products. Recycling does not include burning, incinerating or thermally destroying waste.
- H. Return: To give back reusable items or unused products to vendors.
- I. Reuse: To reuse excess or discarded construction material in some manner on the Project site.
- J. Salvage: To remove a waste material from the Project site for resale or reuse.
- K. Waste: Extra material or material that has reached the end of its useful life in its intended use. Waste includes salvageable, returnable, recyclable and reusable material.
- L. Waste Management Plan: A project-related plan for the collection, transportation and disposal of waste generated at the construction site. The purpose of the plan is to ultimately reduce the amount of material becoming landfill.

1.5 WASTE MANAGEMENT PERFORMANCE REQUIREMENTS:

- A. The City of New York has established that this project shall generate the least amount of waste possible and that processes that ensure the generation of as little waste as possible due to error, inaccurate planning, breakage, mishandling, contamination, or other factors shall be employed.
- B. Of the waste that is generated during demolition, as many of the waste materials as economically feasible, and as stated here, shall be reused, salvaged, or recycled. Waste disposal in landfills shall be minimized.

REFER TO THE ADDENDUM FOR THE APPLICABILITY OF SUB-SECTION 1.5 C

- C. LEED CERTIFICATION: The City of New York will seek LEED (Leadership in Energy and Environmental Design) certification for this Project as indicated in the Addendum to the General Conditions from the U.S. Green Building Council. The documentation required here will be used for this purpose. LEED awards points for a variety of sustainable design measures on a project, one of which is the reuse and recycling of project waste.
- D. DIVERSION REQUIREMENTS. A minimum of 75% of total Project demolition waste (by weight) shall be diverted from landfill. The following waste categories are likely candidates to be included in the diversion plan as applicable for this project:
 - 1. Concrete
 - 2. Bricks
 - 3. Concrete masonry units (CMU)
 - 4. Asphalt
 - 5. Metals (e.g. banding, stud trim, ceiling grid, ductwork, piping, rebar, roofing, other trim, steel, iron, galvanized, stainless steel, aluminum, copper, zinc, brass, bronze)



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- 6. Clean dimensional wood
- 7. Carpet and pad
- 8. Drywall
- 9. Ceiling tiles
- 10. Cardboard, paper and packaging
- 11. Reuse items indicated on the Drawings and/or elsewhere in the Specification
- E. All fluorescent lamps, HID lamps and mercury-containing thermostats removed from the site shall be recycled.
- F. Recycling on the job, subject to the Commissioner's approval, is encouraged on the site itself, such as the crushing and reuse of removed sound concrete and stone. Include these categories in the Waste Management Plan.

1.6 REFERENCES, RESOURCES:

- A. DDC encourages its contractors to seek information from websites and experts in salvage or recycling in order to minimize disposal costs. There are numerous opportunities to sell, salvage, or to donate materials and accrue tax benefits (which would accrue to the contractor); also there are outlets that will pick up, and in some cases buy recyclable materials. Examples of information resources are as follows:
 - DDC's Sustainable Design web site: http://www.nyc.gov/html/dec/html/design/sustainable_home.shtml This includes a manual on Construction and Demolition Waste Reduction and Recycling, a Sample Waste Management Plan and sample C&D Waste Management log. A standard Construction and Demolition Waste Management Log form is included at the end of this section.
 - 2. Web Resources

(Information only; no warranty or endorsement is implied.)

www.wastematch.org
 Site of New York Waste Match, a materials exchange database and service
 www.bignyc.org
 Site of Build It Green NYC, a non profit outlet for salvaged and surplus building
 materials

www.usgbc.org Site of the United States Green Building Council, with a description of the LEED certification process and requirements for C&D waste recycling

www.epa.gov/epawaste/index.htm Site of the U.S. Environmental Protection Agency that discusses construction and demolition waste issues, and links to other resources.

1.7 SUBMITTALS:

- A. The Contractor shall be responsible for the development and implementation of a Waste Management Plan for the Project. The Contractor's subcontractors shall assist in the development of that Plan, and collect and deposit their waste and recyclable materials in accordance with the approved Plan.
- B. DRAFT WASTE MANAGEMENT PLAN. Within fifteen (15) days after receipt of 'Notice to Proceed', or prior to any waste removal, whichever occurs sooner, the Contractor shall submit to the Commissioner a Draft Waste Management Plan. Include separate sections for demolition and construction waste. The Plan shall demonstrate how the performance goals will be met, and contain the following:



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- List of materials targeted for reuse, salvage, or recycling, and names, addresses, and phone numbers of receiving facilities/companies that will be purchasing or accepting each material.
- 2. Description of onsite and/or offsite sorting methods for all materials to be removed from site.
- 3. If mixed construction and demolition waste is to be sorted off-site, provide a letter from the processor stating the average percentage of mixed construction and demolition waste they recycle.
- 4. Landfill information: Names of landfills where non-recyclable/reusable/salvageable waste will be disposed, and list of applicable tipping fees.
- Materials handling procedures: A description of the means by which any recyclable, salvaged, or reused materials will be protected from contamination, and collected in a manner that will meet the requirements for acceptance by the designated recycling processors.
- 6. Transportation: A description of the means of transportation and destination for recycled materials.
- 7. Meetings: Description of regular meetings to be held to address waste management.
- 8. Sample spreadsheet and description of how the implementation of the plan will be documented on a monthly basis.
- C. FINAL WASTE MANAGEMENT PLAN. Within fifteen (15) days of Commissioner's approval of the Draft Plan, the Contractor shall submit a Final Waste Management Plan.
- D. PROGRESS REPORTS. The Contractor shall submit monthly a Waste Management Progress Report, containing the following information:
 - 1. Project title, name of company completing report, and dates of period covered by the report
 - 2. Report on the disposal of all jobsite waste. A DDC C&D Waste Management Log form is available on the DDC Sustainable Design website and included at the end of this section. For each shipmen of material removed from the site, provide the following:
 - a. Date and ticket number of removal
 - b. Identity of material hauler
 - c. Material Category
 - d. Total quantity of waste, in tones/cubic yards, by type
 - e. Quantity of waste salvaged, recycled and/or reused, by type
 - f. Total quantity of waste diverted from landfill (recycled, salvaged, reused) as a percentage of total waste
 - g. Recipient of each material type
 - 3. Provide monthly and cumulative project totals of waste, quantity diverted, and percentage diverted.
 - 4. Note that the unit of measure may be either tons or cubic yards, but must be consistent for all shipments and all materials throughout the project. Reports with inconsistent or mixed units will not be reviewed and will be returned for re-submission.
 - 5. Include legible copies of on-site logs, weight tickets and receipts. Receipts shall be from charitable organizations, recycling and/or disposal site operators who can legally accept the materials for the purpose of reuse, recycling or disposal. Contractor shall save such original documents for the life of the project plus seven (7) years.
- E. LEED Submittal: For LEED designated projects submit LEED Letter Template for Credit 2.2, signed by the Contractor, tabulating total waste material, quantities diverted and means by which it is diverted, and statement that requirements for the credit have been met.
- F. Refrigerant Recovery. Submit Qualification data for Refrigerant recovery technician. Statement of refrigerant recovery, signed by the refrigerant recovery technician responsible for recovering refrigerant



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stating that all refrigerant that was present was recovered and that recovery was performed according to EPA regulations. Include name and address of technician and date refrigerant was recovered.

1.8 QUALITY ASSURANCE:

- A. The Contractor shall designate a Waste Management Coordinator, to ensure compliance with this section. Coordinator shall be present at Project site full time for the duration of the project.
- B. Refrigerant Recovery Technician Qualifications: Certified by EPA-approved certification program.
- C. Regulatory Requirements: Comply with hauling and disposal regulations of authorities having jurisdiction.
- Waste management plans, documentation and implementation shall be discussed at the following meetings:
 - 1. Pre-demolition kick-off meeting
 - 2. Pre-construction kick-off meeting
 - 3. Regular job-site meetings
 - 4. Contractor toolbox meetings

PART II - PRODUCTS (Not Used)

PART III - EXECUTION

3.1 WASTE PLAN IMPLEMENTATION:

- A. The Contractor shall implement the Waste Management Plan, coordinate the Plan with all affected trades, and designate one individual as the Construction Waste Management Representative, who will be responsible for communicating the progress of the Plan with the Commissioner on a regular basis, and for assembling the required LEED documentation.
- B. The Contractor shall be responsible for the provision of containers and the removal of all waste, non-returned surplus materials, and rubbish from the site in accordance with the approved Waste Management Plan. The Contractor shall oversee and document the results of the Plan. Monies received for salvaged materials shall remain with the Contractor, except the monies for those items specifically identified elsewhere in the specifications, or indicated on the drawings as belonging to others.
- C. Responsibilities of Subcontractors: Each subcontractor shall be responsible for collecting its waste, non-returned surplus materials, and rubbish, in accordance with the Waste Management Plan.
- D. Distribution. The Contractor shall distribute copies of the Waste Management Plan to each Subcontractor, Resident Engineer, Construction Manager, and Commissioner.
- E. Instruction: The Contractor shall provide on-site instruction of proper waste management procedures to be used by all parties in appropriate stages of the Project.
- F. Procedures. Conduct waste management operations to ensure minimum interference with site vegetation, roads, streets, walks and other adjacent occupied and used facilities.
 - 1. Collect co-mingled waste and/or separate all recyclable waste in accordance with the Plan Specific areas on the Project site are to be designated, and appropriate containers and bins clearly marked with acceptable and unacceptable materials.
 - 2. Inspect containers and bins for contamination and remove contaminated materials if found.



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3. Comply with the General Conditions for controlling dust and dirt, environmental protection, and noise control.

3.2 ADDITIONAL DEMOLITION AND SALVAGE REQUIREMENTS:

A. Demolition and salvage of additional items indicated in other sections of the Project Specifications require special attention as part of the overall 75 % diversion from landfill. Specific requirements for special attention are designated in other sections of the Project Specifications.

3.3 DISPOSAL:

- A. General. Except for items or material to be salvaged, recycled or otherwise reused, remove waste material from the Project site and legally dispose of them in a manner acceptable to authorities having jurisdiction.
 - 1. Except as otherwise specified, do not allow waste materials that are to be disposed of to accumulate on site.
 - 2. Remove and transport debris in a manner that will prevent spillage on adjacent surfaces and areas.
- B. Burning. Do not burn waste materials
- C. Disposal. Transport waste materials off Project Site and legally dispose of them.

END OF SECTION 01 74 19





Project Project	Project Name: Project I.D.:				Cont Prep For N	Contractor: Prepared by: For Month:			
				Material	Quantity (to	ns or cubic ya	ards)¹		Γ
Haul	Ticket #	Hauling Company	*Material Category²	*Total Weight	Excluded Material ³	Excluded *Diverted *Land	*Landfilled Material	*Material Recipient	
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				*Total		*Diverted	*Landfilled		
			Monthly Totals						
			% Diverted this Month*				I BARTA YE		
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			Odillulative Totals						
			% Diverted to Date	***************************************					

Notes:

- 1. Volume (cubic yards) may be used instead of weight if used for ALL amounts and ALL materials.
- Includes concrete; bricks; concrete masonry units (CMU); asphalt; metals; clean dimensional wood; carpet and pad; drywall; ceiling tiles; cardboard, paper, and packaging; and any other reuse items indicated on the Drawings and/or elsewhere in the Specification.
 - Excluded material includes soil or land clearing debris.
- Diverted material includes recycled and reused material diverted from landfill. Recycled material is reprocessed into new products. Reused material is reclaimed, salvaged or otherwise used in its original form, either on-site or off-site.
 - These items must be listed in order to receive LEED credit.

No Text



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SECTION 01 77 00 CLOSEOUT PROCEDURES

PART I - GENERAL

1.1 RELATED DOCUMENTS:

A. The following documents apply to all required work for the Project: (1) the Contract Drawings, (2) the Specifications, (3) the General Conditions, (4) the Addendum, and (5) the Contract [City of New York Standard Construction Contract].

1.2 SUMMARY:

- A. This Section includes administrative and general procedural requirements for Closeout Procedures, including without limitation the following:
 - 1. Definitions
 - 2. Substantial Completion
 - 3. Final Acceptance
 - 4. Warranties
 - 5. Final Cleaning
 - 6. Repair of the Work
- B. LEED: Refer to the Addendum to identify whether this project is designed to comply with a Certification Level according to the U.S. Green Building Council's Leadership in Energy & Environmental Design (LEED) Rating System, as specified in Section 01 81 13, "SUSTAINABLE DESIGN REQUIREMENTS FOR LEED BUILDINGS."
- C. COMMISSIONING: Refer to the Addendum to identify whether this project will be commissioned by an independent third party under separate contract with the City of New York. Commissioning shall be in accordance with ASHRAE and USGBC LEED- NC procedures, as described in Section 01 91 13, GENERAL COMMISSIONING REQUIREMENTS. The Contractor shall cooperate with the commissioning agent and provide whatever assistance is required.

1.3 RELATED SECTIONS: include without limitation the following:

- A. Section 01 10 00 SUMMARY
- B. Section 01 33 00 SUBMITTAL PROCEDURES
- C. Section 01 74 19 CONSTRUCTION WASTE MANAGEMENT & DISPOSAL
- D. Section 01 78 39 CONTRACT RECORD DOCUMENTS
- E. Section 01 79 00 DEMONSTRATION AND OWNER'S PRE-ACCEPTANCE ORIENTATION

1.4 DEFINITIONS:

- A. Refer to Article 2 of the Contract for definition of terms, words and expressions used in the General Conditions not otherwise defined herein.
- B. Design Consultant: "Design Consultant" shall mean the entity responsible for providing design services for the Project, including without limitation, preparing the construction documents (drawings and specifications) and providing services in connection with such documents during construction. The entity serving as the "Design Consultant" may be a corporation, firm, partnership, joint venture, individual or



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combination thereof. Such entity may be either an employee(s) of the City or an entity engaged by the City to provide such services.

- C. <u>Substantial Completion</u>: shall mean the written determination by the Commissioner that the Work required under the Contract is substantially, but not entirely, complete.
- D. <u>Final Acceptance</u>: shall mean final written acceptance of all the Work by the Commissioner, a copy of which shall be sent to the Contractor.

1.5 SUBSTANTIAL COMPLETION:

- A. Preliminary Procedures: Before requesting inspection to determine the date of Substantial Completion, the Contractor shall complete and supply all items required by the contract specifications, General Conditions, Addendum to the General Conditions, change orders or other directives from the Commissioner's representatives. The required items will include all contract requirements for substantial completion, including but not limited to items related to releases, regulatory approvals, warranties and guarantees, record documents, testing, demonstration and orientation, final clean up and repairs, and all specific checklist of items by the Resident Engineer. (See Attachment "A" at the end of this section for sample requirements for Substantial Completion).
- B. Prepare and submit a list to the Resident Engineer of incomplete items, the value of incomplete construction, and reasons the work is not complete.
- C. Inspection: The Contractor shall submit to the Resident Engineer a written request for inspection for Substantial Completion. Within ten (10) days of receipt of the request, the Resident Engineer will either proceed with inspection or notify Contractor of unfulfilled requirements. The Resident Engineer may request the services, as required, of the Design Consultant, Client Agency Representative and/or other entities havil involvement with the Work to assist in the inspection of the Work. If the Resident Engineer makes a determination that the work is substantially complete and approves the Final Punch List and the date for Final Acceptance, he/she will so advise the Commissioner and recommend issuance of the Certificate of Substantial Completion. If the Resident Engineer determines that the work is not substantially complete, he/she will notify the Contractor of those items that must be completed or corrected before the Certificate of Substantial Completion will be issued.
 - Re-inspection: Contractor shall request re-inspection when the Work identified in previous inspections as incomplete is completed or corrected.
 - 2 Results of completed inspection will form the basis of requirements for Final Acceptance.

1.6 FINAL ACCEPTANCE:

- A. Preliminary Procedures: Before requesting final inspection for Final Acceptance of the Work, the Contractor shall complete the following. (Note that the following are to be completed, submitted as appropriate, and approved by the Commissioner, as applicable, prior to the final inspection and are not to be submitted for approval or otherwise at the final inspection unless specifically indicated). List exceptions in the request.
 - 1. Verify that all required submittals have been provided to the Commissioner including but not limited to the following:
 - a. Manufacturer's cleaning instructions
 - b. Posted instructions
 - c. As-built Record Documents (Drawings, specifications, and product data) as described in Section 01 78 39, CONTRACT RECORD DOCUMENTS, incorporating any changes required by the Commissioner as a result of the review of the submission prior to the pre-final inspection.
 - d. Operation and Maintenance Manuals, including Preventive Maintenance, Special Tools, Repair Requirements, Parts List, Spare Parts List, and Operating Instructions.





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e. Completion of required Demonstration and Orientation, as applicable, of designated personnel in operation and maintenance of systems, sub-systems and equipment.

f. Applicable LEED Building submittals as described in Section 01 81 13, SUSTAINABLE DESIGN REQUIREMENTS FOR LEED BUILDINGS.

g. Construction progress photographs as described in Section 01 32 33, PHOTOGRAPHIC DOCUMENTATION.

2. Submit a certified copy of the final approved Punch List of items to be completed or corrected. The certified copy of the Punch List shall state that each item has been completed or otherwise resolved for acceptance, and shall be endorsed and dated by the Contractor.

3. Submit pest-control final inspection report and survey as required in Section 01 50 00,

TEMPORARY FACILITIES AND CONTROLS.

4. Submit record documents and similar final record information.

5. Deliver tools, spare parts, extra stock and similar items.

6. Complete final clean-up requirements including touch-up painting of marred surfaces.

7. Submit final meter readings for utilities, as applicable, a measured record of stored fuel, and similar data as of the date when the City took possession of and assumed responsibility for corresponding elements of the work.

- B. Final Inspection: The Contractor shall submit to the Resident Engineer a written request for inspection for Final Acceptance of the Work. Within ten (10) days of receipt of the request, the Resident Engineer will either proceed with inspection or notify the Contractor of unfulfilled requirements. The Resident Engineer may request the services, as required, of the Design Consultant, Client Agency Representative and/or other entities having involvement with the Work to assist in the inspection of the Work. If the Resident Engineer finds that all items on the Final Approved Punch List are complete and no further work remains to be done, he/she will so advise the Commissioner and recommend the issuance of the determination of Final Acceptance. If the Resident Engineer determines that the work is not complete, he/she will notify the Contractor of those items that must be completed or corrected before the determination of Final Acceptance will be issued.
- C. Final Acceptance: The Work will be accepted as final and complete as of the date of the Resident Engineer's inspection if, upon such inspection, the Resident Engineer finds that all items on the Punch List are complete and no further Work remains to be done. The Commissioner will then issue a written determination of Final Acceptance.

1.7 WARRANTIES:

- A. The items of materials and/or equipment for which manufacturer warranties are required are listed in Schedule B of the Addendum. For each item of material and/or equipment listed in Schedule B, the Contractor shall obtain a written warranty from the manufacturer. Such warranty shall provide that the material or equipment is free from defects for the period set forth in Schedule B and will be replaced or repaired within such specified period. The contractor shall deliver all required warranties to the Commissioner.
- B. Unless indicated otherwise Warranties are to take effect on the date of Substantial Completion.
- C. Submittal Time: Submit written Warranties on request of the Commissioner for designated portions of the Work where commencement of Warranties other than date of Substantial Completion is indicated.
- D. Partial Occupancy: Submit properly executed Warranties to the Commissioner within 15 days of completion of designated portions of the Work that are completed and occupied or used by the City.
- E. Organize the Warranty documents into an orderly sequence based on the Project Specification Divisions and Section Numbers.



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- 1. Bind Warranties in heavy-duty, 3-ring, vinyl-covered, loose-leaf binders, thickness as necessary to accommodate contents, and sized to receive 8-1/2-by-11-inch paper.
- 2. Identify each binder on the front and spine with the typed or printed title "WARRANTIES;" name and location of Project; Capitol Budget Project Number (FMS ID); and Contractor's and applicable subcontractor's name and address.
- 3. Provide heavy paper dividers with plastic-covered tabs for each separate Warranty. Mark tab to identify the product or installation.
- 4. Provide a typed description of each product or installation being warranted, including the name of the product, and the name, address, and telephone number of the Installer.
- F. When warranted materials and/or equipment require operation and maintenance manuals, provide additional copies of each required Warranty in each required manual. Refer to Section 01 78 39, CONTRACT RECORD DOCUMENTS, for requirements of Operation and Maintenance Manuals.

PART II - PRODUCTS

2.1 MATERIALS:

A. Cleaning Agents: Use cleaning materials and agents recommended by manufacturer or fabricator of the surface to be cleaned. Do not use cleaning agents that are potentially hazardous to health or property or that might damage finished surfaces.

PART III - EXECUTION

3.1 FINAL CLEANING:

- A. General: Provide final cleaning. Conduct cleaning and waste-removal operations to comply with local laws and ordinances and Federal and local environmental and antipollution regulations.
- B. Cleaning: Employ experienced workers or professional cleaners for final cleaning. Clean each surface or unit to condition expected in an average commercial building cleaning and maintenance program. Comply with manufacturer's written instructions.
 - 1. Complete the following cleaning operations, as applicable, before requesting inspection for Final Acceptance of the Work for entire Project or for a portion of Project:
 - a. Clean Project site, yard, and grounds, in areas disturbed by construction activities, including landscape development areas, of rubbish, waste material, litter, and other foreign substances.
 - b. Sweep paved areas broom clean. Remove petrochemical spills, stains, and other foreign deposits.
 - c. Rake grounds that are neither planted nor paved to a smooth, even-textured surface.
 - d. Remove tools, construction equipment, machinery, and surplus material from Project site.
 - e. Remove snow and ice to provide safe access to building.
 - f. Clean exposed exterior and interior hard-surfaced finishes to a dirt-free condition, free of stains, films, and similar foreign substances. Avoid disturbing natural weathering of exterior surfaces. Restore reflective surfaces to their original condition.
 - g. Remove debris and surface dust from limited access spaces, including roofs, plenums, shafts, trenches, equipment vaults, manholes, attics, and similar spaces.
 - h. Sweep concrete floors broom clean in unoccupied spaces.
 - Vacuum carpet and similar soft surfaces, removing debris and excess nap; shampoo if visible soil or stains remain.



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j. Clean transparent materials, including mirrors and glass in doors and windows. Remove glazing compounds and other noticeable, vision-obscuring materials. Replace chipped or broken glass and other damaged transparent materials. Polish mirrors and glass, taking care not to scratch surfaces.

k. Remove labels that are not permanent.

- Touch up and otherwise repair and restore marred, exposed finishes and surfaces. Replace finishes and surfaces that cannot be satisfactorily repaired or restored or that already show evidence of repair or restoration.
 - 1) Do not paint over "UL" and similar labels, including mechanical and electrical nameplates.
- m. Wipe surfaces of mechanical and electrical equipment and similar equipment. Remove excess lubrication, paint and mortar droppings, and other foreign substances.

n. Replace parts subject to unusual operating conditions.

o. Clean plumbing fixtures to a sanitary condition, free of stains, including stains resulting from water exposure.

p. Replace disposable air filters and clean permanent air filters. Clean exposed surfaces of diffusers, registers, and grills.

q. Clean ducts, blowers, and coils if units were operated without filters during construction.

r. Clean light fixtures, lamps, globes, and reflectors to function with full efficiency. Replace burned-out bulbs, and those noticeably dimmed by hours of use, and defective and noisy starters in fluorescent and mercury vapor fixtures to comply with requirements for new fixtures.

s. Leave Project clean and ready for occupancy.

- t. Construction Waste Disposal: Comply with waste disposal requirements in Section 01 74 19, CONSTRUCTION WASTE MANAGEMENT AND DISPOSAL.
- C. Pest Control: Engage an experienced, licensed exterminator to make a final inspection and rid Project of rodents, insects, and other pests, as required in Section 01 50 00, TEMPORARY FACILITIES, SERVICES AND CONTROLS. Prepare and submit a Pest Control report to the Commissioner.
- D. Comply with safety standards for cleaning. Do not burn waste materials. Do not bury debris or excess materials on City's property. Do not discharge volatile, harmful, or dangerous materials into drainage systems. Remove waste materials from Project site and dispose of lawfully.

3.2 REPAIR OF THE WORK:

- A. Subject to the terms of the Contract the Contractor shall complete repair and restoration operations before requesting inspection for determination of Substantial Completion.
- B. Contractor shall repair or remove and replace defective construction. Repairing includes replacing defective parts, refinishing damaged surfaces, touching up with matching materials, and properly adjusting operating equipment. Where damaged or worn items cannot be repaired or restored, provide replacements. Remove and replace operating components that cannot be repaired. Restore damaged construction and permanent facilities used during construction to specified condition.

1. Remove and replace chipped, scratched, and broken glass, reflective surfaces, and other damaged transparent materials.

2. Touch up and otherwise repair and restore marred or exposed finishes and surfaces. Replace finishes and surfaces that that already show evidence of repair or restoration.

a. Do not paint over "UL" and other required labels and identification, including mechanical and electrical nameplates. Remove paint applied to required labels and identification.



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3. Replace parts subject to operating conditions during construction that may impede operation or reduce longevity.

4. Replace burned-out bulbs, bulbs noticeably dimmed by hours of use, and defective and noisy starters in fluorescent and mercury vapor fixtures to comply with requirements for new fixtures.

END OF SECTION 01 77 00



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SECTION 01 77 00

ATTACHMENT 'A'

The following list is a general sample of Substantial Completion requirements, including but not limited to:

- 1. Prepare and submit a list to the Resident Engineer, of incomplete items, the value of incomplete construction, and reasons the work is not complete.
- 2. Obtain and submit any necessary releases enabling the City unrestricted use of the project and access to services and utilities.
- 3. Regulatory Approvals: Submit all required documentation from applicable Governing Authorities, including, but not limited to, Department of Buildings (DoB); Department of Transportation (DoT); Department of Environmental Protection (DEP); Fire Department (FDNY); etc. Documentation to include, but not limited to, the following:
 - a. Building Permits, Applications and Sign-offs.
 - b. Permits and Sign-off for construction fences; sidewalk bridges; scaffolds, cranes and derricks; utilities; etc.
 - c. Certificates of Inspections and Sign-offs.
 - d. Required Certificates and Use Permits.
 - e. Certificate of Occupancy (C.O.), Temporary Certificate of Occupancy (T.C.O.) or Letter of Completion as applicable.
- 4. Submit specific warranties required by the specifications, final certifications, and similar documents.
- 5. Prepare and submit Record Documents as described in Section 01 78 39, CONTRACT RECORD DOCUMENTS, including but not limited to; approved documentation from Governing Authorities; as-built record drawings and specifications; product data; operation and maintenance manuals; Final Completion construction photographs; damage or settlement surveys; final property surveys; and similar final record information. The Resident Engineer will review the submission and provide appropriate comments. If comments are significant the initial submission will be returned to the Contractor for correction and re-submission incorporating the comments prior to the Final Inspection.
- Record Waste Management Progress Report: Submit C&D Waste Management logs, with legible copies of weight tickets and receipts required in accordance with Section 01 74 19, CONSTRUCTION WASTE MANAGEMENT AND DISPOSAL.
- 7. If applicable submit LEED Letter Template in accordance with the requirements of Section 01 81 13, SUSTAINABLE DESIGN REQUIREMENTS FOR LEED BUILDINGS.
- 8. Schedule applicable Demonstration and Orientation required in other Sections of the Project Specifications and as described in Section 01 79 00, DEMONSTRATION AND OWNER'S PRE-ACCEPTANCE ORIENTATION.
- 9. Deliver tools, spare parts, extra materials, and similar items to location designated by Resident Engineer. Label with manufacturer's name and model number where applicable.
- 10. Make final changeover of permanent locks and deliver keys to the Resident Engineer. Advise Commissioner of changeover in security provisions.
- 11. Complete startup testing of systems as applicable.
- 12. Submit approved test/adjust/balance records.
- 13. Terminate and remove temporary facilities from Project site, along with mockups, construction tools, and similar elements as directed by the Resident Engineer.
- 14. If applicable complete Commissioning requirements as defined in Section 01 91 13, GENERAL COMMISSIONING REQUIREMENTS.
- 15. Complete final cleaning requirements, including touchup painting.
- 16. Touch up and otherwise repair and restore marred exposed finishes to eliminate visual defects.



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No Text



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SECTION 01 78 39 CONTRACT RECORD DOCUMENTS

PART I - GENERAL

RELATED DOCUMENTS: 1.1

The following documents apply to all required work for the Project: (1) the Contract Drawings, (2) the A. Specifications, (3) the General Conditions, (4) the Addendum, and (5) the Contract [City of New York Standard Construction Contract].

SUMMARY: 1.2

- This Section includes administrative and general procedural requirements for Contract Record A. Documents, including:
 - As-built Contract Record Drawings.
 - As-built marked-up copies of Record Specifications, addenda and Change Orders. 2.
 - As-built marked-up Product Data 3.
 - **Record Samples** 4.
 - Construction Record Photographs
 - Operating and Maintenance Manuals
 - Final Site Survey 7.
 - **Guarantees and Warranties**
 - Waste Disposal Documentation
 - 10. LEED Materials and Matrix
 - 11. Miscellaneous Record Submittals
- The Department of Design and Construction, at the start of construction (kick-off meeting), will furnish to B. the Contractor at no cost a complete set of Contract Drawings Mylars (reproducible) pertaining to the work to be performed under the Contract. It is the responsibility of the Contractor to modify the Contract Drawings to indicate all changes and corrections, if any, occurring in the work as actually installed. The Contractor is required to furnish all other Mylar (reproducible) drawings, if necessary, such as Addenda Drawings and Supplementary Drawings as may be necessary to indicate all work in detail as actually completed. All professional seals must be blocked out. Title box complete with project title and Design Consultants' names will remain.
- Maintenance of Documents and Samples: The Contractor shall maintain, during the progress of the work, C. an accurate record of the work as actually installed, on Contract Record Drawings, on Mylar (reproducible), in ink. Store record documents and samples in the field office apart from the Contract Documents used for construction. Do not use Project Record Documents for construction purposes. Maintain record documents in good order and in a clean, dry, legible condition. Make documents and samples available at all times for the Resident Engineer's inspections.

The Contractor's attention is particularly directed to the necessity of keeping accurate records of all subsurface and concealed work, so that the Contract Record Drawings contain this information in exact detail and location. Contract Record Drawings shall also show all connections, valves, gates, switches, cut-outs and similar operating equipment.

For projects designated to achieve a LEED rating the Contractor shall receive a copy of the project's LEED scorecard for the purpose of monitoring compliance with the target objectives and to facilitate coordination with the LEED Consultant. The Contractor shall receive periodic updates of this scorecard,



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and is required to submit the final version of the Scorecard at Substantial Completion with other project Record Documents.

1.3 RELATED SECTIONS: include without limitation the following:

Α.	Section 01 10 00	SUMMARY
B.	Section 01 32 00	CONSTRUCTION PROGRESS DOCUMENTATION
C.	Section 01 32 33	PHOTOGRAPHIC DOCUMENTATION
D.	Section 01 33 00	SUBMITTAL PROCEDURES
E.	Section 01 77 00	PROJECT CLOSEOUT PROCEDURES

1.4 DEFINITIONS:

- A. Refer to Article 2 of the Contract for definition of terms, words and expressions used in the General Conditions not otherwise defined herein.
- B. Design Consultant: "Design Consultant" shall mean the entity responsible for providing design services for the Project, including without limitation, preparing the construction documents (drawings and specifications) and providing services in connection with such documents during construction. The entity serving as the "Design Consultant" may be a corporation, firm, partnership, joint venture, individual or combination thereof. Such entity may be either an employee(s) of the City or an entity engaged by the City to provide such services.

1.5 SUBMITTALS:

- A. As-Built Contract Record Drawings: Comply with the following:
 - Progress Submission: As directed by the Resident Engineer, submit progress As-Built Contract Record Drawings at the 50% Construction Completion stage.
 - Final Submission: Before substantial completion payment, the Contractor shall furnish to the Commissioner one (I) complete set of marked-up Mylar (reproducible) As-Built Contract Record Drawings, in ink indicating all of the work and locations as actually installed, plus one (1) set of paper prints which will be furnished to the sponsoring agency by DDC.
 - 3. As-Built Contract Record Drawings shall be of the same size as that of the Contract Drawings, with a one (1) inch margin on three (3) sides and a two (2) inch margin on the left side for binding.
 - 4. Each As-Built Contract Record Drawing shall bear the legend "AS-BUILT CONTRACT RECORD DRAWING" in heavy block lettering, one half (I/2) inch high, and contain the following data:

AS-BUILT CONTRACT RECONTRACTORS Contractor's Name Contractor's Address Subcontractor's Name (whe Subcontractor's Address		NG 	
Made by:	Date		
Checked by:	Date		
Commissioner's Representa (Resident Engineer) (Plumbing Inspector) (Heating & Ventilating Inspe (Electrical Inspector)	D D ctor) D	DC DC DC DC	



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- 5. Record Drawing Title Sheet: The Contractor shall prepare a title sheet, the same size as the Contract Record Drawings, which shall contain the following:
 - a. Heading:

The City of New York
Department of Design and Construction

Division of Public Buildings

- b. Capital Budget Project Number (FMS ID)
- c. Name and Location of Project
- d. Contractor's Name and Address
- e. Subcontractor's Name and Address (where applicable)
- f.. Record of changes (a caption description of work affected, and the date and number of Change Order or other authorization)
- g.. List of Record Drawings
- B. Record Specifications, Addenda and Change Order: Submit to the Commissioner two (2) copies each of marked-up Record Specifications, Addenda and Change Orders.
- C. Record Product Data: Submit to the Commissioner two (2) sets of Record Product Data.
- D. Record Construction Photographs: Submit to the Commissioner final as-built construction photographs and negatives of the completed work as described in Section 01 32 33, PHOTOGRAPHIC DOCUMENTATION.
- E. Operating and Maintenance Manuals:
 - Submit three (3) copies each of preliminary manuals to the Resident Engineer for review and approval. The Contractor shall make such corrections, changes and/or additions to the manual until deemed satisfactory by the Resident Engineer. Deliver three (3) copies of the final approved manuals to the Resident Engineer for distribution.
 - 2. Commissioning: Comply with the requirements of Section 01 91 13, GENERAL COMMISSIONING REQUIREMENTS, as well as the requirements set forth in sections of the Project Specifications, for projects designated for Commissioning. Submit four (4) copies each of data designated to be included in the Commissioning Operation and Maintenance Manual to the Resident Engineer. The Resident Engineer will forward such data to the Commissioning Authority/Agent (CxA) for review and comment. The Contractor shall make such corrections, changes and/or additions to the data until deemed satisfactory and deliver four (4) copies of the final data to the Resident Engineer for use by the Commissioning Authority/Agent (CxA) to prepare the Commissioning Operation and Maintenance Manual.
 - a. Non-Commissioning Data: All remaining data not designated for Commissioning and required as part of Maintenance and Operation Manual shall be prepared and assembled in accordance with the requirements of this section for Operating and Maintenance Manuals.
- F. Final Site Survey: Submit Final Site Survey as described in Section 01 73 00, EXECUTION, in quantities requested by the Commissioner, signed and sealed by a Land Surveyor licensed in the State of New York.
- G. Guarantees and Warranties.
- H. Waste Disposal Documents and Miscellaneous Record Documents.



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PART II - PRODUCTS

2.1 CONTRACT RECORD DRAWINGS:

- A. Record Prints: The Contractor shall maintain one set of blue- or black-line white prints as applicable of the Contract Drawings and Shop Drawings. If applicable, the Record Contract Drawings and Shop Drawings shall incorporate the arrangement of the work based on the accepted Master Coordination Drawing(s) as described in Section 01 33 00, SUBMITTAL PROCEDURES.
 - 1. Preparation: The Contractor shall mark Record Prints to show the actual installation where installation varies from that shown originally. Require individual or entity who obtained record data, whether individual or entity is Installer, subcontractor, or similar entity, to prepare the marked-up Record Prints.
 - Give particular attention to information on concealed elements that would be difficult to identify or measure and record later.
 - b. Accurately record information in an understandable drawing technique.
 - c. Record data as soon as possible after obtaining it. Record and check the markup before enclosing concealed installations.
 - Change Orders: All changes from Contract Drawings shall be distinctly encircled and identified by Change Order number correlating to changes listed on the "Title Sheet." The Contractor shall show within the encircled areas the work as actually installed.
- B. Content: Types of items requiring marking include, but are not limited to, the following:
 - 1. Dimensional changes to Drawings.
 - 2. Revisions to details shown on Drawings.
 - 3. Depths of foundations below first floor.
 - 4. Locations and depths of underground utilities.
 - 5. Revisions to routing of piping and conduits.
 - 6. Revisions to electrical circuitry.
 - 7. Actual equipment locations.
 - 8. Duct size and routing.
 - 9. Locations of concealed internal utilities.
 - 10. Changes made by Change Order
 - Changes made following Commissioner's written orders.
 - 12. Details not on the original Contract Drawings.
 - 13. Field records for variable and concealed conditions.
 - 14. Record information on the Work that is shown only schematically.
- C. Progress Record Mylar's (reproducible): As directed by the Resident Engineer at 50% construction completion, review marked-up Record Prints with the Resident Engineer and the Design Consulting. When directed by the Resident Engineer transfer progress mark-ups to a full set of Mylar's (reproducible) and submit one blue line or black line record copy to the Resident Engineer. The marked-up Mylar's (reproducible) shall be retained by the contractor for completion of mark-up and final submission.
- D. Final Contract Record Mylar's (reproducible): Immediately before final inspection for Certificate of Substantial Completion, review marked-up Record Prints with the Resident Engineer and the Design Consulting. When authorized, complete mark-up of a full set of corrected Mylar's (reproducible) of the Contract Drawings.
 - 1. Incorporate changes and additional information previously marked on Record Prints. Erase, redraw, and add details and notations where applicable.
 - 2. Refer instances of uncertainty to Resident Engineer for resolution.
 - 3. Print the As-Built Contract Drawings and Shop Drawings for use as Record Transparencies as described in Sub-Section 1.5.



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2.2 RECORD SPECIFICATIONS, ADDENDA AND CHANGE ORDERS:

- A. Preparation: Mark Specifications to indicate the actual product installation where installation varies from that indicated in Specifications, addenda, and contract modifications.
 - 1. Give particular attention to information on concealed products and installations that cannot be readily identified and recorded later.
 - 2. Mark copy with the proprietary name and model number of products, materials, and equipment furnished, including substitutions and product options selected.
 - 3. Record the name of manufacturer, supplier, Installer, and other information necessary to provide a record of selections made
 - 4. For each principal product, indicate whether Record Product Data has been submitted in operation and maintenance manuals instead of submitted as Record Product Data.
 - 5. Note related Change Orders and Record Drawings where applicable.
 - 6. Upon completion of mark-up, submit two (2) complete copies of the marked-up Record Specifications to the Commissioner.

2.3 RECORD PRODUCT DATA:

- A. Preparation: Mark Product Data to indicate the actual product installation where installation varies substantially from that indicated in Product Data submittal.
 - 1. Give particular attention to information on concealed products and installations that cannot be readily identified and recorded later.
 - 2. Include significant changes in the product delivered to Project site and changes in manufacturer's written instructions for installation.
 - 3. If possible, a Change Order proposal should include resubmitting updated Product Data. This eliminates the need to mark up the previous submittal.
 - 4. Note related Change Orders and Record Drawings where applicable.
 - 5. Upon completion of mark-up submit to the Commissioner two (2) sets of the marked-up Record Product Data.
 - 6. Where Record Product Data is required as part of Maintenance Manuals, submit marked-up Product Data as an insert in the manual instead of submittal as record Product Data.

2.4 RECORD SAMPLE SUBMITTAL:

- A. Prior to the date of Substantial Completion, the Contractor shall meet with the Resident Engineer at the site to determine which of the Samples maintained during the construction period shall be transmitted to the Commissioner for record purposes.
- B. Comply with the Resident Engineer's instructions for packaging, identification marking and delivery to DDC. Dispose of other samples as specified for disposal of surplus and waste material.

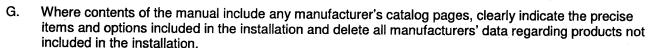
2.5 OPERATING AND MAINTENANCE MANUALS:

- A. The Contractor shall provide preliminary and final versions of Operating and Maintenance Manuals required for those systems, equipment and materials listed in other Sections of the Project Specifications.
- B. Format: Prepare and assemble Operation and Maintenance Manuals in heavy-duty, 3-ring, hardback loose leaf binders in the form of an instructional manual. All binders for each discipline shall be the same color. When multiple binders are used, correlate data into related consistent groupings. Binder front shall containing permanently attached labels displaying the following:

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- Heading:

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 Department of Design and Construction
 Division of Public Buildings
- 2. Capital Budget Project Number (FMS ID)
- 3. Name and Location of Project
- 4. Contractor's name and Address
- 5. Subcontractor's Name and Address (where applicable)
- 6. Dates of the work covered by the contents of the Project Manual.
- 7. Binder spine shall display Project Number (FMS ID) and date of completion.
- C. Organization: Include a section in the directory for each of the following:
 - 1. List of documents
 - 2. List of systems
 - 3. List of equipment
 - 4. Table of contents
- D. Arrange content by systems under Specification Section numbers and sequence of Table of Contents of the Project manual. Provide tabbed flyleaf for each separate product, equipment and/or system/subsystem with typed description of product and major component parts of equipment.
- E. Safety warnings or cautions shall be visibly highlighted within each maintenance procedure. Use of such highlights shall be limited to only critical items and shall not be used in an excessive manner which would reduce their effectiveness.
- F. For each product or system, list names, addresses and telephone numbers of Subcontractors and Suppliers, including local source of supplies and replacement parts. Vendors and Supplier listings are to include names, addresses and telephone numbers, including nearest field service telephone numbers.



- H. All material within manuals shall be new. Copies used for prior submittals or used in construction shall not be used.
- Submit preliminary and final manual editions to the Commissioner according to the approved progress schedule.
- J. Manuals shall present all technical material to the greatest extent possible, with respect to text, tabular matter and illustrations. Illustrations shall preferably consist of line drawings. All applicable drawings shall be included. If available, color photograph prints may be included.
- K. Preliminary manual editions shall be as technically complete as the final manual edition. All illustrations shall be in final forms.
- L. Final manual editions shall be technically accurate and complete and shall represent all "as-built" systems, pieces of equipment, or materials, which have been accepted by the Commissioner. All illustrations, text and tabular material shall be in final form. All shop drawings shall be included as specified in individual Specification Sections.
- M. Building products, applied materials, and finishes: Include product data, with catalog number, size, composition, and color texture designations. Where applicable, provide information for re-ordering custom manufactured products.
- N. Instructions for care and maintenance: Include manufacturers' recommendations for cleaning agents and methods, and recommended schedule for cleaning and maintenance.



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- O. Moisture Protection and Weather Exposed Products: Include product data listing applicable reference standards, chemical compositions, and details of installation. Provide recommendations for inspections, maintenance, and repair.
- P. Additional Requirements: Specified in individual Specification Sections.

2.6 DEMONSTRATION AND ORIENTATION DVD:

A. Non-Commissioned Projects: The Contractor shall submit final version of applicable Demonstration and Training DVD recordings in compliance with Section 01 79 00, DEMONSTRATION AND OWNER'S PRE-ACCEPTANCE ORIENTATION.

2.7 GUARANTEES AND WARRANTIES:

- A. SCHEDULE B Requirements for guarantees and warranties for the Project are set forth in Schedule B, which is included as part of the Addendum.
- B. FORM For all guarantee requirements set forth in Schedule B, the Contractor shall provide a written guaranty, in the form set forth herein.
- C. Submit fully executed and signed manufacturers' Warranties as listed in the Project Specifications and outlined in Schedule B of the Addendum. Refer to Section 01 77 00, CLOSEOUT PROCEDURES for submittal requirements.



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GUARANTY

DDC PROJECT #		
PROJECT DESCRIPTION		
CONTRACT #		
GUARANTY TO BE IN EFFECT FROM		
		•
The Contractor also guarantees that it will necessary by the City, any or all defective must within the guaranty period and any finished satisfaction of the City and without any cost or	promptly repair, repai	restore, rebuild or replace whichever may be deem anship of the aforementioned section, that may appear damage may occur because of such defects, to the
	Contractor:	
	Ву:	Signature of Partner or Corporate Officer
	Print Name:	
Subscribed and sworn to before me this day of, year		
Notary Public		



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2.8 WASTE DISPOSAL DOCUMENTATION:

A. Certify and deliver to the Commissioner all documentation including reports, receipts, certificates, records etc. for the collection, handling, storage, classification, testing, transportation, recycling and/or disposal of all Non-Hazardous Construction Waste as required by Section 01 74 19, CONSTRUCTION WASTE MANAGEMENT AND DISPOSAL, and Hazardous Waste as required by other Project Specification Sections. Certify compliance with all applicable governing laws, codes, rules and regulations.

2.9 MISCELLANEOUS RECORD DOCUMENTS:

- A. Refer to other Project Specification Sections for miscellaneous record-keeping requirements and submittals in connection with various construction activities. Prior to Final Acceptance, complete miscellaneous records and place in good order, properly identified and bound or otherwise organized to allow for use and reference.
- B. Submit three (3) copies of each document to the Commissioner or as otherwise directed by the Commissioner.

PART III - EXECUTION

3.1 RECORDING AND MAINTENANCE:

- A. Recording: Maintain one copy of each submittal during the construction period for Contract Record Document purposes. Post changes and modifications to Project Record Documents as they occur; do not wait until the end of Project.
- B. Maintenance of Record Documents and Samples: Store Record Documents and Samples in the field office apart from the Contract Documents used for construction. Do not use Contract Record Documents for construction purposes. Maintain Record Documents in good order and in a clean, dry, legible condition, protected from deterioration and loss. Provide access to the Contract Record Documents for the Resident Engineer's reference during normal working hours.

END OF SECTION 01 79 39



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No Text



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SECTION 01 79 00 DEMONSTRATION AND OWNER'S PRE-ACCEPTANCE ORIENTATION

REFER TO THE ADDENDUM FOR APPLICABILITY OF THIS SECTION 01 79 00

PARTI- GENERAL

1.1 RELATED DOCUMENTS:

A. The following documents apply to all required work for the Project: (1) the Contract Drawings, (2) the Specifications, (3) the General Conditions, (4) the Addendum, and (5) the Contract [City of New York Standard Construction Contract].

1.2 SUMMARY:

- A. This Section includes administrative and procedural requirements, when set forth in sections of the Project Specifications, for instructing facility's personnel, including the following:
 - 1. Demonstration of operation of systems, subsystems, and equipment.
 - 2. Owner's Pre-Acceptance Orientation in operation and maintenance of systems, subsystems, and equipment.
 - 3. Demonstration and Orientation videotapes. (Non-Commissioned Projects)
- B. The Contractor shall provide the services of equipment manufacturers orientation specialists experienced in the type of equipment to be demonstrated.
- C. Separate Orientation sessions shall be conducted for mechanical operations and maintenance personnel and for electronic and electrical maintenance personnel.
- D. Commissioning: Refer to the Addendum to identify whether this project is to be Commissioned. For Commissioned projects the Contractor shall provide Demonstration and Orientation as described in this section and cooperate with the Commissioning Authority/Agent (CxA) to implement Commissioning requirements as described in Section 01 91 13, GENERAL COMMISSIONING REQUIREMENTS.

1.3 RELATED SECTIONS: include without limitation the following:

- A. Section 01 10 00 SUMMARY
- B. Section 01 33 00 SUBMITTAL PROCEDURES
- C. Section 01 77 00 CLOSEOUT PROCEDURES
- D. Section 01 78 39 CONTRACT RECORD DOCUMENTS
- E. Section 01 91 13 GENERAL COMMISSIONING REQUIREMENTS
- F. Specific requirements for demonstration and training indicated in other sections of the Project Specifications

1.4 **DEFINITIONS**:

A. Refer to Article 2 of the Contract for definition of terms, words and expressions used in the General Conditions not otherwise defined herein.



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B. Design Consultant: "Design Consultant" shall mean the entity responsible for providing design services for the Project, including without limitation, preparing the construction documents (drawings and specifications) and providing services in connection with such documents during construction. The entity serving as the "Design Consultant" may be a corporation, firm, partnership, joint venture, individual or combination thereof. Such entity may be either an employee(s) of the City or an entity engaged by the City to provide such services.

1.5 SUBMITTALS:

- A. Instruction Program: Submit three (3) copies of outline of instructional program for demonstration and orientation, including a schedule of proposed dates, times, length of instruction time, and instructors' names for each orientation module to the Commissioner for approval no less than thirty (30) days prior to the date the proposed orientation is to take place. Include learning objectives and outline for each orientation module.
 - 1. At completion of training, submit three (3) complete training manual(s) and three (3) applicable DVD recording(s) to the Commissioner for the facility's and City's use.
- B. Qualification Data: For facilitator, instructor and Videographer.
- C. Attendance Record: For each orientation module, submit list of participants and length of instruction time.
- D. Evaluations: For each participant and for each orientation module, submit results and documentation of performance-based test.
- E. Submit all final orientation material to the Resident Engineer a minimum of fourteen (14) days prior to the scheduled training.
- F. Demonstration and Orientation Recordings:
 - 1. Non-Commissioned Projects:
 - a. The Contractor shall submit to the Commissioner three (3) copies of Demonstration and Orientation DVD (Digital Video Disk) recordings within seven (7) days of end of each training module.
 - b. Identification: On each copy, provide an applied label with the following information:
 - 1) Project Contract I.D. Number
 - 2) Project Contract Name
 - 3) Name of Contractor
 - 4) Name of Subcontractor as applicable
 - 5) Name of Design Consultant
 - 6) Name of Construction Manager as applicable
 - 7) Date recorded.
 - 8) Description of vantage point, indicating location, direction (by compass point), and elevation or story of construction.
 - 9) Table of Contents including list of systems covered.
 - c. Transcript: Prepared on 8-1/2-by-11-inch paper, punched and bound in heavy-duty, 3-ring, vinyl-covered binders. Mark appropriate identification on front and spine of each binder. Include a cover sheet with same label information as the corresponding DVD recording. Include name of Project and date of recording on each page.

2. Commissioned Projects:

a. Demonstration and Orientation DVD recordings for Commissioned projects will be recorded by the Commissioning Authority/Agent (CxA) under separate contract with the City of New





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York. The Contractor performing Demonstration and Orientation shall cooperate with the CxA in the recording of each Demonstration and Orientation module.

QUALITY ASSURANCE: 1.6

- Facilitator Qualifications: A firm or individual experienced in orientation or educating maintenance personnel in an orientation program similar in content and extent to that indicated for this Project.
- Instructor Qualifications: A factory-authorized service representative, complying with requirements in B. Section 01 40 00, QUALITY REQUIREMENTS, experienced in operation and maintenance procedures and orientation.
- Videographer Qualifications: A professional Videographer who has experience with orientation and C. construction projects.
- Pre-instruction Conference: Schedule with the Resident Engineer a conference at Project site to D. comply with requirements in Section 01 31 00, PROJECT MANAGEMENT AND COORDINATION. Review methods and procedures related to demonstration and orientation including, but not limited to, the following:
 - Inspect and discuss locations and other facilities required for instruction.
 - Review and finalize instruction schedule and verify availability of educational materials, 2. instructors' personnel, audiovisual equipment, and facilities needed to avoid delays.
 - Review required content of instruction. 3.
 - For instruction that must occur outside, review weather and forecasted weather conditions and procedures to follow if conditions are unfavorable.

COORDINATION:

- Coordinate instruction schedule with the Resident Engineer and facility's operations. Adjust schedule A. as required to minimize disrupting facility's operations.
- Coordinate instructors, including providing notification of dates, times, length of instruction time, and B. course content.
- Coordinate content of orientation modules with content of approved emergency, operation, and maintenance manuals. Do not submit instruction program until operation and maintenance data has been reviewed and approved by the Commissioner.

PART II - PRODUCTS

INSTRUCTION PROGRAM: 2.1

- Program Structure: Develop an instruction program that includes individual orientation modules for A. each system and equipment not part of a system, as specified and required by individual Specification Sections.
- Orientation Modules: Develop a learning objective and teaching outline for each module. Include a B. description of specific skills and knowledge that participant is expected to master. For each module, include instruction for the following:
 - Basis of System Design, Operational Requirements, and Criteria: Include the following:
 - System, subsystem, and equipment descriptions.
 - Performance and design criteria if Contractor is delegated design responsibility. b.
 - Operating standards. C.

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- d. Regulatory requirements.
- e. Equipment function including auxiliary equipment and systems.
- f. Operating characteristics.
- g. Limiting conditions.
- h. Performance curves.
- 2. Documentation: Review the following items in detail:
 - a. Emergency manuals.
 - b. Operations manuals.
 - c. Maintenance manuals.
 - d. Project Record Documents.
 - e. Identification systems.
 - f. Warranties
- 3. Emergencies: Include the following, as applicable:
 - Instructions on meaning of warnings, trouble indications, and error messages.
 - b. Instructions on stopping.
 - c. Shutdown instructions for each type of emergency.
 - d. Operating instructions for conditions outside of normal operating limits.
 - e. Sequences for electric or electronic systems.
 - f. Special operating instructions and procedures.
- 4. Operations: Include the following, as applicable:
 - a. Startup procedures.
 - b. Equipment or system break-in procedures.
 - c. Routine and normal operating instructions.
 - d. Regulation and control procedures.
 - e. Control sequences.
 - f. Safety procedures.
 - g. Instructions on stopping.
 - h. Normal shutdown instructions.
 - i. Operating procedures for emergencies.
 - j. Operating procedures for system, subsystem, or equipment failure.
 - k. Seasonal and weekend operating instructions.
 - I. Required sequences for electric or electronic systems.
 - m. Special operating instructions and procedures.
- 5. Adjustments: Include the following:
 - a. Alignments.
 - b. Checking adjustments.
 - c. Noise and vibration adjustments.
 - d. Economy and efficiency adjustments.
- 6. Troubleshooting: Include the following:
 - a. Diagnostic instructions.
 - b. Test and inspection procedures.
- 7. Maintenance: Include the following:
 - Inspection procedures.
 - b. Types of cleaning agents to be used and methods of cleaning.
 - c. List of cleaning agents and methods of cleaning detrimental to product.
 - d. Procedures for routine cleaning



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- e. Procedures for preventive maintenance.
- Procedures for routine maintenance. f.
- Instruction on use of special tools. g.
- Housekeeping practices h.
- Repairs: Include the following: 8.
 - Diagnosis instructions. a.
 - Repair instructions. b.
 - Disassembly; component removal, repair, and replacement; and reassembly instructions. C.
 - Instructions for identifying parts and components. d.
 - Review of spare parts needed for operation and maintenance. e.

PART III - EXECUTION

INSTRUCTION: 3.1

- Facilitator: Engage a qualified facilitator to prepare instruction program and training modules, to A. coordinate instructors, and to coordinate between Contractor and the Resident Engineer for the number of participants, instruction times, and location.
- The Contractor shall engage qualified instructors to instruct facility's personnel to adjust, operate, В. and maintain systems, subsystems, and equipment not part of a system.
- Scheduling: Schedule instruction with the Resident Engineer at mutually agreed times. For equipment C. that requires seasonal operation, provide similar instruction at start of each season.
 - Schedule orientation with the Resident Engineer with at least fourteen (14) days' advance 1. notice.
- Evaluation: At conclusion of each orientation module, assess and document each participant's D. mastery of module(s) by use of an oral a written or a demonstration performance-based test.
- Cleanup: Collect and remove used and leftover educational materials from project site. Remove E. instructional equipment. Restore systems and equipment to condition existing before initial orientation use.

DEMONSTRATION AND ORIENTATION RECORDINGS: 3.2

- Non-Commissioned projects: A.
 - The Contractor shall engage a qualified commercial Videographer to record demonstration and orientation sessions. Record each orientation module separately. Include classroom instructions and demonstrations, board diagrams, and other visual aids, but not student practice.
 - At beginning of each orientation module, record each chart containing learning objective and 2. lesson outline.
 - All recordings must be close captioned. 3.
 - Recording Format: Provide high-quality DVD (Digital Video Disk) format. 4.
 - Recording: Mount camera on tripod before starting recording, unless otherwise necessary to 5. show area of demonstration and orientation. Display continuous running time.
 - Narration: Describe scenes on the recording by audio narration by microphone while recording 6. or by dubbing audio narration off-site after. Include description of items being viewed. Describe vantage point, indicating location, direction (by compass point), and elevation or story of construction.



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- 7. Transcript: Provide a typewritten transcript of the narration. Display images and running time captured from opposite the corresponding narration segment.
- B. Commissioned Projects:

Refer to the Addendum to determine if the project is to be Commissioned.

1. The Commissioning Authority/Agent (CxA) under separate contract with the City of New York will assess and comment on the adequacy of the Orientation Instruction sessions by reviewing the Orientation and Instruction program and agenda provided by each contractor. The provider of the Orientation program will videotape the sessions and provide a copy to the CxA for final review and comments. If necessary, Contractor shall edit the DVD recording per CxA comments.

END OF SECTION 01 79 00



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SECTION 01 81 13 SUSTAINABLE DESIGN REQUIREMENTS FOR LEED BUILDINGS

REFER TO THE ADDENDUM FOR APPLICABILITY OF THIS SECTION 01 81 13

PART I - GENERAL

RELATED DOCUMENTS:

The following documents apply to all required work for the Project: (1) the Contract Drawings, (2) the Specifications, (3) the General Conditions, (4) the Addendum, and (5) the Contract [City of New York Standard Construction Contract].

1.2 SUMMARY:

LEED BUILDING - GENERAL REQUIREMENTS: A.

> The City of New York is committed to implementing good environmental practices and procedures which include achieving a LEED™ Green Building rating. Specific project requirements related to this goal are listed in the applicable paragraphs of this section of the General Conditions. The Contractor shall ensure that these requirements as defined in the sections below and in related sections of the Contract Documents, are implemented to the fullest extent. Substitutions, or other changes to the work proposed by the Contractor or their Subcontractors, shall not be allowed if such changes compromise the stated LEED BUILDING criteria.

- This Section includes: B.
 - **Definitions** 1.
 - **LEED Provisions** 2.
 - LEED Building Submittals 3.
 - **LEED Building Submittal Requirements** 4.
 - LEED Action Plan

RELATED SECTIONS: Include without limitation the following:

CONSTRUCTION WASTE MANAGEMENT AND DISPOSAL Section 01 74 19 A. VOLATILE ORGANIC COMPOUND (VOC) LIMITS FOR ADHESIVES, Section 01 81 13.13 B. SEALANTS, PAINTS AND COATINGS INDOOR AIR QUALITY REQUIREMENTS FOR LEED BUILDINGS C. Section 01 81 19 GENERAL COMMISSIONING REQUIREMENTS

D. Section 01 91 13

DEFINITIONS: 1.4

- Refer to Article 2 of the Contract for definition of terms, words and expressions used in the General A. Conditions not otherwise defined herein.
- Agrifiber Products: Products derived from recovered agricultural waste fiber from sources such as cereal B. straw, sugarcane bagasse, sunflower husk, walnut shells, coconut husks, and agricultural prunings, processed and mixed with resins to produce panels with characteristics similar to composite wood.



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- C. Composite Wood: Products composed of wood or plant particles or fibers bonded by a synthetic resin or binder to produce panels such as plywood, particleboard, and medium density fiberboard (MDF). Does not include hardboard, structural panels, glued laminated timber, prefabricated wood I-joists, or finger-jointed lumber.
- D. Design Consultant: "Design Consultant" shall mean the entity responsible for providing design services for the Project, including without limitation, preparing the construction documents (drawings and specifications) and providing services in connection with such documents during construction. The entity serving as the "Design Consultant" may be a corporation, firm, partnership, joint venture, individual or combination thereof. Such entity may be either an employee(s) of the City or an entity engaged by the City to provide such services.
- E. Forest Stewardship Council (FSC) Certified Wood: Wood-based materials and products certified in accordance with the Forest Stewardship Council's principles and criteria.
- F. LEED: The Leadership in Energy & Environmental Design rating system developed by the United States Green Building Council.
- G. Rapidly Renewable Materials: Materials made from agricultural products that are typically harvested within a ten-year or shorter cycle. Rapidly renewable materials include products made from bamboo, cotton, flax, jute, straw, sunflower seed hulls, vegetable oils, or wool.
- H. Regionally Manufactured Materials: Materials that are manufactured within a radius of 500 miles from the Project location. Manufacturing refers to the final assembly of components into the building product that is installed at the Project site.
- Regionally Extracted, Harvested, or Recovered Materials: Materials which are extracted, harvested, or recovered and manufactured within a radius of 500 miles from the Project site.
- J. Recycled Content: The percentage by weight of constituents that have been recovered or otherwise diverted from the solid waste stream, either during the manufacturing process (pre-consumer), or after consumer use (post-consumer).
 - 1. Spills and scraps from the original manufacturing process that are combined with other constituents after a minimal amount of reprocessing for use in further production of the same product are not recycled materials.
 - 2. Discarded materials from one manufacturing process that are used as constituents in another manufacturing process are pre-consumer recycled materials.
 - "Pre-consumer" may also be referred to as "post-industrial".
- K. Solar Reflectance Index (SRI): A measure of a material's ability to reflect solar heat, as shown by a small temperature rise. It is defined so that a standard black (reflectance 0.05, emittance 0.90) is equal to 0, and a standard white (reflectance 0.80, emittance of 0.90) is equal to 100.
- L. Volatile Organic Compound (VOC): Any compound of carbon (excluding carbon monoxide, carbon dioxide, carbonic acid, metallic carbides or carbonates, and ammonium carbonate) which vaporizes (becomes a gas) and participates in atmospheric photochemical reactions, as specified in Part 51.00 of Chapter 40 of the U.S. Code of Federal Regulations, at normal room temperatures. For the purposes of this specification, formaldehyde and acetaldehyde are considered to be VOCs.



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1.5 LEED PROVISIONS:

A. Refer to the Addendum for the LEED rating to be achieved for this project. The provisions to achieve this LEED rating are integrated within the project construction documents and specifications. The Contractor is specifically directed to the "LEED BUILDING Performance Criteria" and "LEED BUILDING Submittals" sections within the contract specification. Additional LEED requirements are met through aspects of the project design, including material and equipment selections, which may not be specifically identified as LEED BUILDING requirements. Compliance with the requirements needed to obtain LEED prerequisites and credits will be used as one criterion to evaluate substitution requests.

1.6 LEED BUILDING SUBMITTALS:

- A. Scope: LEED BUILDING submittals are required for all installed materials included in General Construction work. LEED BUILDING Submittals are only required for field-applied adhesives, sealants, paints and coatings included in Plumbing, Mechanical and Electrical work. Submit all required LEED BUILDING submittals in accordance with Section 01 33 00, SUBMITTAL PROCEDURES.
- B. Applicability: The extent of the LEED BUILDING Submittals varies depending on the specification section. Applicable LEED BUILDING Submittals are listed under the "LEED BUILDING Submittals" heading in each specification section. The detailed requirements for the LEED BUILDING Submittals are defined in Item C below.
- C. Detailed Requirements: Sub-Sections 1.6 C.1through 1.6 C.3 below defines the information and documents to be provided for each type of LEED BUILDING Submittal as identified in the LEED Submittal Requirements of each specification section:
 - 1. ENVIRONMENTAL BUILDING MATERIALS CERTIFICATION FORM (EBMCF)[GHI]: Information to be supplied for this form (blank sample copy attached at end of this Section to be modified as appropriate to the project) shall include some or all of the following items, as identified in the LEED Submittal Requirements of each specification section:
 - Cost breakdowns for the materials included in the contractor or sub-contractor's scope of work. Cost reporting shall include itemized material costs (excluding the contractor's labor, equipment, overhead and profit).
 - b. The percentages (by weight) of post-consumer and/or post-industrial recycled content in the supplied product(s).
 - For each product with recycled content, also indicate the total recycled content value (1/2 x pre-consumer percentage x product value + 1 x post-consumer percentage x product value = total recycled content value).
 - 2. See additional requirements for concrete below.
 - c. Identification (Yes/No) of materials manufactured within 500 miles of the project site AND containing raw materials harvested or extracted within 500 miles of the project site.
 - 1) Indicate the percentage by weight, relative to the total weight of the product that meets these criteria.
 - 2) Indicate the point of harvest/extraction/recovery of regional raw materials, the point of final assembly of regional manufactured products, and the distance from each point to the project site.
 - d. Volatile Organic Compound (VOC) content of all field-applied adhesives, sealants, paints, and coatings, listed in grams/liter or lbs./gallon, less water.
 - For detailed requirements refer to Section 01 81 13.13 VOC LIMITS FOR ADHESIVES, SEALANTS, PAINTS AND COATINGS.
 - e. The amount of "Forest Stewardship Council (FSC) Certified" wood products if used in the Project.
 - Record only new FSC-certified wood products. Do not record reclaimed, salvaged, or recycled FSC-certified wood products.



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- Reclaimed, salvaged, or recycled FSC-certified wood may be recorded as postconsumer recycled content.
- f. The amount of Rapidly Renewable materials if used in the Project.
 - Indicate the type of rapidly renewable material used, and the percentage by weight, relative to the total weight of the product, that consists of rapidly renewable material.
- g. The percentage (by weight), relative to the total weight of cementitious materials, of supplementary cementitious materials or pozzolans such as fly ash used in each concrete mix used in the Project.
 - 1) For each concrete mix, provide a complete breakdown of all components, by weight and by cost.
- h. Identification (Yes/No) of composite wood or agrifiber products used in the project that are free of added urea-added formaldehyde resins.
- Identification (Yes/No) of flooring products used in the project that have Carpet and Rug Institute (CRI) Green Label or Green Label Plus certification, or Resilient Floor Covering Institute FloorScore certification.
 - Untreated solid wood flooring, and mineral-based flooring products such as tile, masonry, terrazzo, and cut stone that have no organic-based coatings or sealants, are excluded from this requirement.
- j. The EBMCF shall record the above information only for those materials or products permanently installed in the project. The EBMCF shall record VOC content, composite and agrifiber products, and CRI or FloorScore ratings only for those materials or products permanently installed within the weather barrier of the LEED building.
- 2. EBMCF BACK-UP DOCUMENTATION: These documents are used to validate the information provided on the EBMCF (except cost data). For each material listed on the EBMCF, provide documentation to certify the material's LEED BUILDING attributes, as applicable:
 - RECYCLED CONTENT: Provide published product literature or letter of certification on the manufacturer's letterhead certifying the amounts of post-consumer and/or post-industrial content.
 - b. REGIONAL MANUFACTURING **AND** REGIONAL RAW MATERIALS (WITHIN 500 MILES): Provide published product literature or letter of certification on the manufacturer's letterhead indicating the city/state where the manufacturing plant is located, where each of the raw materials in the product were extracted, harvested or recovered and the distance in miles from the project site.
 - 1) If only some of the raw materials for a particular product or assembly originate within 500 miles of the project site, provide the percentage (by weight) that these materials comprise in the complete product.
 - c. VOC CONTENT: Provide Material Safety Data Sheets (MSDS) certifying the Volatile Organic Compound (VOC) content of the adhesive, sealant, paint, or coating products. VOC content is to be reported in grams/liter or lbs./gallon, less water. If the MSDS does not show the product's VOC content, this information must be provided through other published product literature from the manufacturer, or stated in a letter of certification from the product manufacturer on the manufacturer's letterhead.
 - d. RAPIDLY RENEWABLE MATERIALS: If used in the project, provide published literature or letter of certification on the manufacturer's letterhead certifying the percentage of each product that is rapidly renewable (by weight).
- 3. PRODUCT CUT SHEETS: Provide product cut sheets with the Contractor's or sub-contractor's stamp, confirming that the submitted products are the products installed in the Project.
- 4. CRI GREEN LABEL PLUS CERTIFICATION: For carpets and carpet cushions, provide published product literature or letter from the manufacturer (on the manufacturer's letterhead) verifying that the products comply with the "Green Label Plus" IAQ testing program of the Carpet and Rug Institute Dalton, GA.



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- 5. CERTIFICATION OF COMPOSITE WOOD OR AGRIFIBER RESINS: For all composite wood, engineered wood and agrifiber products (including plywood, particleboard, and medium density fiberboard), provide published product literature or letter from the manufacturer (on the manufacturer's letterhead) verifying that that the products do not contain added urea-formaldehyde resins.
- 6. CERTIFICATION OF COMPOSITE WOOD OR AGRIFIBER LAMINATING ADHESIVES: For all laminating adhesives used with composite wood, engineered wood and agrifiber products (e.g., adhesives used to laminate wood veneers to an engineered wood substrate), provide published product literature or letter from the manufacturer (on the manufacturer's letterhead) verifying that the adhesive products do not contain urea-formaldehyde.
- 7. FSC-CERTIFIED WOOD:
 - If used in the project, provide chain of custody documents and copies of invoices regarding wood products, including whether or not such wood product is FSC-certified.
 - b. If used in the project, for assemblies, provide the percentage (by cost and by weight) of the assembly that is FSC-certified wood.
 - c. If used in the project, for assemblies, provide published product literature or letter from the manufacturer(on the manufacturer's letterhead) verifying the percentage that is FSC-certified wood.
- 8. GREEN SEAL COMPLIANCE: Provide published product literature or letter from the manufacturer (on the manufacturer's letterhead) verifying that the following product types comply with the VOC limits and chemical component restrictions developed by the Green Seal organization of Washington, DC:
 - a. Interior Architectural Paints and Coatings: refer to Green Seal standard GS-11 (1st edition, May 1993)
 - b. Anti-corrosive and Anti-rust paints: refer to Green Seal standard GC-03 (2nd Edition, January 1997)
 - c. Aerosol Adhesives: refer to Green Seal standard GS-36 (1st edition, October 2000)
- 9. HIGH ALBEDO PAVING AND WALKWAY MATERIALS: For paving and walkway materials made from concrete or brick provide published product literature or letter from the manufacturer (on the manufacturer's letterhead) verifying a minimum Solar Reflectance Index (SRI) value of 29. SRI values shall be calculated according to ASTM E 1980. Reflectance shall be measured according to ASTM E 903, ASTM E 1918, or ASTM C 1549. Emittance shall be measured according to ASTM E 408 or ASTM C 1371.
- 10. HIGH ALBEDO ROOFING MATERIALS: For exposed roofing membranes, pavers, and ballast products, provide published product literature or letter from the manufacturer (on the manufacturer's letterhead) verifying the following minimum Solar Reflectance Index (SRI) values:
 - a. 78 for low-sloped roofing applications (slope \leq 2:12)
 - b. 29 for steep-sloped roofing applications (slope > 2:12)

SRI values shall be calculated according to ASTM E 1980. Reflectance shall be measured according to ASTM E 903, ASTM E 1918, or ASTM C 1549. Emittance shall be measured according to ASTM E 408 or ASTM C 1371.

Vegetated roof surfaces are exempt from the SRI criteria.

- 11. LOW MERCURY LAMPS: For all fluorescent, compact fluorescent, and HID lamps installed in the project, provide published product literature or letter from the manufacturer (on the manufacturer's letterhead) verifying:
 - a. The mercury content or content range per lamp in milligrams or picograms;
 - b. The design light output per lamp (light at 40% of a lamp's useful life) in lumens; and
 - The rated average life of the lamp in hours.



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In addition, provide the total number of each lamp type installed in the project.

- 12. <u>FLOORSCORE CERTIFICATION</u>: For all hard surface flooring, including vinyl, linoleum, laminate flooring, wood flooring, ceramic flooring, rubber flooring, and wall base, provide published product literature or letter from the manufacturer (on the manufacturer's letterhead) verifying that the products comply with the current FloorScore standard requirements.
- 13. CONCRETE: Provide concrete mix design for each mix, designated by a distinct identifying code or number and signed by a Professional Engineer licensed in the state in which the concrete manufacturer or supplier is located.
- 14. INTERIOR LIGHTING FIXTURES: For each lighting fixture type installed within the building's weather barrier, provide manufacturer's cut sheets indicating the following:
 - a. Fixture power in watts.
 - b. Initial lamp lumens.
 - c. Photometric distribution data.
 - d. Dimming capability, in range of percentages.
- 15. EXTERIOR LIGHTING FIXTURES: For each lighting fixture type installed on site, provide manufacturer's cut sheets indicating the following:
 - a. Fixture power in watts.
 - b. Initial lamp lumens.
 - c. Photometric distribution data.
 - d. Range of field adjustability, if any.
 - e. Warranty of suitability for exterior use.
- 16. ALTERNATIVE TRANSPORTATION: Provide manufacturer's cut sheets and/or shop drawings for the following items installed on site:
 - a. Bike racks, including total number of bicycle slots provided.
 - b. Signage indicating parking spaces reserved for electric or low-emitting vehicles and for carpools/vanpools, including total number of signs.
- 17. WATER CONSERVING FIXTURES: For all water consuming plumbing fixtures and fittings, provide manufacturer's cut sheets showing maximum flow rates and/or flush rates.
- 18. ENERGY SAVING APPLIANCES: Provide manufacturer's cut sheets and published product literature or letter from the manufacturer (on the manufacturer's letterhead) verifying the product's rating under the U.S. EPA/DOE Energy Star program, for all of the following:
 - a. Appliances (i.e., refrigerators, dishwashers, microwave ovens, televisions, clothes washers, clothes dryers, chilled water dispensers).
 - b. Office equipment (i.e., copy machines, fax machines, plotters/printers, scanners, binding and publishing equipment).
 - c. Electronics (i.e., servers, desktop computers, computer monitor displays, laptop computers, network equipment).
 - d. Commercial food service equipment
- 19. GLAZING: For glazing in any windows, doors, storefront and window wall systems, curtainwall systems, skylights, and partitions, provide manufacturer's cut sheets indicating the following:
 - a. Glazed area.
 - b. Visible light transmittance.
 - c. Solar heat gain coefficient.
 - d. Fenestration assembly u-factor.



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- VENTILATION: Provide manufacturer's cut sheets for the following: 20.
 - a. Carbon dioxide monitoring systems, if any, installed to measure outside air delivery.
 - b. Air filters: for detailed requirements refer to Section 01 81 19 INDOOR AIR QUALITY REQUIREMENTS.
- REFRIGERATION: For all refrigeration equipment, provide manufacturer's cut sheets indicating the following:
 - a. Equipment type.
 - b. Equipment life. Default values specified by the 2007 ASHRAE Applications Handbook will be used unless otherwise demonstrated by the manufacturer's guarantee and an equivalent long-term service contract.
 - c. Refrigerant type.
 - d. Refrigerant charge in pounds of refrigerant per ton of gross cooling capacity.
 - e. Tested refrigerant leakage rate, in percent per year. A default rate of 2% will be used unless otherwise demonstrated by test data.
 - Tested end-of-life refrigerant loss, in percent. A default rate of 10% will be used unless otherwise demonstrated by test data.

LEED BUILDING SUBMITTAL REQUIREMENTS: 1.7

The LEED BUILDING Submittal information shall be assembled into one package per contract A. specification section(s) (or per subcontractor), and submitted in accordance with Section 01 33 00, SUBMITTAL PROCEDURES. Incomplete or inaccurate LEED BUILDING submittals may be used as the basis for the rejection of products or assemblies. Incomplete or inaccurate LEED BUILDING Submittals may be used as the basis for rejecting the submitted products or assemblies.

1.8 **LEED ACTION PLANS:**

- Construction Waste Management Plan- Refer to Section 01 74 19, Construction Waste Management and A. Disposal for detailed submittal requirements.
- Construction IAQ Management Plan- Refer to Section 01 81 19, Indoor Air Quality Requirements for B. LEED Buildings, for detailed submittal requirements.
- **Erosion and Sedimentation Control Plan:** C.
 - The Plan shall be in accordance with the New York State Department of Environmental 1. Conservation (NYSDEC) or the 2003 EPA Construction General Permit, whichever is more
 - The Plan shall be submitted in accordance with Section 01 33 00, SUBMITTAL PROCEEDURES. 2.
 - Detailed requirements: ESC Plan 3.
 - Include the Stormwater Pollution Prevention Plan, if required.
 - Identify the party responsible for Plan monitoring and documentation. The party must be regularly on site.
 - Describe all site work that will be implemented on the project. C.
 - Provide site plan with location of ESC measures, including, but not limited to, stormwater quantity controls, stormwater quality controls, stabilized construction entrances, washdown areas, and inlet/catch basin protection.
 - Describe the inspection and maintenance of the ESC measures. Provide a construction schedule indicating weekly site review.
 - Describe reporting and documentation measures.
 - Detailed requirements: ESC Measures



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- 5. Submittal requirements: ESC Tracking Log
 - a. Note date of major rain events, describe damage, describe any repairs or maintenance performed, and note responsible party.
 - b. Note date and findings of weekly site review, describe any repairs or maintenance performed, and note responsible party.
 - c. Submit monthly.
- 6. Implementation
 - a. The Contractor shall implement the ESC Plan, coordinate the Plan with all affected trades, and designate one individual as the Erosion and Sedimentation Control Representative, who will be responsible for communicating the progress of the Plan with the Commissioner on a regular basis, and for assembling the required LEED documentation.
 - b. The Contractor shall be responsible for the provision, maintenance, and repair of all ESC measures.
 - c. Demonstration. The Contractor shall provide on-site instruction of proper construction practices required to prevent erosion and sedimentation.
 - d. Meetings. Urgent or ongoing ESC issues shall be discussed at weekly on-site job meetings.

1.9 QUALITY ASSURANCE:

- A. The Contractor shall implement all LEED Action Plans, coordinate the Plans and LEED Building Submittals with all affected trades, and designate one individual as the Sustainable Construction Representative at no additional cost to the City of New York, who will be responsible for communicating the progress of LEED activities with the Commissioner on a regular basis, and for assembling the required LEED documentation.
- B. Responsibilities of Contractor's Subcontractors: The Contractor shall be responsible for his/her subcontractors complying with the LEED Action Plans and for providing required LEED documentation as required for the project.
- C. Distribution and Compilation: The Contractor shall be responsible for distributing the EBMCF and any other forms or templates required for the subcontractors to record LEED documentation. The Contractor shall also be responsible for collecting and compiling EBMCF information into packages as described in Section 01 33 00 SUBMITTAL PROCEDURES.
- D. Meetings: Sustainable design and construction issues shall be discussed at the following meetings:
 - Demolition kick-off meeting
 - 2. Construction kick-off meeting
 - 3. Construction kick-off meeting for LEED (independent meeting)
 - 4. Weekly job-site progress and coordination meetings
 - 5. Closeout meeting

PART II - PRODUCTS (Not Used)

PART III - EXECUTION (Not Used)

END OF SECTION 01 81 13



ENVIRONMENTAL BUILDING MATERIALS CERTIFICATION FORM

Project Name:	Recycled Content Regional ⁴ Rapidly Renewable ⁷ VOC content ⁸ Flooring ⁹ Wood	Pre- Post- Total % Location & Extracted *VOC *VOC *Green *Added urea FSC Consumer (½ Pre Distance to D				
	Recycled	Material Consumer				
Contractor Name: Contractor Contact: Telephone Number:	The state of the s	Product/Manufacturer			The state of the s	

- Material Cost: As it appears on the manufacturer's or distributor's invoice to the contractor or subcontractor. Does not include labor or equipment costs associated with installation.
- Pre-Consumer Recycled Content: Industrial/manufacturing waste material (e.g., fly-ash and synthetic gypsum, both waste products from coal burning electricity plants) diverted from landfill and incorporated into a finished product. Scrap raw materials that can be reused in the same manufacturing process from which they are recovered are not considered Pre-Consumer Recycled Content
 - Post-Consumer Recycled Content: Material or product that has served its intended consumer use (e.g., an empty plastic bottle) and has been diverted from landfill and incorporated into a finished product.
 - Regional: Refers to a material/product that is BOTH extracted AND manufactured within 500 miles of the Project site. Record this information ONLY for materials/products meeting BOTH of these criteria.
- Extraction: Refers to the location from which the raw resources used in a building product are extracted, harvested, or recovered.
- Manufacture: Refers to the location of the final assembly of components into a building product that is furnished and installed by the Contractor.
- Rapidly Renewable: Refers to materials/products derived from agricultural products that are typically harvested within a ten-year or shorter cycle.
- VOC Content: The quantity of volatile organic compounds contained in adhesives, sealants. paints and architectural coatings. Reported in grams/liter or lbs/gallon, less water.
- Flooring: For carpet, indicate Carpet and Rug Institute (CRI) Green Label Plus certification. For carpet cushion, indicate CRI Green Label certification. For all flooring except unfinished/untreated wood and mineral-based flooring (tile, masonry, terrazzo, cut stone) without organic-based coatings or sealants, indicate Resilient Floor Covering Institute FloorScore rating. VOC limits for adhesives, sealants, etc. still apply.
 - OAdded Urea Formaidehyde: Applies to composite wood and agrifiber products only (plywood, particleboard, MDF, OSB, wheatboard, strawboard). Resins or binders with added urea formaldehyde are prohibited
 - 1FSC Certified: Certification from the Forest Stewardship Council. This column is only applicable to wood products.
- * Applies only to materials/products installed within the weather barrier

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(the Contractor) hereby certify that the material information	naterial qualifications to be provided by the Contractor as components of the final building construction.	ing period will require prior written approval from the Commissioner.
I, a duly authorized representative of	contained herein is an accurate representation of the material qualifications to be pro-	Furthermore, I understand that any change in such qualifications during the purchasing period will require prior written approval from the Commissioner.

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SECTION 01 81 13.13

VOLATILE ORGANIC COMPOUND (VOC) LIMITS FOR ADHESIVES, SEALANTS, PAINTS AND COATINGS FOR LEED BUILDINGS

REFER TO THE ADDENDUM FOR APPLICABILITY OF THIS SECTION 01 81 13.13

PARTI- GENERAL

1.1 RELATED DOCUMENTS:

A. The following documents apply to all required work for the Project: (1) the Contract Drawings, (2) the Specifications, (3) the General Conditions, (4) the Addendum, and (5) the Contract [City of New York Standard Construction Contract].

1.2 SUMMARY:

- A. This Section includes requirements for volatile organic compound (VOC) content in adhesives, sealants, paints and coatings used for the project.
- B. All sections in the Project Specifications with adhesives, sealant or sealant primer applications, paints and coatings shall follow all requirements of this section. In the event of any conflict or inconsistency between this section and the Specifications regarding adhesives, sealant or sealant applications, paints and coatings, the requirements set forth in this Section shall prevail.
- C. This Section includes:
 - 1. General Requirements
 - 2. References
 - 3. VOC Requirements for Interior Adhesives
 - 4. VOC Requirements for Interior Sealants
 - 5. VOC requirements for Interior Paints
 - 6. VOC requirements for Interior Coatings
 - 7. Submittals

1.3 RELATED SECTIONS: Include without limitation the following:

A. Section 01 10 00 SU	MMARY
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- B. Section 01 31 00 PROJECT MANAGEMENT AND COORDINATION
- C. Section 01 32 00 CONSTRUCTION PROGRESS DOCUMENTATION
- D. Section 01 33 00 SUBMITTAL PROCEDURES
- E. Section 01 73 00 EXECUTION
- F. Section 01 77 00 CLOSEOUT PROCEDURES
- G. Section 01 78 39 CONTRACT RECORD DOCUMENTS
- H. Section 01 81 13 SUSTAINABLE DESIGN REQUIREMENTS FOR LEED BUILDINGS
- I. Section 01 81 19 INDOOR AIR QUALITY FOR LEED BUILDINGS

1.4 DEFINITIONS:

- A. ADHESIVE: Any substance used to bond one surface to another by attachment. Includes adhesive primers and adhesive bonding primers.
 - 1. Aerosol Adhesive: Any adhesive packaged as an aerosol with a spray mechanism permanently housed in a non-refillable can designed for hand-held application without the need for ancillary equipment.
- B. CARCINOGEN: A chemical listed as a known, probable, reasonably anticipated, or possible human



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carcinogen by the International Agency for Research on Cancer (IARC) (Groups 1, 2A, and 2B), the National Toxicology Program (NTP) (Groups 1 and 2), the U.S. Environmental Protection Agency (EPA) Integrated Risk Information System (IRIS) (weight-of-evidence classifications A, B1, B2, and C, carcinogenic, likely to be carcinogenic, and suggestive evidence of carcinogenicity or carcinogen potential), or the Occupational Safety and Health Administration (OSHA).

- C. CLEAR WOOD FINISH: Clear/semi-transparent coating applied to wood substrates to provide a transparent or translucent solid film.
 - 1. Lacquer: Clear/semi-transparent coating formulated with cellulosic or synthetic resins to dry by evaporation without chemical reaction and provide a solid, protective film.
 - 2. Sanding Sealer: A sanding sealer that also meets the definition of a lacquer.
 - 3. Varnish: Clear/semi-transparent coating, excluding lacquers and shellacs, formulated to dry by chemical reaction on exposure to air. May contain small amounts of pigment.
- D. COATING: Liquid, liquefiable, or mastic composition that is converted to a solid adherent film after application to a substrate as a thin layer; and is used for decorating, protecting, identifying or to serve some functional purpose such as the filling or concealing of surface irregularities or the modification of light and heat radiation characteristics; and is intended for on-site application to interior or exterior surfaces of buildings. Does not include stains, clear finishes, recycled latex paint, specialty (industrial, marine or automotive) coatings or paint sold in aerosol cans.
- E. FLOOR COATING: Opaque coating applied to flooring. Excludes industrial maintenance coatings.
- F. HAZARDOUS AIR POLLUTANT: Any compound listed by the U.S. EPA in the Clean Air Act Section 112(b)(1) as a hazardous air pollutant.
- G. MUTAGEN: A chemical that meets the criteria for category 1, chemicals known to induce heritable mutations or to be regarding as if they induce heritable mutations in the germ cells of humans, under the Harmonized System for the Classification of Chemicals Which Cause Mutations in Germ Cells (United Nations Economic Commission for Europe, Globally Harmonized System of Classification and Labeling of Chemicals).
- H. OZONE-DEPLETING COMPOUNDS: A compound with an ozone-depletion potential greater than 0.1 (CFC 11=1) according to the U.S. EPA list of Class I and Class II Ozone-Depleting Substances.
- I. PAINT: A pigmented coating. For the purposes of this specification, paint primers are considered to be paints.
 - 1. Flat Coating or Paint: Has a gloss of less than 15 (using an 85-degree meter) or less than 5 (using a 60-degree meter).
 - 2. Non-Flat Coating or Paint: Has a gloss of greater than or equal to 15 (using an 85-degree meter) or greater than or equal to 5 (using a 60-degree meter).
 - Non-Flat High-Gloss Coating or Paint: Has a gloss of greater than or equal to 70 (using a 60-degree meter).
 - 4. Anti-Corrosive / Rust Preventative Paint: Coating formulated and recommended for use in preventing the corrosion of ferrous metal substrates.
- J. PRIMER: Coating that is formulated and recommended for one or more of the following purposes: to provide a firm bond between the substrate and a subsequent coating; to prevent a subsequent coating from being absorbed into the substrate; to prevent harm to a subsequent coating from materials in the substrate; or to provide a smooth surface for application of a subsequent coating.
- K. REPRODUCTIVE TOXIN: A chemical listed as a reproductive toxin (including developmental, female, and male toxins) by the State of California under the Safe Drinking Water and Toxic Enforcement Act of 1986 (California Code of Regulations, Title 22, Division 2, Subdivision 1, Chapter 3, Sections 1200, et. Seq.).
- L. SANDING SEALER: Clear/semi-transparent coating formulated to seal bare wood. Can be abraded to create a smooth surface for subsequent coatings. Does not include sanding sealers that are lacquers (see Clear Wood Finish above).
- M. SEALANT: Any material with adhesive properties, formulated primarily to fill, seal, or waterproof gaps or join



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between surfaces. Includes sealant primers and caulks.

- N. SHELLAC: Clear or pigmented coating formulated solely with the resinous secretions of the lac beetle, thinned with alcohol and formulated to dry by evaporation without chemical reaction. Excludes floor applications.
- O. STAIN: Clear semi-transparent/opaque coating formulated to change the color but not conceal the grain pattern or texture of the substrate.
- P. VOLATILE AROMATIC COMPOUND: Any hydrocarbon compound containing one or more 6-carbone benzene rings, and having an initial boiling point less than or equal to 280 degrees Celsius measured at standard conditions of temperature and pressure.
- Q. VOLATILE ORGANIC COMPOUND: Any compound of carbon (excluding carbon monoxide, carbon dioxide, carbonic acid, metallic carbides or carbonates, and ammonium carbonate) which vaporizes (becomes a gas) and participates in atmospheric photochemical reactions, as specified in Part 51.00 of Chapter 40 of the U.S. Code of Federal Regulations, at normal room temperatures. For the purposes of this specification, formaldehyde and acetaldehyde are considered to be VOCs.
- R. WATERPROOFING SEALER: A coating that prevents the penetration of water into porous substrates.

1.5 GENERAL REQUIREMENTS:

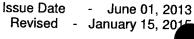
A. The City of New York is committed to implementing good environmental practices and procedures which include achieving a LEED Green building rating. Specific project requirements related to this goal which may impact this area of work are listed in the applicable paragraphs of this specification section. The Contractor shall ensure that the requirements as defined in the sections below and in related sections of the Contract Documents, are implemented to the fullest extent. Substitutions, or other changes to the work proposed by the Contractor or their Subcontractors, shall not be allowed if such changes compromise the stated environmental goals.

1.6 REFERENCES:

- A. Rule 1168 "Adhesive and Sealant Applications", amended 7 January 2005): South Coast Air Quality Management District (SCAQMD), State of California, www.agmd.gov
- B. Rule 1113 "Architectural Coatings", amended 9 July 2004: South Coast Air Quality Management District (SCAQMD), State of California, www.aqmd.gov
- C. Green Seal Standard GS-11- "Paints", of Green Seal, Inc., Washington, DC, www.greenseal.org
- D. Green Seal Standard GC-03- "Anti-Corrosive Paints", of Green Seal, Inc., Washington, DC, www.greenseal.org

1.6 VOC REQUIREMENTS FOR INTERIOR ADHESIVES, SEALANTS, PAINTS AND COATINGS:

- A. GENERAL: Unless otherwise specified herein, the VOC content of all interior adhesives, sealants, paints and coatings (herein referred to as "products") shall not be in excess of 250 grams per liter.
- B. No product shall contain any ingredients that are carcinogens, mutagens, reproductive toxins, persistent bioacculmulative compounds, hazardous air pollutants, or ozone-depleting compounds. An exception shall be made for titanium dioxide and, for products that are pre-tinted by the manufacturer, carbon black, which shall be less than or equal to 1% by weight of the product.
- C. No product shall contain the following:
 - 1. methylene chloride
 - 2. 1.1.1-trichloroethane
 - 3. benzene





- 4. toluene
- 5. ethylbenzene
- 6. vinyl chloride
- 7. naphthalene
- 1,2-dichlorobenzene 8.
- 9. di (2-ethylhexyl) phthalate
- 10. butyl benzyl phthalate
- 11. di-n-butyl phthalate
- 12. di-n-octyl phthalate
- 13. diethyl phthalate
- 14. dimethyl phthalate
- 15. isophorone
- 16. antimony
- 17. cadmium
- 18. hexavalent chromium
- 19. lead
- 20. mercury
- 21. formaldehyde
- 22. methyl ethyl ketone
- 23. methyl isobutyl ketone
- 24. acrolein
- 25. acrylonitrile
- No product shall contain more than 1.0% by weight of sum total of volatile aromatic compounds. D.

1.8 **VOC REQUIREMENTS FOR INTERIOR ADHESIVES:**

- The volatile organic compound (VOC) content of adhesives, adhesive bonding primers, or adhesive A. primers used in this project shall not exceed the limits defined in Rule 1168 - "Adhesive and Sealant Applications" of the South Coast Air Quality Management District (SCAQMD), of the State of California.
- The VOC limits defined by SCAQMD are as follows. All VOC limits are defined in grams per liter, less B. water and less exempt compounds.
- C. For specified building construction related applications, the allowable VOC content is as follows:
 - 1. Architectural Applications:

a.	indoor carpet adnesive	50
b.	Carpet pad adhesive	50
C.	Wood flooring adhesive	100
d.	Rubber floor adhesive	60
e.	Subfloor adhesive	50
f.	Ceramic tile adhesive	65
g.	VCT and asphalt tile adhesive	50
h.	Drywall and panel adhesive	50
i.	Cove base adhesive	50
j.	Multipurpose construction adhesive	70
k.	Structural glazing adhesive	100

2. Specialty Applications:

a.	PVC welding	510
b.	CPVC welding	490
C.	ABS welding	325
d.	Plastic cement welding	250

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e.	Adhesive primer for plastic	550
f.	Contact Adhesive	80
g.	Special Purpose Contact Adhesive	250
ĥ.	Structural Wood Member Adhesive	140
i.	Sheet Applied Rubber Lining Operations	850
j.	Top and Trim Adhesive	250

3. Substrate Specific Applications:

a.	Metal to metal	30
b.	Plastic foams	50
C.	Porous material (except wood)	50
d.	Wood	30
e.	Fiberglass	80

4. Aerosol Adhesives:

a.	General purpose mist spray	65% VOC's by weight
b.	General purpose web spray	55% VOC's by weight
		7 · H · · · · · · · · · · · · · · · · ·

c. Special purpose aerosol adhesives (all types)

70% VOC's by weight

1.9 VOC REQUIREMENTS FOR INTERIOR SEALANTS:

- A. The volatile organic compound (VOC) content of sealants, or sealant primers used in this project shall not exceed the limits defined in Rule 1168 "Adhesive and Sealant Applications" of the South Coast Air Quality Management District (SCAQMD), of the State of California.
- B. The VOC limits defined by SCAQMD are as follows. All VOC limits are defined in grams per liter, less water and less exempt compounds.

1. Sealants:

a.	Architectural	250
b.	Non-membrane roof	300
C.	Roadway	250
d.	Single-ply roof membrane	450
e.	Other	420
_	Drimore	

2. Sealant Primer:

a.	Architectural - Nonporous	250
b.	Architectural - Porous	775
C.	Other	750

1.10 VOC REQUIREMENTS FOR INTERIOR PAINTS:

- A. Paints and Primers: Paints and primers used in non-specialized interior applications (i.e., for wallboard, plaster, wood, metal doors and frames, etc.) shall meet the VOC limitations of the Green Seal Paint Standard GS-11, of Green Seal, Inc., Washington, DC. Product-specific environmental requirements are as follows:
 - 5. Volatile Organic Compounds:
 - a. The VOC concentrations (in grams per liter) of the product shall not exceed those listed below as determined by U. S. Environmental Protection Agency (EPA) Reference Test Method 24.

Interior Paints and Primers:

Non-flat: 150 g/l Flat: 50 g/l

The calculation of VOC shall exclude water and tinting color added at the point of sale.

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- B. Anti- Corrosive and Anti-Rust Paints: Anti-corrosive and anti-rust paints applied to interior ferrous metal substrates shall meet the VOC limitations of the Green Seal Paint Standard GC-03, of Green Seal, Inc., Washington, DC. Product-specific environmental requirements are as follows:
 - 1. Volatile Organic Compounds:
 - a. The VOC concentrations (in grams per liter) of the product shall not exceed those listed below as determined by U. S. Environmental Protection Agency (EPA) Reference Test Method 24.

Anti-Corrosive and Anti-Rust Paints: 250 g/l

The calculation of VOC shall exclude water and tinting color added at the point of sale.

1.11 VOC REQUIREMENTS FOR INTERIOR COATINGS:

A. Clear wood finishes, floor coatings, stains, sealers, and shellacs applied to the interior shall meet the VOC limitations defined in Rule 1113, "Architectural Coatings" of SCAQMD, of the State of California. The VOC limits defined by SCAQMD, based on 7/9/04 amendments, are as follows. VOC limits are defined in grams per liter, less water and less exempt compounds.

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	a.	Varnish	350
	b.	Sanding Sealers	350
	C.	Lacquer	550
2.	She	llac:	,
	a.	Clear	730
	b.	Pigmented	550
3.	Stai	ns	250
4.	Floc	or Coatings	100
5.	Wat	erproofing Sealers	250
6.	San	ding Sealers	275
7	Oth	ar Sealers	200

The calculation of VOC shall exclude water and tinting color added at the point of sale.

1.12 SUBMITTALS:

- A. Submit Material Safety Data Sheets, for all applicable products in accordance with Section 01 33 00, SUBMITTAL PROCEDURES. Applicable products include, but are not limited to adhesives, sealants, carpets, paints and coatings. Material Safety Data Sheets shall indicate the Volatile Organic Compound (VOC) limits of products submitted. (If an MSDS does not include a product's VOC limits, then product data sheets, manufacturer literature, or a letter of certification from the manufacturer can be submitted in addition to the MSDS to indicate the VOC limits).
- B. Submit Environmental Building Materials Certification Form (EBMCF) as referenced in Section 01 81 13 SUSTAINABLE REQUIREMENTS FOR LEED BUILDINGS: For each field-applied adhesive, sealant, paint, and coating product, provide the VOC requirement, as provided in this Specification, for the relevant material category indicated on the documentation noted above.

PART II - PRODUCTS (Not Used)
PART III - EXECUTION (Not Used)
END OF SECTION 01 81 13.13



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SECTION 01 81 19 INDOOR AIR QUALITY REQUIREMENTS FOR LEED BUILDINGS

REFER TO THE ADDENDUM FOR APPLICABILITY OF THIS SECTION 01 81 19

PART I - GENERAL

1.1 RELATED DOCUMENTS:

A. The following documents apply to all required work for the Project: (1) the Contract Drawings, (2) the Specifications, (3) the General Conditions, (4) the Addendum, and (5) the Contract [City of New York Standard Construction Contract].

1.2 CONSTRUCTION IAQ MANAGEMENT GOALS FOR THE PROJECT:

A. The City of New York has determined that this Project shall minimize the detrimental impacts on Indoor Air Quality (IAQ) resulting from construction activities. Factors that contaminate indoor air, such as dust entering HVAC systems and ductwork, improper storage of materials on-site, poor housekeeping, shall be minimized.

1.3 RELATED SECTIONS:

- A. All sections of the Specifications related to interior construction, MEP systems, and items affecting indoor air quality.
- B. Section 01 81 13, SUSTAINABLE DESIGN REQUIREMENTS FOR LEED BUILDINGS
- C. Section 01 81 13.13, VOLATILE ORGANIC COMPOUND (VOC) LIMITS FOR ADHESIVES, SEALANTS, PAINTS AND COATINGS.
- D. Division 9 (of the Specifications): Finishes.

1.4 DEFINITIONS:

- A. Refer to Article 2 of the Contract for definition of terms, words and expressions used in the General Conditions not otherwise defined herein.
- B. Design Consultant: "Design Consultant" shall mean the entity responsible for providing design services for the Project, including without limitation, preparing the construction documents (drawings and specifications) and providing services in connection with such documents during construction. The entity serving as the "Design Consultant" may be a corporation, firm, partnership, joint venture, individual or combination thereof. Such entity may be either an employee(s) of the City or an entity engaged by the City to provide such services.
- C. Volatile Organic Compounds (VOC's): Chemical compounds common in and emitted by many building products, including solvents in paints, coatings, adhesives and sealants, wood preservatives, composite wood binder, and foam insulations. Not all VOC's are harmful, but many of those contained within building products contribute to the formation of smog and may irritate building occupants by their smell and/or health impact.



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- D. Materials that act as "sinks" for VOC contamination: Absorptive materials, typically dry and soft materials (such as textiles, carpeting, acoustical ceiling tiles and gypsum board) that readily absorb VOC's emitted by "source" materials and release them over a prolonged period of time.
- E. Materials that act as "sources" for VOC contamination: Products with high VOC contents that emit VOC's either rapidly during application and curing (typically "wet" products, such as paints, sealants, adhesives, caulks and sealers) or over a prolonged period (typically "dry" products such as flooring coverings with plasticizers and engineered wood with formaldehyde).

1.5 REFERENCES, RESOURCES:

- A. "IAQ Guidelines for Occupied Buildings Under Construction", First Edition, November 1995, The Sheet Metal and Air Conditioner Contractors National Association (SMACNA). (703) 803-2980, www.smacna.org.
- B. ANSI/ASHRAE 52.2-1999, "Method of Testing General Ventilation Air-Cleaning Devices for Removal Efficiency by Particle Size", www.ashrae.org

1.6 LEED BUILDING GENERAL REQUIREMENTS:

A. Implement practices and procedures as necessary to meet the project's environmental performance goals as set forth in the specific requirements of this section. Specific project goals that may impact this area of work include: use of recycled-content materials; use of low-emitting materials; construction waste recycling; and the implementation of a construction indoor air quality management plan. Ensure that the requirements related to these goals, as defined in this Section, are implemented to the fullest extent. Substitutions or other changes to the work shall not be allowed if such changes compromise the stated LEED BUILDING Performance Criteria.

1.7 CONSTRUCTION IAQ MANAGEMENT PLAN:

- A. The Contractor shall prepare a Construction IAQ Management Plan in coordination with each subcontractor and submit the IAQ Management Plan to the Commissioner for approval in accordance with Section 01 33 00, SUBMITTAL PROCDEURES. The Construction IAQ Management Plan shall meet the following criteria:
 - 1. Construction activities shall be planned to meet or exceed the minimum requirements of the Sheet Metal and Air Conditioning National Contractors' Association (SMACNA) "IAQ Guidelines for Occupied Buildings under Construction", First Edition, 1995.
 - 2. Absorptive materials shall be protected from moisture damage when stored on-site and after installation.
 - 3. If air handlers are to be used during construction, filtration media with a Minimum Efficiency Reporting Value (MERV) of 8 must be used at each return air grill, as determined by ASHRAE 52.2-1999.
 - 4. Filtration media shall be replaced immediately prior to occupancy. Filtration media shall have a Minimum Efficiency Reporting Value (MERV) of 13 as determined by ASHRAE 52.2-1999 if the project is pursuing Indoor Air Quality Credit 5: Indoor Chemical Pollutant Source Control.
 - 5. A "Sequence of Finish Installation Plan" shall be developed, highlighting measures to reduce the absorption of VOCs by materials that act as "sinks".
 - 6. Upon approval of the Plan by the Commissioner, it shall be implemented by the Contractor through the duration of the construction process, and documented in accordance with the Submittal Requirements of Sub-Section 1.8 herein.



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- B. Further description of the Construction IAQ Management Plan requirements is as follows:
 - 1. SMACNA Guidelines: Chapter 3 of the referenced "IAQ Guidelines for Occupied Buildings Under Construction", outline IAQ measures in five categories as listed below. The Construction IAQ Management Plan shall be organized in accordance with the SMACNA format, and shall address measures to be implemented in each of the five categories (including subsections). All subsections shall be listed in the Plan; items that are not applicable for this project should be listed as such.

a. HVAC Protection

- 1) Protect air handling and distribution equipment and air supply and return ducting during construction.
- All ductwork arriving on site will be sealed with plastic sheeting and stored on pallets or dunnage until installed.
- 3) Cover and protect all exposed air inlets and outlets, openings, grilles, ducts, plenums, etc. to prevent water, moisture, dust and other contaminant intrusion.
- Apply protection immediately after ducting.

5) Protect ducting runs at the end of day's work.

6) Inspect temporary filtration weekly and replace as required to maintain the proper ventilation rates in the building.

b. Source Control

1) Protect stored on-site or installed absorptive or porous materials.

2) Do not use wet or damaged porous materials in the building.

3) Recover, isolate, and ventilate containers housing toxic materials and materials with VOC levels above the limits for interior adhesives, sealants, paints, and coatings described in these Specifications.

4) Exhaust fumes from idling vehicles and gasoline fueled tools through use of funnels or temporary piping.

- 5) Containers housing toxic materials and materials with VOC levels above the limits for interior adhesives, sealants, paints, and coatings described in these Specifications, shall be closed when not in use.
- c. Pathway Interruption

1) Depressurize work areas to contain dust and odors.

- 2) Pressurize occupied spaces to prevent intrusion of dust and odors.
- 3) Erect barriers to contain construction areas.

4) Relocate pollutant sources.

5) Temporarily seal the building and provide 100% outside air for ventilation.

d. Housekeeping

1) Store materials on elevated platforms under cover, in a designated dry, clean location, prior to unpacking for installation.

2) If materials are not stored in an enclosed location, cover tops and sides of material with waterproof sheeting, securely tied.

3) Institute cleaning activities to remove contaminants from the building prior to occupancy. Clean all coils, air filters, and ductwork prior to performing testing, adjusting, and balancing of HVAC systems.

Sweep the work area on a daily basis. Use an efficient and effective dust collecting method such as damp cloth, wet mop, or vacuum with particulate filters. Activities which produce high levels of dust shall be cleaned up immediately upon completion.

- 5) Spills or excess applications of products containing solvents, or with VOC levels above the limits for interior adhesives, sealants, paints, and coatings described in these Specifications, must be removed immediately.
- 6) Dust all walls prior to application of finishes.

7) Vacuum all stud tracks prior to application of insulation.

8) Materials which become contaminated through direct exposure to moisture from



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precipitation, plumbing leaks, or condensation shall be replaced by the Contractor. Schedulina

Phase construction such that absorptive materials are installed only in areas that are 1) weathertight. 2)

Schedule activities that utilize "sources" of VOC contamination to take place prior to

installing high absorbent materials that will act as "sinks" for contaminants.

Review of the appropriate components of the Construction IAQ Management Plan shall 3) be a regular action topic at weekly site coordination meetings. Implementation of the Plan shall be documented in the meeting minutes.

- Protection of Materials from Moisture Damage: As part of the "Housekeeping" section of the 2. Construction IAQ Management Plan, measures to prevent installed materials or material stored onsite from moisture damage shall be described. This section should also describe measures to be taken if moisture damage does occur to absorptive materials during the course of construction.
- Replacement of Filtration Media: Under the "HVAC Protection" section of the Construction IAQ 3. Management Plan, a description of the filtration media in all ventilation equipment shall be provided. The description shall include replacement criteria for filtration media during construction, and confirmation of filtration media replacement for all equipment immediately prior to occupancy.
- Sequence of Finish Installation for Materials: Where feasible, absorptive materials shall be installed 4. after the installation of materials or finishes which have high short-term emissions of VOC's, formaldehyde, particulates, or other air-borne compounds. Absorptive materials include, but are not limited to: carpets; acoustical ceiling panels; fabric wall coverings; insulations (exposed to the airstream); upholstered furnishings; and other woven, fibrous or porous materials. Materials with high short-term emissions include, but are not limited to: adhesives, sealants and glazing compounds (specifically those with petrochemical vehicles or carriers); paints, wood preservatives and finishes; control and/or expansion joint fillers; hard finishes requiring adhesive installation; gypsum board (with associated finish processes and products); and composite or engineered wood products with formaldehyde binders.
- 5. Develop and implement an Indoor Air Quality (IAQ) Management Plan for the pre-occupancy phase as follows:

OPTION 1 — Flush-Out

· After construction ends, prior to occupancy and with all interior finishes installed, perform a building flush-out by supplying a total air volume of 14,000 cu.ft. of outdoor air per sq.ft. of floor area while maintaining an internal temperature of at least 60 degrees F and relative humidity no higher than 60%.

OR

· If occupancy is desired prior to completion of the flush-out, the space may be occupied following delivery of a minimum of 3,500 cu.ft. of outdoor air per sq.ft. of floor area to the space. Once a space is occupied, it shall be ventilated at a minimum rate of 0.30 cfm/sq.ft. of outside air or the design minimum outside air rate determined in EQ Prerequisite 1, whichever is greater. During each day of the flush-out period, ventilation shall begin a minimum of three hours prior to occupancy and continue during occupancy. These conditions shall be maintained until a total of 14,000 cu.ft./sq.ft. of outside air has been delivered to the space.

OR



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OPTION 2 — Air Testing

Conduct baseline IAQ testing, after construction ends and prior to occupancy, using testing
protocols consistent with the United States Environmental Protection Agency Compendium of
Methods for the Determination of Air Pollutants in Indoor Air and as additionally detailed in the
LEED-NC Reference Guide.

· Demonstrate that the contaminant maximum concentrations listed below are not exceeded.

CONTAMINANT	MAXIMUM CONCENTRATION
Formaldehyde	27 parts per billion
Particulates (PM10)	50 micrograms per cubic meter
Total Volatile Organic Compounds (TVOC)	500 micrograms per cubic meter
* 4-Phenylcyclohexene (4-PCH)	6.5 micrograms per cubic meter
Carbon Monoxide (CO)	9 part per million and no greater than 2 parts per million above outdoor levels
* This test is only required if carpets and fabrica backing material are installed as part of the base.	

- For each sampling point where the maximum concentration limits are exceeded, conduct additional flush-out with outside air and retest the specific parameter(s) exceeded to indicate the requirements are achieved. Repeat procedure until all requirements have been met. When retesting non-complying building areas, take samples from the same locations as in the first test.
- The air sample testing shall be conducted as follows:
- a. All measurements shall be conducted prior to occupancy, but during normal occupied hours and with the building ventilation system starting at the normal daily start time and operated at the minimum outside air flow rate for the occupied mode throughout the duration of the air testing.
- b. The building shall have all interior finishes installed, including but not limited to millwork, doors, paint, carpet and acoustic tiles. Non-fixed furnishings such as workstations and partitions are encouraged, but not required, to be in place for the testing.
- c. The number of sampling locations will vary depending upon the size of the building and number of ventilation systems. For each portion of the building served by a separate ventilation system, the number of sampling points shall not be less than one per 25,000 sq.ft., or for each contiguous floor area, whichever is larger, and include areas with the least ventilation and greatest presumed source strength.
- d. Air samples shall be collected between 3 feet and 6 feet from the floor to represent the breathing zone of occupants, and over a minimum 4-hour period.
- 6. Implementation and Coordination: Implement the Construction IAQ Management Plan, and coordinate the Plan with all affected trades. Designate one individual as the Construction IAQ Representative at no additional cost to the City of New York, who will be responsible for communicating the progress of the Plan with the Commissioner on a regular basis, and for assembling the required LEED documentation. Include provisions in the Construction IAQ Management Plan for addressing conditions in the field that do not adhere to the Plan, including provisions to implement a stop work order, or to rectify non-compliant conditions.



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- a. Distribution: The Contractor shall distribute copies of the Construction IAQ Management Plan in accordance with Section 01 33 00, SUBMITTAL PROCEDURES.
- b. Instruction: The Contractor shall provide on-site instruction of appropriate site management to all Contractor's Subcontractors.
- c. Monitoring: The Construction IAQ Representative shall monitor the implementation of the Construction IAQ Management Plan.

SUBMITTALS: 1.8

Submit the following LEED-required records and documents in accordance with Section 01 33 00, SUBMITTAL PROCEDURES and Section 01 81 13, SUSTAINABLE DESIGN REQUIREMENTS FOR LEED BUILDINGS.

- A copy of the Construction IAQ Management Plan as defined in Sub-Section 1.07 herein.
- B. Product cut-sheets for all filtration media used during construction and installed immediately prior to occupancy, with MERV values highlighted. Cut sheets shall be submitted with the Contactor's or Subcontractor's 'approved' stamp as confirmation that the products are the products installed on the project.
- C. Provide the Commissioner with a minimum of 18 photographs as required under the provision for Special Photographs, in accordance with Section 01 32 33, PHOTOGRAPHIC DOCUMENTATION, comprised of at least six photographs taken on three different occasions during construction. The photographs shall document the implementation of the Construction IAQ Management Plan throughout the course of the project construction. Examples include photographs of ductwork sealing and protection, temporary ventilation measures, and conditions of on-site materials storage (to prevent moisture damage). Photographs shall include integral date stamping, and shall be submitted with brief descriptions of the Construction IAQ Management Plan measure documented, or be referenced to project meeting minutes or similar project documents which reference to the Construction IAQ Management Plan measure documented.
- A copy of the project's TAQ Testing report if applicable.

1.9 **QUALITY ASSURANCE:**

- A. The Contractor shall be responsible for preparing and implementing the Construction IAQ Management Plan and shall coordinate and incorporate the work of its subcontractors in the IAQ Management Plan.
- B. Responsibility of Subcontractors: Subcontractors for this project shall be responsible to cooperate with the Contractor in the preparation and implementation of the Construction IAQ Management Plan.

PART II - PRODUCTS (Not Used)

PART III - EXECUTION (Not Used)

END OF SECTION 01 81 19



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SECTION 01 91 13 GENERAL COMMISSIONING REQUIREMENTS

REFER TO THE ADDENDUM FOR APPLICABILITY OF THIS SECTION 01 91 13

PART I - GENERAL

1.1 RELATED DOCUMENTS:

- A. The following documents apply to all required work for the Project: (1) the Contract Drawings, (2) the Specifications, (3) the General Conditions, (4) the Addendum, and (5) the Contract [City of New York Standard Construction Contract].
- B. OPR and BoD documentation are included by reference for information only.
- C. The Commissioning Plan, prepared by the Commissioning Agent (CxA) under separate contract with the City of New York, contains requirements that apply to this section.

1.2 SUMMARY:

- A. This Section includes general requirements that apply to implementation of Commissioning without regard to systems, subsystems, and equipment being commissioned.
- B. This Section includes:
 - 1. Definitions
 - 2. Commissioning Team
 - 3. City's Responsibilities
 - 4. Each Contractor's Responsibilities
 - 5. Commissioning Authority's/Agent's (CxA) Responsibilities
 - 6. Commissioning Documentation
 - 7. Submittals
 - 8. Coordination

1.3 RELATED SECTIONS: Include without limitation the following:

- A. "HVAC Commissioning Requirements" indicated in other sections of the project specifications for specific requirements for commissioning HVAC systems.
- B. This project will be commissioned by an independent third party under separate contract with the City of New York. Commissioning shall be in accordance with ASHRAE and USGBC LEED procedures, and specific commissioning requirements of the Project Specifications, whichever is more stringent. The Contractor shall cooperate with the CxA and provide whatever assistance is required.
- C. Related Sections include without limitation the following:

1.	Section 01 10 00	SUMMARY
2.	Section 01 31 00	PROJECT MANAGEMENT AND COORDINATION
3.	Section 01 32 00	CONSTRUCTION PROGRESS DOCUMENTATION
4.	Section 01 78 39	CONTRACT RECORD DOCUMENTS
5.	Section 01 79 00	DEMONSTRATION AND OWNERS PRE-ACCEPTANCE ORIENTATION
6.	Section 01 81 13	SUSTAINABLE DESIGN REQUIREMENTS FOR LEED BUILDINGS

1.4 DEFINITIONS:

A. Refer to Article 2 of the Contract for definition of terms, words and expressions used in the General Conditions not otherwise defined herein.



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- B. Design Consultant: "Design Consultant" shall mean the entity responsible for providing design services for the Project, including without limitation, preparing the construction documents (drawings and specifications) and providing services in connection with such documents during construction. The entity serving as the "Design Consultant" may be a corporation, firm, partnership, joint venture, individual or combination thereof. Such entity may be either an employee(s) of the City or an entity engaged by the City to provide such services.
- C. Commissioner: The Commissioner of the Department of Design and Construction of the City of New York, his/her successors, or duly authorized representative(s).
- D. BoD: Basis of Design: A document, prepared by the Consultant Architect/Engineer, that records concepts, calculations, decisions, and product selections used to meet the OPR and to satisfy applicable regulatory requirements, standards, and guidelines. The document includes both narrative descriptions and lists of individual items that support the design process.
- E. Commissioning Plan: A document that outlines the organization, schedule, allocation of resources, and documentation requirements of the commissioning process.
- F. CxA: Commissioning Agent (Aka Commissioning Authority) under separate contract with the City of New York to provide Commissioning Services for this project.
- G. OPR: Owner's (City of New York) Project Requirements: A document, prepared by the Consulting Architect/Engineer) that details the functional requirements of a project and the expectations of how it will be used and operated. These include Project goals, measurable performance criteria, cost considerations, benchmarks, success criteria, and supporting information.
- H. Systems, Subsystems, Equipment, and Components: Where these terms are used together or separately, they shall mean "as-built" systems, subsystems, equipment, and components.
- I. TAB: Testing, Adjusting, and Balancing.

1.5 COMMISSIONING TEAM:

- A. Members Appointed by the Contractor and its Subcontractors: Individuals, each having authority to act on behalf of the entity he or she represents, explicitly organized to implement the commissioning process through coordinated actions. The commissioning team shall consist of, but not be limited to, representatives of the Contractor, including Project superintendent and subcontractors, installers, suppliers, and specialists deemed appropriate by the CxA.
- B. Members Appointed by the City:
 - 1. Commissioning Authority/Agent (CxA): The designated person, company, or entity under separate contract with the City that plans, schedules, and coordinates the commissioning team to implement the commissioning process.
 - 2. Representatives of the facility user and operation and maintenance personnel.
 - 3. Consultant Architect/Engineer and other concerned entities.

1.6 CITY'S RESPONSIBILITIES:

- A. Provide the OPR documentation to the Commissioning Agent (CxA) for use in developing the commissioning plan; systems manual; operation and maintenance training plan; and testing plans and checklists.
- B. Assign operation and maintenance personnel and schedule them to participate in commissioning teleactivities.

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C. Provide the BoD documents, prepared by the Consulting Architect/Engineer and approved by the Commissioner, to the Commissioning Agent (CxA) for use in developing the commissioning plan, systems manual, and operation and maintenance training plan.

1.7 CONTRACTOR'S RESPONSIBILITIES:

- A. The Contractor shall provide utility services required for the commissioning process.
- B. As a member of the Commissioning Team, the Contractor and subcontractor(s) shall assign representatives with expertise and authority to act on behalf of the Contractor and its subcontractor(s) and schedule them to participate in and perform commissioning team activities including, but not limited to, the following:
 - 1. Participate in scheduled construction-phase coordination and commissioning team meetings.
 - 2. Integrate and coordinate commissioning process activities with the construction schedule.
 - 3. Review and accept commissioning process test procedures provided by the CxA.
 - 4. Review and accept construction checklists provided by the CxA.
 - 5. Perform testing required in the Commissioning Schedule as per the Commissioning Process test procedures provided by the CxA.
 - 6. Complete installation checklists as Work is completed and return to CxA through the Resident Engineer.
 - 7. Cooperate with the CxA for resolution of issues recorded in the Issues Log.
 - 8. Evaluate performance deficiencies identified in test reports and, in collaboration with entity responsible for system and equipment installation, recommend corrective action.
 - 9. Submit As-Built documents, operation and maintenance manuals for systems and subsystems, and equipment in accordance with Section 01 78 39, CONTRACT RECORD DOCUMENTS.
 - Provide orientation sessions for operation and maintenance personnel (sessions will be video recorded by the CxA) in accordance with Section 01 79 00, DEMONSTRATION AND OWNER'S PRE-ACCEPTANCE ORIENTATION.

1.8 COMMISSIONING AGENT'S (CxA) RESPONSIBILITIES:

- A. Organize and lead the commissioning team.
- B. Prepare a construction-phase commissioning plan. Collaborate through the Resident Engineer with each Contractor and with subcontractors to develop test and inspection procedures. Include design changes and coordinate commissioning activities with the overall Project schedule. Identify commissioning team member responsibilities, by name, firm, and trade specialty, for performance of each commissioning task.
- C. Review and comment in accordance with Section 01 33 00, SUBMITTAL PROCEDURES, on submittals from the Contractor for compliance with the OPR, BoD, Contract Documents, and construction-phase commissioning plan. Review and comment on performance expectations of systems and equipment and interface between systems relating to the OPR and BoD.
- D. Coordinate with the Resident Engineer to convene commissioning team meetings for the purpose of coordination, communication, and conflict resolution; discuss progress of the commissioning processes. Responsibilities include arranging for facilities, preparing agenda and attendance lists, and notifying participants. The Commissioning Agent CxA will prepare and distribute minutes to commissioning team members and attendees within three workdays of the commissioning meeting.
- E. At the beginning of the construction phase, coordinate with the Resident Engineer's kick-off meeting schedule to conduct an initial construction-phase coordination meeting for the purpose of reviewing the commissioning activities and establishing tentative schedules for operation and maintenance submittals, operation and maintenance training sessions, TAB Work, and Project completion.



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- F. Observe and inspect construction. Report progress and deficiencies to the Commissioner. In addition to compliance with the OPR, BoD, and Contract Documents, inspect systems and equipment installation for adequate accessibility required for component maintenance replacement and repair.
- G. Prepare Project-specific test and inspection procedures and checklists.
- H. Coordinate with the Resident Engineer to schedule, direct, witness, and document tests, inspections, and systems startup.
- ١. Compile test data, inspection reports, and certificates and include them in the systems manual and commissioning report.
- J. Certify date of acceptance and startup for each item of equipment for start of warranty periods.
- K. Review and comment on operation and maintenance documentation and systems manual outline for compliance with the OPR, BoD, and Contract Documents. Operation and maintenance documentation requirements are specified in other sections of the project specifications and described in Section 01 78 39, CONTRACT RECORD DOCUMENTS.
- L. Record and edit demonstration and orientation sessions on DVD.
- М. Prepare commissioning reports.
- N. Assemble the final commissioning documentation, including the commissioning report and Systems Manual.

COMMISSIONING DOCUMENTATION: 1.9

The Contractor shall assist the Commissioning Agent (CxA) in the development and compiling of the following Commissioning Documentation:

- A. Index of Commissioning Documents: The Commissioning Agent (CxA) will prepare an index including the storage location of each document.
- B. OPR: A written document prepared by the Commissioning Agent (CxA) that details the functional requirements of the Project and expectations of how it will be used and operated. This document includes the Project and design goals, measurable performance criteria, budgets, schedules, success criteria, and supporting information.
- C. BoD Document: A document prepared by the Consulting Architect/Engineer that records concepts, calculations, decisions, and product selections used to meet the OPR and to satisfy applicable regulatory requirements, standards, and guidelines. The document includes both narrative descriptions and lists of individual items that explain the designed systems.
- D. Commissioning Plan: A document prepared by the Commissioning Agent (CxA) that outlines the schedule, allocation of resources, and documentation requirements of the commissioning process.
- E. Test Checklists: The Commissioning Agent (CxA) will develop test checklists for each system, subsystem, or equipment including interfaces and interlocks, and include a separate entry, with space for comments, for each item to be tested. The CxA will prepare separate checklists for each mode of operation and provide space to indicate whether the mode under test responded as required. Space will be provided for testing personnel to sign off on each checklist. Specific checklist content requirements are specified in other sections of the project specifications.
- F. Inspection Checklists will be signed by the Contractor, Subcontractor(s), Installer(s), and CxA certifying that systems, subsystems, equipment, and associated controls are ready for testing.
- G. Test and Inspection Reports: The Commissioning Agent (CxA) will record test data, observations, and measurements on test checklists. Photographs, forms, and other means appropriate for the application will be included with data. CxA shall compile test and inspection reports and test and inspect certificates and include them in systems manual and commissioning report.

Division 01 – DDC STANDARD GENERAL CONDITIONS SINGLE CONTRACT PROJECTS

Issue Date - June 01, 2013 Revised - January 15, 2015

- Н. Corrective Action Documents: The Commissioning Agent (CxA) will document corrective action taken for systems and equipment that fail tests and include required modifications to systems and equipment and revisions to test procedures, if any. The Contractor shall retest systems and equipment requiring corrective action. The CxA will document retest results.
- I. Issues Log: The Commissioning Agent (CxA) will prepare and maintain an issues log that describes design, installation, and performance issues that are at variance with the OPR, BoD, and Contract Documents. The log will identify and track issues as they are encountered, documenting the status of unresolved and resolved issues.
 - Commissioning Report: The Commissioning Agent (CxA) will document results of the commissioning process including unresolved issues and performance of systems, subsystems, and equipment. The commissioning report will indicate whether systems, subsystems, and equipment have been completed and are performing according to the OPR, BoD, and Contract Documents.
- J. Systems Manual: The Commissioning Agent (CxA) will gather required information and compile systems manual as specified in other sections of the project specifications and described in Section 01 78 39. CONTRACT RECORD DOCUMENTS...

1.10 SUBMITTALS:

- A. Commissioning Plan Pre-final Submittal: The Commissioning Agent (CxA) will submit six (6) copies of the pre-final commissioning plan to the Commissioner for review and distribution.
- B. Commissioning Plan Final Submittal: The Commissioning Agent (CxA) will submit six (6) hard copies and electronically formatted information of the final commissioning plan to the Commissioner. The final submittal will address previous review comments.
- C. Test and Inspection Reports: CxA will submit test and inspection reports.
- D. Corrective Action Documents: CxA will submit corrective action documents.

1.11 COORDINATION:

- A. Coordinating Meetings: The Commissioning Agent (CxA) will coordinate with the Resident Engineer's regularly scheduled construction progress meetings to conduct coordination meetings of the commissioning team to review progress on the commissioning plan, to discuss scheduling conflicts, and to discuss upcoming commissioning process activities.
- Pre-testing Meetings: The Commissioning Agent (CxA) will coordinate with the Resident Engineer to B. conduct pretest meetings of the commissioning team to review startup reports, pretest inspection results. testing procedures, testing personnel and instrumentation requirements, and manufacturers' authorized service representative services for each system, subsystem, equipment, and component to be tested.
- C. Testing Coordination: The Commissioning Agent (CxA) will coordinate with the Resident Engineer the sequence of testing activities to accommodate required quality-assurance and -control services with a minimum of delay and to avoid necessity of removing and replacing construction to accommodate testing and inspecting.
 - 1. Coordinate schedule times with the Resident Engineer for tests, inspections, obtaining samples. and similar activities.
- Manufacturers' Field Services: D. The Commissioning Agent (CxA) will coordinate services of manufacturers' field services.

PART II - PRODUCTS (Not Used)



Revised - January 15, 201

PART III - EXECUTION

OPERATION & MAINTENANCE MANUALS 3.1

Α. General

- The CxA shall review the Operation & Maintenance manuals provided by the Contractor or 1. subcontractors for completeness of the document. The review process shall verify that Operation & Maintenance instructions meet specifications and are included for all commissioned equipment furnished by the Contractor.
- Published literature shall be specifically oriented to the provided equipment, indicating required 2. operation and maintenance procedures, parts lists, assembly / disassembly diagrams and related information.
- The Contractor shall incorporate the standard technical literature into system specific formats for 3. this facility as designed and as actually installed. The resulting Operation & Maintenance information shall be system specific, concise, to the point and tailored specifically to this facility. The CxA shall review these documents as necessary for final corrections by the Contractor.
- The Operation & Maintenance Manual review and coordination efforts shall be completed prior to Owner B. orientation sessions, as these documents are to be utilized in the training sessions.

C. System Operations Manual

- The CxA shall prepare and deliver these documents with inputs from other agencies. The contractors will confirm the proper documents are onsite and readily available. Typically, the manual includes the following:
 - Commissioned systems single line diagrams (Mechanical, Electrical, Plumbing, and Building Management System (BMS) subcontractors).
 - As built sequences of operations, control drawings and original set points (Design Consultant b. and BMS subcontractor)
 - Operating instructions for integrated building systems (mechanical and BMS subcontractors). C.
 - Recommended schedule of maintenance requirements and frequency (subcontractors). d.
 - Recommended schedule for calibrating sensors and actuators (BMS subcontractor) e.

DEMONSTRATION AND INSTRUCTION 3.2

- The Contractor shall schedule and coordinate instruction sessions for the facility's staff for each A. commissioned system. Demonstrations shall be held per Contract Documents, along with the appropriate schematics, handouts and visual / audio training aids onsite with equipment.
- The equipment vendors shall provide instruction on the specifics of each major equipment item including B. philosophy, troubleshooting and repair techniques.
- For additional prescription pertinent to instruction, refer to other specific divisions for demonstration and C. instruction requirements.

WARRANTY REVIEW / SEASONAL TESTING 3.3

- The CxA will return upon the start of the new season (cooling or heating) after project completion to conduct performance tests that could not be performed due to ambient conditions. The seasonal testing will only be performed if unsuitable loads / conditions were unavailable during the performance testing stages (in other words; the requirement for testing is warranted).
- If agreed upon by facility, Seasonal Testing can also be used for the Warranty Review. During which the B. CxA will interview the occupants, maintenance staff, review the operation of the building, provide recommendations for installation and operational problems and document warranty and operational issues in the issues database.



Division 01 - DDC STANDARD GENERAL CONDITIONS SINGLE CONTRACT PROJECTS Issue Date - June 01, 2013 Revised - January 15, 2015

RECORD DRAWINGS

The CxA shall review the as built contract documents to verify incorporation of both design changes and as built construction details. Discrepancies noted shall be corrected by the appropriate party.

END OF SECTION 01 91 13



Division 01 – DDC STANDARD GENERAL CONDITIONS
SINGLE CONTRACT PROJECTS
Issue Date - June 01, 2013
Revised - January 15, 2015

NO TEXT

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	MS.	11 /

CO300ELV2

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

30-30 THOMSON AVENUE

LONG ISLAND CITY, NEW YORK 11101-3045

TELEPHONE (718) 391-1000

WEBSITE www.nyc.gov/buildnyc

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

CONTRACT NO. 1

LOCATION:

BOROUGH:

Dated

GENERAL CONSTRUCTION

Queens Supreme Court Elevator Modernization Re-Bid

88-11 Sutphin Boulevard

Queens 11435

CITY OF NEW YORK		
Centernial Elevator	Industries	
Dated December		, 20 15
Approved as to Form Certified as to Legal Authority Acting Corporation Counsel		
Dated September 14	3 000 - 2000 -	, 20 <u>/</u>
Entered in the Comptroller's Office		
First Assistant Bookkeeper		



R/14/15





PROJECT ID:

CO300ELV2

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

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

VOLUME 3 OF 3

ADDENDUM TO THE GENERAL CONDITIONS

SPECIFICATIONS

FOR FURNISHING ALL LABOR AND MATERIALS NECESSARY AND REQUIRED FOR:

Queens Supreme Court Elevator Modernization Re-Bid

LOCATION: BOROUGH:

CITY OF NEW YORK

88-11 Sutphin Boulevard

Queens 11435

CONTRACT NO. 1

GENERAL CONSTRUCTION

FOR:

DGS

BY:

AECOM

Date:

September 9, 2015





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

ADDENDUM TO THE GENERAL CONDITIONS FOR SINGLE CONTRACT PROJECTS

The General Conditions are hereby amended in accordance with the terms and conditions set forth in this Addendum.

I. PROJECT DESCRIPTION

FMS #:

CO300ELV2

Modernization of Elevators at Queens Supreme Court

PROJECT DESCRIPTION: This Project consists of Modernization of 10 Electric Traction Passenger Elevators including cabs, hoisting machinery, wire ropes, and all controls. The project also includes modernization of 1 Dumbwaiter and the installation of 5 sets of Sump Pumps in the elevator pits.

PROJECT LOCATION:

88-11 Sutphin Boulevard

BOROUGH:

Queens, NY

CITY OF NEW YORK

ZIP CODE:

11435

COMMUNITY BOARD #:

415

LANDMARK STATUS:

If this is a Designated Landmark Structure or Site, Section 01 3591, Historic Treatment Procedures applies to this project.

If this is a Landmark Quality Structure, Section 01 3591, Historic Treatment Procedures applies to this LANDMARK QUALITY STRUCTURE: project.

II. LEED GREEN BUILDING REQUIREMENTS

NOT USED

III. COMMISSIONING REQUIREMENTS

This project includes Commissioning Requirements. The General Commissioning Requirements are found in Section 01 9113 of the DDC Standard General Conditions. Other specific Commissioning Requirements can be found in the Project Specification Sections.

IV. PROJECT MANAGEMENT

X	DDC shall publicly bid and enter into all contracts for the Project.	DDC shall manage the Project
	DDC shall publicly bid and enter into all contracts for the Project. A C "CM") hired by DDC shall manage the Project. The Contractor is advis representative of the Commissioner at the site and shall, subject to responsible for the inspection, management, coordination and administration work, as delineated in the article of the Standard Construction Contract entering the contract of t	onstruction Management firm (the ed that the CM shall serve as the

V. CONTRACTS FOR THE PROJECT

The Project consists of a single contract, the Contract for General Construction Work. The Contractor for General Construction Work is responsible for the performance of all required work for the Project as set forth in the Contract Documents (General Conditions, Drawings and Specifications), including all responsibilities and obligations assigned to separate Contractors for the following subdivisions of the work: Plumbing Work, HVAC Work, and Electrical Work. of the work are the responsibility of the Contractor for General Construction Work.

VI. SCHEDULES

The Contractor is advised that Schedules A through F are attached to, and incorporated as part of, this Addendum to the General Conditions. These schedules contain important information that is specific to this Project. The Contractor is advised to carefully review these schedules.

VII. APPLICABILITY OF SECTIONS/SUB-SECTIONS AND AMENDED SUB-SECTIONS

he Contractor is advised that various Sections/Sub-Sections in the General Conditions may not apply to this Project or may apply as amended. Such Sections/Sub-Sections advise the Contractor to "Refer to the Addendum for the applicability of this Section/Sub-Section." Such Sections/Sub-Sections are set forth below. A check mark indicates applicability of this Section/Sub-Section." Such Sections/Sub-Sections are set forth below. A check mark indicates applicability of this Section/Sub-Section. (2) does not apply to the Project, or (3) applies to the whether the Section/Sub-Section (1) applies to the Project as amended. If no box is checked, the Section/Sub-Section, as set forth in the General Conditions, applies to the Project. Amended Sections/Sub-Sections, if any, are set forth following this list of Sections.

24ian	Sub-	Sub-Section	Applies	Does not Apply	Applies as Amended
<u>Section</u>	<u>Section</u>			X	
01 1000	1.4 (B)	Scope and Intent / LEED	$\overline{\mathbf{x}}$		
	1.4(C)	Scope and Intent / Commissioning	X		
01 3233		Photographic Documentation		X	
01 3300	1.7 (A-D)	LEED Submittals	X	 	
		General Mechanical Requirements			-
01 3503		Flectrical Conduit System Including Boxes (Fuil,	X		
01 3506	3.2 (A-B)	Junction and Outlet)	Х		
	3.3 (A-E)	Electrical Wiring Devices	Х		
	3.4 (A-I)	Electrical Conductors and Terminations	X		
	3.5 (A-B)	Circuit Protective Devices	X		
	3.6 (A-J)	Contors	X	 	
	3.7 (A-I)			 	
	3.8 (A-I)	O antrol Equipment	X	 	++
	3.0 (717)	Historic Treatment Procedures	X		
01 3591		Temporary Water Facilities / Temporary Water — Work	X		
01 5000	3.2 (A)	Temporary Water Facilities / Temporary Water – Work	X		
	3.2 (B)	in Existing Facilities	X		
	3.3 (B)	Temporary Sanitary Facilities / Self-Contained			
	J.J (D)	Units Temporary Sanitary Facilities / Existing Toilets		X	
	3.3 (C)	Temporary Sanitary Facilities / Extends Temporary Power, Lighting, and Site Lighting /		X	
	3.4 (B)	Temporary Power, Lighting, and Site Light Connection to Utility Lines			

<u>Sectio</u>	Section Sub-Section		Applie	es	Does not	Applies as
01 500	0 3.4 (B)	Temporary Power, Lighting, and Site Lighting /			Apply	as Amende
			X			
	3.4 (B	Electrical Generator Power Service Lighting /	V			
	3.4 ([)) remporary Power Lighting and City Living	X			
	2.475	Temporary Lighting /	X			
ļ	3.4 (E	Security Lighting (for New Construction of Site		++-		
	3.5 (A-	J) Temporary Heat			X	
	3.8 (A				X	
	3.8 (B	DDC Field Office / Office Space in Existing Building			X	
	3.8 (B		Х	1		
	3a)	Managed Field Office Trailer		++-		
	3.8 (B-	DDC Field Office / CM Managed Field Office Trailer	X			
	3b)	DDC Field Off			X	
	3.8 (D)	DDC Field Office / Additional Equipment for the DDC Field Office		+		
	3.13(A-D) Work Fence Enclosure	X			
	3.17(B)	Project Rendering	X			
	3.18 (A-			>		
	C) `	Security Guards / Fire Guards on Site	\	-		
01 5411	3.1 (A-J)	Temporary Use Operation and Maria	X			
	3.1 (A-J)					
		Temporary Use Operation and Maria		X		
	3.2 (A-M)					
	+	15 Stories		X		
	3.3 (A-E)	Temporary Use, Operation and Maintenance of		+		
01 7300	3.3 (A-I)	Elevators During Construction for Existing Buildings Surveys	X			
	3.4 (A-B)	Borings		X		
	3.12 (A-			X		
	D) `	Sleeves and Hangers		+-^		
	3.13 (A)	Sleeve and Penetration Drawings	X			
	3.15 (A)	Location of Partitions	X			
01 7419		Waste Management D. C.	Х			
	1.5 (C)	Waste Management Performance Requirements / LEED Certification		 		
01 7900		Demonstration and Owner's Pro Assault		Х		
01 0440			X			
01 8113		Sustainable Design Requirements for LEED Buildings				
1 8113.13		VOU LITTIES TOT ATTNESS CONTRACT TO 1		X		
01 8119		- Joi LLLD Buildings		Х		
01 9113		Indoor Air Quality Requirements for LEED Buildings		X	++-	
10		General Commissioning Requirements		^		-

VIII. SPECIAL EXPERIENCE REQUIREMENTS FOR THE PROJECT

- (1) <u>GENERAL</u>: Special Experience Requirements applicable to the contractor or subcontractor that will perform specific areas of work are set forth below.
- (2) REVISION OF SPECIFICATIONS AND DRAWINGS: In the event the Specifications and/or the Contract Drawings contain any Special Experience Requirement that is not set forth below, such Special Experience Requirement is deemed deleted, except as otherwise expressly provided in Section VIII of this Addendum.
- SPECIAL EXPERIENCE REQUIREMENTS FOR SPECIFIC AREAS OF WORK: The special experience requirements set forth below apply to the contractor or subcontractor that will perform specific areas of work. Compliance with such experience requirements will be evaluated after an award of contract. Within two (2) compliance with such experience requirements will be required to submit the qualifications of the contractor or weeks of such award, the contractor will be required to submit the qualifications of the contractor or subcontractor that will perform these specific areas of work. If the contractor intends to perform these specific areas of work, the special experience requirements. If areas of work with its own forces, it must demonstrate compliance with the special experience requirements. Once approved, no substitution will be demonstrate compliance with the special experience requirements. Once approved in writing in advance by permitted, unless the qualifications of the proposed replacement have been approved in writing in advance by the City.
 - (a) Special Experience Requirement: The contractor or subcontractor performing the work of this section must, within the last five (5) consecutive years prior to the bid opening, have successfully completed in a timely fashion at least three (3) projects similar in scope and type to the required work. In addition, the contractor or subcontractor must be licensed, certified or approved by the manufacturer. This Special experience Requirement applies to the contractor or subcontractor that will perform specific areas of work specified in the sections set forth below.

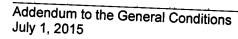
General Construction Work:

Section 07 55 52: MODIFIED BITUMINOUS PROTECTED MEMBRANE ROOFING

IX. REVISIONS: SPECIFICATIONS AND CONTRACT DRAWINGS

The Specifications and the Contract Drawings for the Project are revised in accordance with the provisions set forth below.

- (1) Owner: Wherever the term "Owner" or "DCAS" is used in the Specifications and/or the Contract Drawings, such term shall mean the City of New York.
- (2) Other Entities: In the event any entity other than the City of New York is referred to or named as the "Owner" or replaced with the "City of New York".
- (3) Architect / Engineer: Wherever the words "Architect", "Engineer", "Architect / Engineer" or "Architect and/or replaced with the word "Commissioner".
- (4) Products / Manufacturers: Wherever the Specifications and/or the Contract Drawings require the contractor to provide a particular product (i.e., material and/or equipment) from a designated manufacturer and/or vendor, the as otherwise provided below.
 - (a) <u>Proprietary Items</u>: If the Bid Booklet contains a Notice which identifies a particular product from a designated manufacturer as a "Proprietary Item", the Contractor shall be required to provide such specified product. In such case, no substitution or "approved equal" will be permitted.
- (5) Special Experience Requirements: Special Experience Requirements for the Project, if any, are set forth in the Bid Booklet. Special Experience Requirements may apply to contractors, subcontractors, installers, Experience Requirement that is not set forth in the Bid Booklet, such Special Experience Requirement is deemed deleted, except as otherwise provided below.
 - (a) Any Special Experience Requirement that provides that the entity performing the work or supplying the material must have more than three (3) years of experience, is revised to provide that the entity performing paragraph (b) below.
 - (b) Any Special Experience Requirement that pertains to the abatement of hazardous materials shall not be subject to the deletion and/or revision set forth above. Such Special Experience Requirement shall remain in full force and effect.
 - (c) Any Special Experience Requirement that provides that the entity performing the work must be licensed, authorized, certified, approved by or acceptable to the manufacturer, is deemed deleted and replaced with the requirement that such entity must be properly trained for the specified work.
 - (d) Any Special Experience Requirement that provides that the individual workers performing the work must be licensed, authorized, certified, approved by or acceptable to the manufacturer, is deemed deleted and replaced with the requirement that such individual workers must be properly trained for the specified work.
- Alternate Bids: If the agency is requesting the submission of Alternate Bids, a Notice regarding such Alternate Alternate Bids set forth in the Bid Booklet. In the event of any conflict or inconsistency between (1) the Notice regarding regarding Alternate Bids, the Notice set forth in the Bid Booklet shall prevail. If the agency is not requesting the and/or the Contract Drawings contain any provision regarding Alternate Bids, such provision is deemed deleted.
- (7) Contractor Retained Engineer: If the Specifications and/or the Contract Drawings require the Contractor to "Such Engineer must be a Professional Engineer, licensed in the State of New York."



- (8) <u>LEED Related Provisions</u>: If the Specifications and/or the Contract Drawings require the Contractor to purchase FSC certified wood, rapidly renewable materials, or materials within 500 miles, such provisions are deemed deleted and replaced with the requirement that if the contractor has purchased FSC certified wood, rapidly deleted and replaced with the requirement that if the contractor shall submit such forms or documentation as renewable materials, or materials within 500 miles, the contractor shall submit such forms or documentation as may be required by the City in order for the USGBC to certify that the Project qualifies for the related LEED credit(s).
 - (9) Guarantees: Requirements for Guarantees and Maintenance are set forth in Schedule B, which is included in the Addendum to the General Conditions. In the event of any conflict or inconsistency between (1) a guarantee and/or maintenance requirement set forth in the Specifications and/or the Contract Drawings and (2) a guarantee and/or maintenance requirement set forth in Schedule B, the guarantee and/or maintenance requirement set forth in Schedule B shall prevail.
 - (10) <u>Warranties</u>: Requirements for Warranties are set forth in Schedule B, which is included in the Addendum to the General Conditions.
 - (a) In the event of any conflict or inconsistency between (1) a warranty requirement set forth in the Specifications and/or the Contract Drawings and (2) a warranty requirement set forth in Schedule B, the warranty requirement set forth in Schedule B shall prevail.
 - (b) In the event a warranty requirement set forth in the Specifications and/or the Contract Drawings is omitted from Schedule B, such omission from Schedule B shall have no effect and the Contractor's obligation to provide the manufacturer's warranty, as set forth in the Specifications and/or the Contract Drawings, shall remain in full force and effect.
 - In the event a warranty requirement for a particular item of material or equipment is omitted from Schedule B, as well as from the Specifications or the Contract Drawings, and the manufacturer of such item actually provides a warranty, the Contractor shall be obligated to obtain and deliver to the Commissioner the highest level of warranty actually provided by that manufacturer.
 - Exculpatory Provisions: In the event the Specifications and/or the Contract Drawings contain any provision whereby the consultant and/or any of its officers, employees or agents, including subconsultants, is absolved of responsibility for any act or omission, such provision is deemed deleted.
 - (12) Insurance: Provisions regarding insurance coverage the Contractor is required to provide are set forth in Article 22 of the City of New York Standard Construction Contract and Schedule A, which is included in the Addendum to the General Conditions. In the event the Specifications and/or the Contract Drawings contain any provision regarding insurance requirements, such provision is deemed deleted.
 - (13) Indemnification: Provisions regarding indemnification are set forth in Articles 7, 12, 22 and 57 of the City of New York Standard Construction Contract. In the event the Specifications and/or the Contract Drawings contain any provision regarding indemnification, such provision is deemed deleted.
 - (14) <u>Dispute Resolution</u>: Provisions regarding dispute resolution are set forth in Article 27 of the City of New York Standard Construction Contract. In the event the Specifications and/or the Contract Drawings contain any provision regarding dispute resolution, such provision is deemed deleted.
 - (15) Payment to Other Entities: In the event the Specifications and/or the Contract Drawings contain any provision which requires the Contractor to make payments to an entity other than a subcontractor and/or supplier providing services and/or material for the project, such provision is deemed deleted.
 - (16) <u>General Conditions</u>: In the event of any conflict or inconsistency between (1) the Specifications and/or the Contract Drawings and (2) the General Conditions, the General Conditions shall prevail.
 - (17) <u>Standard Construction Contract</u>: In the event of any conflict or inconsistency between (1) the Specifications and/or the Contract Drawings and (2) the City of New York Standard Construction Contract, the City of New York Standard Construction Contract shall prevail.

SCHEDULE A (FOR PUBLICLY BID PROJECTS) PART I - Contract Requirements

Various Articles of the Contract refer to requirements which are set forth in Schedule A of the General Conditions. The Schedule set forth below specifies the following: (1) the referenced Articles of the Contract, and (2) the specific requirements applicable to the contract.

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REFERENC	E ITEM	REQUIREMENTS		(-)σ ορ
Information For Bidders	Bid Security	- CONCENTRATION OF THE PROPERTY OF THE PROPERT	CONTRACT #1 See Attachment 1 – Bid Information in the	
Information For Bidders	Performance a Payment Bond	and Is		
Article 14 Contract	Time of Completion	Consecutive Calendar Days	See Attachment 1- Bid Information in the	Bid Booklet
Article 15 Contract	Liquidated Damages	For each consecutive calendar day over completion time	\$600	
Article 17 Contract Article 21	Sub- Contracts	Not to exceed Percent of Contract Price	60%	
Contract	Retainage	Percent of Voucher	If 100% bonds are required	5%
			If 100% bonds are not required, and Contract Price is \$1,000,000 or less If 100% bonds are not required, and	5%
Article 24	Deposit	Percent of	Contract Price is more than \$1,000,000	10%
Contract	Guarantee	Contract Price	1%	
Article 24 Contract	Period of Guarantee		See Schedule B of the Addendum to the Gel	neral Condition
Article 74 Contract	Statement of Work		See Contract Article 74	
Article 75 Contract	Compensation to be Paid to Contractor		See Contract Article 75	
orticle 78 Contract	MWBE Program		See M/WBE Utilization Plan in the Bid Bookle	et .

Relating to Article 22 - Insurance

PART II. Types of Insurance, Minimum Limits and Special Conditions

Note: All certificate(s) of insurance submitted pursuant to Contract Article 22.3. 3 must be accompanied by a Certification by Broker consistent with Part III below and include the following information:

- For each insurance policy, the name and NAIC number of issuing company, number of policy, and effective dates;
- Policy limits consistent with the requirements listed below;
- Additional insureds or loss payees consistent with the requirements listed below; and
- The number assigned to the Contract by the City (in the "Description of Operations" field).

Insurance indicated by a blackened box (■) or by (X) in the □ to left will be required under this contract.

• The number assigned to the contract by all or by (X) in the urance indicated by a blackened box (■) or by (X) in the Types of Insurance (per Article 22 in its entirety, including listed paragraph)		••••
Commercial General Liability	Art. 22.1.1	The minimum limits shall be \$1,000,000.00 per occurrence and \$2,000,000.00 per project aggregate applicable to this Contract.
		Additional Insureds: 1. City of New York, including its officials and employees, with coverage at least as broad as ISO Forms CG 20 10 and CG 20 37, and
		2. All person(s) or organization(s), if any, that Article 22.1.1(b) of the Contract requires to be named as Additional Insured(s), with coverage at least as broad as ISO Form CG 20 26. The Additional Insured endorsement shall either specify the entity's name, if known, or the entity's title (e.g., Project Manager).
		NYS Queens Supreme Court; NYS Office of Court Administration
■ Workers' Compensation	Art. 22.1.2	Workers' Compensation, Employers' Liability, and Disability Benefits Insurance: Statutory per New York State law without regard to jurisdiction.
■ Disability Benefits Insurance	Art. 22.1.2	Note: The following forms are acceptable: (1) New
■ Employers' Liability	Art. 22.1.2	
□ Jones Act	Art. 22.1.3	(3) New York State Workers Compensation Dear Form No. DB-120.1 and (3) Request for WC/DB
□ U.S. Longshoremen's and Harl Act Art. 22.1.	oor Workers Compensatio 3	

Relating to Article 22 - Insurance

PART II. Types of Insurance, Minimum Limits and Special Conditions

Insurance indicated by a blackened box (■) or by (X) in the □ to left will be required under this contract.

Types of Insurance (per Article 22 in its entirety, including listed paragraph)		Minimum Limits and Special Conditions	
■ Builders' Risk	Art. 22.1.4	100 % of total value of Work	
		Contractor the Named Insured; the City both an Additional Insured and one of the loss payees as its interests may appear.	
		If the Work does not involve construction of a new building or gut renovation work, the Contractor may provide an installation floater in lieu of Builders Risk insurance.	
		Note: Builders Risk Insurance may terminate upon Substantial Completion of the Work in its entirety.	
■ Commercial Auto Liability	Art. 22.1.5	\$1,000,000.00 per accident combined single limit	
		If vehicles are used for transporting hazardous materials, the Contractor shall provide pollution liability broadened coverage for covered vehicles (endorsement CA 99 48) as well as proof of MCS 90	
Contractor's Pollution Liability	Art. 22.1.6	\$ per occurrence	
		\$ aggregate	
		Additional Insureds: 1. City of New York, including its officials and employees, and 2	
Marine Protection and Indemnity	Art. 22.1.7(a)	\$ per occurrence	
		\$ aggregate	
		Additional Insureds: 1. City of New York, including its officials and employees, and 2	

Relating to Article 22 - Insurance

PART II. Types of Insurance, Minimum Limits and Special Conditions (Continued)

urance indicated by a blackened box (■) or by (X) in the Types of Insurance per Article 22 in its entirety, including listed paragraph)	Minimum Limits and Special Conditions
Hull and Machinery Insurance Art. 22.1.7(b)	\$ per occurrence \$ aggregate Additional Insureds: 1. City of New York, including its officials and employees, and 2 3
□ Marine Pollution Liability Art. 22.1.7(c)	\$each occurrence Additional Insureds: 1. City of New York, including its officials and employees, and 2 3
[OTHER] Art. 22.1.8	\$each occurrence
[OTHER] Art. 22.1.8	\$per occurrence \$aggregate Additional Insureds: 1. City of New York, including its officials and employees, and 2 3
[OTHER] Art. 22.1.8 □ Railroad Protective Liability	\$ per occurrence \$ aggregate Additional Insureds: 1. City of New York, including its officials and employees, and 2 3

Relating to Article 22 - Insurance

PART II. Types of Insurance, Minimum Limits and Special Conditions (Continued)

Insurance indicated by a blackened box (\blacksquare) or by (X) in the \square to left will be required under this contract.

[OTHER]	
Art. 22.1.8 Asbestos Liability	Only required of the Contractor or Subcontractor performing any required asbestos removal.
	\$1,000,000 each occurrence,
	\$2,000,000 aggregate (Combined Single Limit), only required of the Contractor or Subcontractor performing any required asbestos removal.
	Additional Insureds: 1. City of New York, including its officials and employees, and
	2. NYS Queens Supreme Court
	3. NYS Office of Court Administration
OTHER] Art. 22.1.8	
Boiler Insurance	\$200,000
OTHER] Art. 22.1.8	
Professional Liability the event any section of the Specifications requires the ontractor to engage a Professional Engineer to provide esign and/or engineering services, the Engineer engaged by e Contractor, as well as any sub consultant(s) performing ofessional services, shall provide Professional Liability surance.	\$1,000,000 per occurrence The Contractor's Professional Engineer shall maintain and submit evidence of Professional Liability Insurance in the minimum amount of \$1,000,000 per claim. The policy or policies shall include an endorsement to cover the liability assumed by the Contractor under this Agreement arising out of the negligent performance of professional services or caused by an error, omission or negligent act of the Contractor's Professional Engineer or anyone employed by the Contractor's Professional Engineer.
	Claims-made policies will be accepted for Professional Liability Insurance. All such policies shall have an extended reporting period option or automatic coverage of not less than two (2) years. If available as an option, the Contractor's Professional Engineer shall purchase extended reporting period coverage effective on cancellation or termination of such insurance unless a new policy is secured with a retroactive date, including at least the last policy year.

SCHEDULE A (FOR PUBLICLY BID PROJECTS)

Relating to Article 22 - Insurance

PART III. Certificates of Insurance

All certificates of insurance (except certificates of insurance solely evidencing Workers' Compensation Insurance, Employer's Liability Insurance, and/or Disability Benefits Insurance) must be accompanied by one of the following:

 the Certification by Insurance Broker or Agent on the following page setting forth the required information and signatures;

-- OR --

copies of all policies as certified by an authorized representative of the issuing insurance carrier that are referenced in such certificate of insurance. If any policy is not available at the time of submission, certified binders may be submitted until such time as the policy is available, at which time a certified copy of the policy shall be submitted.

SCHEDULE A (FOR PUBLICLY BID PROJECTS)

Relating to Article 22 - Insurance

PART III. Certification by Insurance Broker or Agent

The undersigned insurance broker or agent represents to the City of New York that the attached Certificate of Insurance is accurate in all material respects.

	[Name of broker or agent (typewritten)]
	[Address of broker or agent (typewritten)]
	[Email address of broker or agent (typewritten)]
	[Phone number/Fax number of broker or agent (typewritten)]
	[Signature of authorized official or broker or agent]
	[Name and title of authorized official, broker or agent (typewritten)
State of) County of)	
Sworn to before me this	
day of, 20	
NOTARY PUBLIC FOR THE STATE OF	

SCHEDULE A (FOR PUBLICLY BID PROJECTS)

Relating to Article 22 - Insurance

PART IV. Address of Commissioner

Wherever reference is made in Article 7 or Article 22 to documents to be sent to the **Commissioner** (e.g., notices, filings, or submissions), such documents shall be sent to the address set forth below or, in the absence of such address, to the **Commissioner's** address as provided elsewhere in this **Contract**.

ACCO's Office, Insurance Unit
30-30 Thomson Avenue, 4 th Floor
Long Island City, New York 11101

SCHEDULE B

Guarantees and Warranties

(Reference: Section 01 7839, Article 2.7 of the DDC Standard General Conditions)

GUARANTY FROM CONTRACTOR

- (1) Contractor's Guaranty Obligation: The Contractor shall promptly repair, replace, restore or rebuild, as the Commissioner may determine, any finished Work in which defects of materials or workmanship may appear or to which damage may occur because of such defects, during the one (1) year period subsequent to the date of Substantial Completion (or use and occupancy in accordance with the Contract), except for the areas of Work set forth below:
- Roofing, Waterproofing, and Joint Sealant Work. For these types of work, the guarantee period shall be (2)
- Trees and/or Plant Material. For trees and/or plant material furnished and installed, the guarantee period shall be (2) two years. During the guarantee period, the Contractor shall provide all maintenance services set forth in the Specifications.
- (2) Guaranty Period: The obligation of the Contractor, and its Surety under the Performance Bond, is limited to the period(s) of time specified above.
- (3) Other Provisions Deemed Deleted: In the event the Specifications and/or the Contract Drawings contain any provisions regarding guaranty requirements, such provisions are deemed deleted and replaced with the guaranty requirements set forth in this Schedule B.

WARRANTY FROM MANUFACTURER

(1) Contractor's Obligation to Provide Warranties: The items of material and/or equipment for which manufacturer warranties are required are listed below. For each item of material and/or equipment listed below, the Contractor shall obtain a written warranty from the manufacturer. Such warranty shall provide that the material or equipment is free from defects for the period set forth below and will be replaced or repaired within such specified period. The Contractor shall deliver all required warranties to the Commissioner.

(2) Required Warranties:

Specification Number	Material or Equipment	Warranty Period
141200 142005 142123 221429 238113 238126 262416 262816 283100 281316 282300	Dumbwaiter Elevator Cabs Electric Traction Passenger Elevator Sump Pumps Packaged Terminal Air-Conditioners Split-System Air-Conditioners Panelboards Enclosed Switches & Circuit Breakers Fire Alarm System Security and Database Management Video Surveillance System	One (1) Year

- (3) Application: The obligations under the warranty for the periods specified above shall apply only to the manufacturer of the material or equipment, and not to the Contractor or its Surety; provided, however, the Contractor retains responsibility for obtaining all required warranties from the manufacturers and delivering the same to the Commissioner.
- (4) Other Provisions: The warranty requirements set forth in this Schedule B are also included in the Specifications.
- (a) In the event of any conflict between a warranty requirement set forth in the Specifications and a warranty requirement set forth in Schedule B, the warranty requirement set forth in Schedule B shall take precedence.
- (b) In the event a warranty requirement set forth in the Specifications is omitted from Schedule B, such omission from Schedule B shall have no effect and the Contractor's obligation to provide the manufacturer's warranty, as set forth in the Specifications, shall remain in full force and effect
- In the event a warranty requirement for a particular item of material or equipment is omitted from both Schedule B and the Specifications, and the manufacturer of such item actually provides a warranty, the Contractor shall be obligated to obtain and deliver to the Commissioner the highest level of warranty actually provided by that manufacturer.
- In the event a warranty requirement is provided for a particular item of material or equipment, and such requirement specifies a warranty period that is longer than that which is actually provided by any of the specified manufacturers, the Contractor shall be obligated to obtain and deliver to the Commissioner the highest level of warranty actually provided by any of the specified manufacturers, unless otherwise directed in writing by the Commissioner.
- (e) Unless indicated otherwise Warranties are to take effect on the date of Substantial Completion.

SCHEDULE C

Contract Drawings

(Reference: Section 01 1000, Article 1.5 (A) of the DDC Standard General Conditions)

The Schedule set forth below lists all Contract Drawings for the Project.

LIST OF DRAWINGS

G-001.00	Title Sheet
G-002.00	List of Drawings, Plot Plan and

G-002.00 List of Drawings, Plot Plan and Special Inspections

G-003.00 General Notes, Summary of Work, Material Symbols and Reference Symbols

G-004.00 Building Department Notes, Abbreviations

Architectural:

	_
A-001.00	Phasing Plans

A-100.00 Basement Overall Plan, Part Plans & Elevations at Main Elevator Lobby

A-100A.00 Basement Part Plans & Elevations at Judges Elevator Lobbies

A-101.00 1st Floor Overall Plan, Part Plan & Elevations at Main Elevator Lobby

A-102.00 2nd Floor Overall Plan, Part Plan & Elevations at Main Elevator Lobby

A-102A.00 2nd Floor Part Plan & Elevations at Judges Elevator Lobbies

A-103.00 3rd Floor Overall Plan, Part Plan & Elevations at Main Elevator Lobby

A-103A.00 3rd Floor Part Plan & Elevations at Judges Elevator Lobbies

A-104.00 4th Floor Overall Plan, Part Plan & Elevations at Main Elevator Lobby

A-104A.00 4th Floor Part Plan & Elevations at Judges Elevator Lobbies

A-105.00 5th Floor Overall Plan, Part Plan & Elevations at Main Elevator Lobby

A-105A.00 5th Floor Part Plan & Elevations at Judges Elevator Lobbies

A-106.00 6th Floor Overall Plan, Part Plan & Elevations at Main Elevator Lobby

A-106A.00 6th Floor Part Plan & Elevations at Judges Elevator Lobbies

A-107.00 7th Floor Overall Plan, Part Plan & Elevations at Main Elevator Lobby

Attic Overall Plan and Part Plan at Governor Rooms

A-108A.00 Attic Part Plan & Photos at Judges Elevators EMRs

Roof Overall Plan & Part Roof Plans Over EMRs 7, 8, 9 & 10 A-109.00

A-109A.00 Main Elevator Machine Room Part Plan

North & East Elevations and Partial Elevation Details A-201.00

A-202.00 Full Building Sections (For Reference Only)

A-302.00 Signage Details

A-400.00 Louver Details

A-401.00 Elevator Cab Plans, Elevations and Details

A-402.00 **Details**

Door and Louver Schedules & Details A-910.00

Mechanical - HVAC:

M-001.00 General Notes, Symbols And Abbreviations

M-002.00 Central Attic Lower Level & Roof Demolition

M-003.00 South & North Roof Demolition

M-004.00 7th Floor Equipment Path

-005.00 Central Attic Lower Level & Roof Equipment Path

M-101.00 Central Attic Lower Level & Roof New Work

M-102.00 S & N Attic Judge Elevator Machine Room Part Plans

M-103.00 S & N Attic Judge Elevator Machine Room Sections

M-201.00 S & N Roof Part Plans

M-301.00 Details

M-401.00 Equipment Schedules

Plumbing:

P-001.00 General Notes, Symbols And Abbreviations

P-101.00 Basement Plumbing Plan

P-201.00 Basement Plumbing Part Plans

P-202.00 Basement Plumbing Part Plans

P-401.00 Plumbing Details and Schedules

Electrical Work:

E-001.00 General Notes, Demolition Notes, Symbols And Abbreviations

E-101.00 Part One Line Diagram

E-201.00 Elevator Machine Room & Roof Power Plan

E-202.00 Elevator Machine Room Lighting Plan

E-203.00 Judges Elevator Machine Rooms Power Plan

-204.00 Elevator Pits Power & Lighting Plans

E-205.00 Basement Power Plan, Attic Part Plan

E-206.00 First Floor Power Plan

E-207.00 Rooftop Lightning Protection & Power Plan

E-301.00 Feeder Schedule

E-302.00 Panel Schedule

E-303.00 Details

DM-101.00 Part One Line Diagram Demolition

DM-201.00 Elevator Machine Room and Roof Demolition Plan

DM-202.00 Elevator Machine Room Lighting Demolition Plan

DM-203.00 Judges Elevator Machine Rooms Power Demolition Plan

DM-204.00 Elevator Pits Power and Lighting Demolition Plan

DM-205.00 Basement Power Demolition Plan

Elevator:	Sections for Flevators 1 Thru 6
FL-001.00	Hatch Plan, Machine Room and Sections for Elevators 1 Thru 6
== 000 00	Hatch Plan, Machine Room and Sections Judges Elevators 7 Thru

EL-002.00 Hatch Plan, Machine Room and Sections Judges Elevators 7 Thru 10

EL-003.00 CAB Details for Passenger Elevators 1 Thru 6

EL-004.00 CAB Details for Judges Elevators 7 Thru 10

EL-005.00 Hatch Plan and Sections for Dumbwaiter

Fire Alarm:

FA-101.00 Fire Alarm Part Riser Diagram

Structural:

- S-001.00 Structural General Notes, Symbols, Legend & Abbreviations
- S-002.00 Structural Existing South Roof Dunnage Demolition Plan
- S-100.00 Structural Sump Pit Plans
- S-101.00 Structural Hoist Beam & Roof Equip, Support Layout Plan
- S-102.00 Structural Condenser Units Roof Dunnage and Equipment Pads Plans and Sections
- S-103.00 Attic Part Plans at Judges Elevators EMR Rooms
- S-501.00 Structural Sections And Details
- S-502.00 Structural Sump Pit Sections And Details

Security:

- T-001.00 General Notes, Summary of Work, Material Symbols and Reference Symbols
- T-002.00 Building Department Notes, Abbreviations
- T-100.00 Video & Access Control Block Diagram
- T-101.00 Basement Overall Plan, Main Lobby, Judge Entrances
- T-102.00 Basement Part Plans & Elevations at Judges Elevator Lobbies
- T-103.00 CCTV Security Elevator Part Plan
- T-104.00 Attic Overall Plan, Security Cable Routing & Rack Location
- T-201.00 Typical S2 Netbox Card Installation Diagram
- T-202.00 Basement Judges Entrance/Exit Equipment Installation
- T-203.00 Typical Card Reader Detail Installation
- T-204.00 Typical Door Position Switch Installation
- T-205.00 Basement Entrance/Exit Door Equipment Installation
- T-206.00 S2 Netbox Enclosure and Connectivity Details
- T-207.00 Rack Elevation and Camera Details

Asbestos Abatement:

H-001.00 General Notes

H-002.00 First Floor Plan

H-003.00 Attic Plan

H-004.00 Roof Plan

END OF LIST OF DRAWINGS

SCHEDULE D

Electrical Motor Control Equipment

(Reference: 01 3506, Article 3.8 of the DDC Standard General Conditions)

Requirements for electrical motor equipment may be included in one or more sections of the Specifications for the Contract for the Project. Schedule D set forth below delineates specific information for electrical motor control equipment. In the event of any conflict between the Specifications and this Schedule D, Schedule D shall take precedence; provided, however, in the event of an omission from Schedule D (i.e., Schedule D omits either a reference to or information concerning electrical motor equipment which is set forth in the Specifications), such omission from Schedule D shall have no effect and the Contractor's obligation with respect to the electrical motor control equipment, as set forth in the Specifications, shall remain in full force and effect.

DB Disconnect Circuit Breaker (Switch) P Pilot Light

F Firestat TS Thermal Switch T Thermostat MS Magnetic Starter

CMS Comb. Mag. Starter

BG Break Glass Station HOA Hand-Off Auto. PB Push Button Station

RO Remote "off" **AL** Alternator

VVVF-AC Variable Voltage Variable Frequency - AC

Equip. Ident.	Location	# of Units	HP or KW	Volts and Phase	Control Type: See legend above	Remarks:
Elev #1 thru	9 TH Floor MER	6	NA	208 V 3- Phase	VVVF-AC	HP/Kw determined by Vendor
#6 Elev #7 thru	8 th Floor MERs	4	NA	208 V 3- Phase	VVVF-AC	HP/Kw determined by Vendor
#10 ESP-1 thru 5	Elev Sump Pits (Basement)	5	1/2 HP	115 V 1- Phase	Float Switch	Elevator Pit Sump Pumps

SCHEDULE E

Separation of Trades

NOT USED FOR SINGLE CONTRACTS



Submittals Schedule

(Reference: Section 01 3300 Article 1.5 (C) of the General Conditions)

The Schedule set forth below lists all submittal requirements for the Contract. In the event of any conflict between the Specifications and this Schedule F, Schedule F shall take precedence; provided, however, in the event of an omission from Schedule F (i.e., Schedule F omits either a reference to or information concerning a submittal requirement which is set forth in the Specifications), such omission from Schedule F shall have no effect and the Contractor's submittal obligation, as set forth in the Specifications, shall remain in full force and effect.

Contractor's submittal obligation	in, as set for in the span	
CONSULTANT: TELEPHONE NUMBER: DDC PROJECT MANAGER:	AECOM 212 377 8400	DATE:
TELEPHONE NUMBER:		CONSTRUCTION

REPORT DAT	ONE NUMBER:	FMS ID #/PI	ROJECT I	D #: RATION	 l #:				CONTRACT #: Contract 1 – GENERAL CONSTRUCTION TRADE: SHOP DRAWING LOG SHEET #											
PROJECT NAME:								FABRIC.												
SPEC. DESCRI SECT. #	DESCRIPTION	COORD. WITH CONTR.	SUBM	ITTAL.		SUB. DATE	DEL.	TIME			DEC'D RET'D ACTION REC'D RET'D ACT									
		CONTR.	SHOP DWG.	SAMPLE	CAT. CUTS				REC'D	RET'D	ACTION	REC'D	RET'D	ACTION	NEO D					
01 3526	Safety and Health Program	х							-				-							
01 3526	Contractor's Safety Plan	Х							-				-							
01 3591	Historic Treatment Plan	х						-	-	-										
01 5000	Site Plan		X	<u> </u>				_			+	+	1							
01 5000	Reports	Х										-	+							
01 5423	NYC DOB Scaffold & Sidewalk Shed Permits	х	x						-		-			-		-	-			
01 5423	Site Logistics/Site Safety Plan	Х															23 of 28			

01 5423	Scaffold & Shed Installation Drawings		х								T					T	1
01 7419	Waste	х			1	 							-	-	-	-	-
01 7900	& Orientation	х						-							-		-
01 7900	Qualification Data	Х		 									 				
01 8113.13	MSDS			X	X		 	 	-		 		-				
01 8119	IAQ Management Plan	Х							-								
01 8119	Product Cut Sheets		<u> </u>		X		-	+		ļ							
01 8119	IAQ Management Plan Photographs	Х															
02 8013	Allowance for Incidental Asbestos	Х					-										
2 8213	Asbestos Abatement		X					 	ļ ———								
3 2000	Concrete Reinforcement		Х														
3 3000	Cast-In-Place Concrete		х							_							
4 0140	Maintenance of Stone Assemblies		х														
5 1200	Structural Steel		X		_												

5 5000	Metal Fabrications	>														
5 5963	Detention Enclosures	>	<u> </u>													
7 1616	Crystalline Waterproofing	,	<u> </u>													
)7 5552	Modified Bituminous Protected Membrane Roofing	:	×			,										
07 7100	Roofing Specialties		×						 		 					
07 7200	Roof Accessories		×						 		 					
07 8413	Penetration Firestopping		×						-							
07 9200	Joint Sealants		×				 		-		 					
08 1113	Hollow Metal Doors and Frames		×				-	ļ	-		-		-			 +
08 3113	Access Doors and Frames		×									┼	 	+		
08 6200	Unit Skylights		×				-			+	-	 	+			
08 7100	Door Hardware		X									+	1			
09 9123			Х	Х						_		+				
09 2300) Gypsum Plastering		X								+	 		1		
09 2900	Gypsum Board		Х				-				_		1 -			
10 1423	3 Signage		X	X				_	+	_	_					
14 1200	0 Dumbwaiter		×		X					_	-					
14 200			X	×	×	 				_	_					
14 212	Electric Traction Passenger Elevators		x		x											 25 of 28

142300	Abusive Use	Х									1		1	
22 0513	for Plumbing Equipment		x	x										
22 0517	Plumbing Piping	х												
22 0523	Plumbing Piping		x	х				+-					+	-
22 0529	Plumbing Piping		х	х				-		+-		-		
22 0553	Identification for Plumbing Piping			х		 	 			+	-		-	
22 1316	Sanitary Waste & Vent Piping		Х	Х					+			-		
22 1429	Sump Pumps		Х	Х		 	+				-		<u> </u>	
23 0513	Common Motor Requirements for HVAC Equipment		х	x										
3 0517	Sleeves and Seals for HVAC Piping	Х					-	+					-	
3 0523	General Duty Valves for HVAC Piping		х	×						-				
3 0529	Hangers and Supports for HVAC Piping		x	x			-	-		-				
3 0548	Vibration & Seismic Controls for HVAC		x	×										

0553	Identification for HVAC Piping			×													
3 0593	Testing Adjusting & Balancing for HVAC	X															
3 0713	Duct Insulation		×	×	\perp						 	 		 			
3 0719	HVAC Piping Insulation		X	×					 						 		
3 0800	Commissionin g of HVAC	Х			\perp				ļ						 		
3 2300	Refrigerant Piping		X	×					 	_	 		 	 			
23 3113	Metal Ducts		X	×				<u> </u>	<u> </u>		-	+	├				
23 3300	Air Duct Accessories		Х	×	\Box					-			-			 	
23 3713	Diffusers Registers & Grilles		х	,	$\langle \ $			-	-								
23 8113	Packaged Terminal Air Conditioners		x	,	×			-				-			-		-
23 8126	Split System Air Conditioning Units		×		×								-		-	-	-
26 0519	Low Voltage Electrical		x		x												
26 0526	Grounding & Bonding for Electrical Systems		x		x										-	-	+
26 0533	Paceways &		×	 	<u> </u>		-				-		+-				
26 0553	3 Identification			1	Х	<u> </u>					_	_	_	_			
26 2416	6 Panelboards		Х		Χ	1				l							

26 2726	Wiring Devices				Х							- 				
26 2816	Enclosed Switches & Circuit Breakers		X		x		+			-		-				
26 4113	Lightning Protection for Structures		х		×	_		+-							-	-
26 5100	Interior Lighting		Х	1	X	_		_	+		_			-	<u> </u>	
27 0526	Grounding and Bonding for Communicatio ns Systems		x		х											
27 0528	Pathways for Communicatio n Systems		х		х	+				+	-	-				
27 0553	Identification for Communicatio n Systems				х									-		
8 1316	Security & Database Management System	х	х		х						-					
8 2200	Video Surveillance	х	Х		х	 +						 				
8 3100	Fire Alarm System	х	Х		×	 	+		+							
						†	+			 	+	 				
					_	+	+		 	+	+					

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Queens Supreme Court - Modernization of Elevators 88-11 Sutphin Blvd Queens, NY 11435

DDC Project ID # CO300ELV2 December 1, 2014

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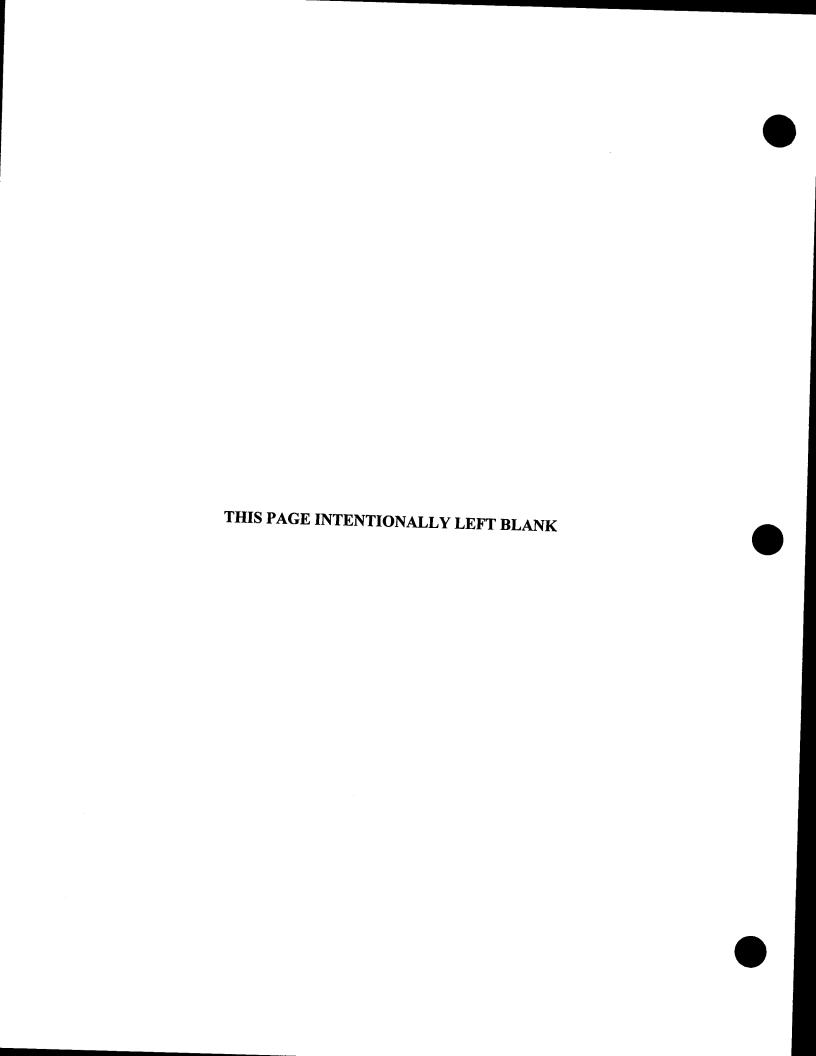
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CONTRACT # 1 GENERAL CONSTRUCTION WORK



SECTION 028013 - GENERAL CONTRACTOR WORK

ALLOWANCE FOR INCIDENTAL ASBESTOS ABATEMENT

1.01 SCOPE FOR ASBESTOS ABATEMENT WORK

- A. The "General Conditions" apply to the work of this Section.
- B. The Asbestos abatement contractor shall remove asbestos containing materials as needed to perform the other work of this Contract when discovered during the course of work. When required, the Asbestos abatement contractor shall replace the ACM with non-asbestos containing materials. An allowance of \$15,000.00 for the General Contractor is herein established for this incidental work when so ordered and authorized by the Commissioner.
- C. ALL WORK SHALL BE DONE IN ACCORDANCE WITH THE APPLICABLE PROVISIONS OF THE RULES AND REGULATIONS OF THE ASBESTOS CONTROL PROGRAM AS PROMULGATED BY TITLE 15 CHAPTER I OF RCNY AND NEW YORK STATE DEPARTMENT OF LABOR INDUSTRIAL CODE RULE 56 CITED AS 12 NYCRR, PART 56 WHICHEVER IS MORE STRINGENT AS PER LATEST AMENDMENTS TO THESE LAWS AND AS MODIFIED HEREIN BY THESE SPECIFICATIONS.
- D. ALL DISPOSAL OF ASBESTOS CONTAMINATED MATERIAL SHALL BE PER LOCAL LAW 70/85.
- E. THE ASBESTOS ABATEMENT CONTRACTOR'S ATTENTION IS DIRECTED TO THE FACT THAT CERTAIN METHODS OF ASBESTOS ABATEMENT ARE PROTECTED BY PATENTS. TO DATE, PATENTS HAVE BEEN ISSUED WITH RESPECT TO "NEGATIVE PRESSURE ENCLOSURE" OR "NEGATIVE-AIR" OR "REDUCED PRESSURE" AND "GLOVE BAG".
- F. THE ASBESTOS ABATEMENT CONTRACTOR SHALL BE SOLELY RESPONSIBLE FOR AND SHALL HOLD THE DEPARTMENT OF DESIGN AND CONSTRUCTION AND THE CITY HARMLESS FROM ANY AND ALL DAMAGES, LOSSES AND EXPENSES RESULTING FROM ANY INFRINGEMENT BY THE ASBESTOS ABATEMENT CONTRACTOR OF ANY PATENT, INCLUDING BUT NOT LIMITED TO THE PATENTS DESCRIBED ABOVE, USED BY THE ASBESTOS ABATEMENT CONTRACTOR DURING PERFORMANCE OF THIS AGREEMENT.
- G. "Asbestos" shall mean any hydrated mineral silicate separable into commercially usable fibers, including but not limited to chrysotile (serpentine), amosite (cumingtonite-grunerite), crocidolite (riebeckite), tremolite, anthrophyllite and actinolite.

H. Prior to starting, the Asbestos abatement contractor must notify the Commissioner of the Department of Design and Construction if he/she anticipates any difficulty in performing the Work as required by these Specifications. The Asbestos abatement contractor is responsible to prepare and submit all filings, notifications, etc. required by all City, State and Federal regulatory agencies having jurisdiction.

The Asbestos abatement contractor is responsible for submitting the Asbestos Project Notification Form (ACP-7 Form) to the Department of Environmental Protection, Asbestos Control Program, as per Title 15, Chapter I of RCNY and to the NYSDOL as per Industrial Code Rule 56.

The Asbestos abatement contractor is responsible for preparing, and submitting Asbestos Variance Application (ACP-9). If a Variance is required, the Asbestos abatement contractor is responsible to retain a NYSDOL Asbestos Project Designer, as defined in Title 15, Chapter 1 of the RCNY to prepare and submit the required variance.

The General contractor is responsible for preparing and submitting an Asbestos Abatement Permit and/or Work Place Safety Plans (WPSP) that may be required for the completion of the Contract or incidental work. If such plans are required, the Asbestos abatement contractor is responsible to retain a NYSDOL Licensed Design Professional as defined in Title 15, Chapter 1 of the RCNY to prepare and submit the required plans.

The Asbestos abatement contractor is responsible for the submission of all required documents to the NYCDEP to acquire the appropriate Asbestos Project Conditional Closeout (ACP-20) and/or Asbestos Project Completion Forms (ACP-21) on a timely basis for the completion of the incidental work encountered under this contract.

The Asbestos abatement contractor will be required to attend an on-site job meeting with the Construction Project Manager prior to the start of work to examine conditions and plan the sequence of operations, etc.

The Asbestos abatement contractor shall have a NYSDOL/NYCDEP Asbestos Supervisor onsite to oversee the work and conduct a final visual inspection as required by both Title 15, Chapter 1 of the RCNY and NYSDOL Industrial Code Rule 56.

I. All work shall be done during regular working hours unless the Asbestos abatement contractor requests authorization to work in other then regular working hours and such authorization is granted by the Commissioner. (Regular work hours are those hours during which any given facility, in which work is to be done, is customarily open and functioning, normally between the hours of 8:00 A.M. and 4:00 P.M. Monday - Friday.) If such work schedule is authorized by the Commissioner, the work shall be done at no additional cost to the City.

J. The Commissioner may <u>order</u> that work be done in other than regular working hours as herein by defined and this order may require the Asbestos abatement contractor to pay premium or overtime wages to complete the work. If the Commissioner orders work in other than regular working hours, the Asbestos abatement contractor shall multiply the unit price for that portion of the work requiring premium wages by 1.50 when computing payment in accordance with Paragraph 1.09. All requests for premium payment must be supported by certified payroll sheets and field sheets approved by the Construction Project Manager.

1.02 QUALIFICATIONS OF ASBESTOS ABATEMENT CONTRACTOR

- A. Requirements: The asbestos abatement contractor must demonstrate compliance with the special experience requirements set forth in subparagraphs (1) through (5) below. The asbestos abatement contractor must, submit documentation demonstrating compliance with all listed requirements. Such documentation shall include without limitation, all required licenses, certificates, and documentation.
 - 1. The asbestos abatement contractor must, whether an individual, corporation, partnership, joint venture or other legal entity, must demonstrate for the three year period prior to the work, that it has been licensed by the New York State Department of Labor, as an "Asbestos abatement contractor".
 - 2. The asbestos abatement contractor must, for the three year period prior to the work, have been in the business of providing asbestos abatement services as a routine part of its daily operations.
 - The asbestos abatement contractor proposing to do asbestos abatement work must be thoroughly experienced in such work and must provide evidence of having successfully performed and completed in a timely fashion at least five (5) asbestos abatement projects of similar size and complexity. The aggregate cost of these projects must be at least \$250,000.00 in each of the three years.
 - 4. For each project submitted to meet the experience requirements set forth above, the asbestos abatement contractor must submit the following information for the project; name and location of the project; name title and telephone number of the owner or the owner's representative who is familiar with the asbestos abatement contractor's work, brief description of the work completed as a prime or sub-asbestos abatement contractor; amount of contract or subcontract and the date of completion.
 - 5. The asbestos abatement contractor must demonstrate that it has the financial resources, supervisory personnel and equipment necessary to carry out the work and to comply with the required performance schedule, taking into consideration other business commitments. The asbestos

abatement contractor must submit such documentation as may be required by the Department of Design and Construction to demonstrate that it has the requisite capacity to perform the required services of this contract.

- B. Insurance Requirements: The asbestos abatement contractor must provide asbestos liability insurance in the following amount: 1 million dollars per occurrence, 2 million dollars aggregate (combined single limit). The City of New York shall be named as an additional insured on such insurance policy.
- C. Throughout the specifications, reference is made to codes and standards which establish qualities and types of workmanship and materials, and which establish methods for testing and reporting on the pertinent characteristics thereof.

1.03 <u>ASBESTOS ABATEMENT CONTRACTOR RESPONSIBILITIES</u>

The Asbestos abatement contractor will visit the subject location within one (1) working day of notification to ascertain actual work required. If the project is identified as being "urgent", then work shall commence no later than 48 hours from the time of notification. In this event, the asbestos abatement contractor shall immediately notify when applicable EPA NESHAPS Coordinator, NYSDOL Asbestos Control Bureau and NYCDEP Asbestos Control Program of start of the work and file the necessary Asbestos Notifications and any applicable Variance Applications with the regulatory agencies cited above.

In the event that the project is not classified as "urgent" the Asbestos abatement contractor shall notify the EPA NESHAPS Coordinator, NYSDOL and NYCDEP by submitting the requisite asbestos project notification forms, postmarked 10 days before activity begins if 260 linear feet or more and/or 160 square feet or more of asbestos containing material will be disturbed.

The following information must be included in the notification:

- Name and address of building City or operator;
- B. Project description:
 - 1. Size square feet, number of linear feet, etc;
 - 2. Age date of construction and renovations (if known);
 - 3. Use i.e., office, school, industrial, etc.
 - 4. Scope repair, demolition, cleaning, etc.
- C. Amount of asbestos involved in work and an explanation of techniques used to determine the amount;

GENERAL CONTRACTOR WORK ALLOWANCE FOR INCIDENTAL ASBESTOS ABATEMENT

- D. Building location/address, including Block and Lot numbers;
- E. Work schedule including the starting and completion dates;
- F. Abatement methods to be employed;
- G. Procedures for removal of asbestos-containing material;
- H. Name, title and authority of governmental representative sponsoring project.

1.04 WORK INCLUDED IN UNIT PRICE

The Asbestos abatement contractor will be paid a basic unit price of \$25.00 per square feet for the removal and disposal of asbestos containing material and replacement of the same with non-asbestos containing materials.

Unit price shall include all costs necessary to do the work of this Contract, including but not limited to: labor, materials, equipment, utilities, disposal, insurance, overhead and profit.

1.05 <u>AIR MONITORING – ASBESTOS ABATEMENT CONTRACTOR</u>

- A. "Air Sampling" shall mean the process of measuring the fiber content of a known volume of air collected during a specific period of time. The procedure utilized for asbestos follows the N1OSH Standard Analytical Method 7400 or the provisional transmission electron microscopy methods developed by the USEPA and/or National Institute of Standard and Technology which are utilized for lower detectability and specific fiber identification.
- B. Air monitoring of Asbestos abatement contractor's personnel will be performed in conformance with OSHA requirements, (All costs associated with this work are deemed included in the unit price.).
- C. Qualifications of Testing Laboratory:

The industrial hygiene laboratory shall be a current proficient participant in the American Industrial Hygiene Association (AIHA) PAT Program. The laboratory identification number shall be submitted and approved by the City. The laboratory shall be accredited by the AIHA and New York State Department of Health Environmental Laboratory Approval Program (ELAP).

Note: Work area air testing and analysis before, during and upon completion of work (clearance testing) will be performed by a Third Party Air Monitor under separate Contract with the City.

1.06 THIRD PARTY MONITORING AND LABORATORY

- A. The NYCDDC, at its own expense, will employ the services of an independent Third Party Air Monitoring Firm and Laboratory. The Third Party Air Monitor will perform air sampling activities and project monitoring at the Work Site.
- B. The Laboratory will perform analysis of air samples utilizing Phase Contrast Microscopy (PCM) and/or Transmission Electron Microscopy (TEM).
- C. The Third Party Air Monitoring Firm and the designated Project Monitor shall have access to all areas of the asbestos removal project at all times and shall continuously inspect and monitor the performance of the Asbestos abatement contractor to verify that said performance complies with this Specification. The Third-Party Air Monitor shall be on site throughout the entire abatement operation.
- D. The NYCDDC will be responsible for costs incurred with the Third Party Air Monitoring Firm and laboratory work. Any subsequent additional testing required due to limits exceeded during initial testing shall be paid for by the Asbestos abatement contractor.

1.07 PAYMENT REQUEST DOCUMENTATION

- B. The following information shall be included for each payment request:
 - 1. Description of work performed.
 - 2. Linear footage and pipe sizes involved.
 - 3. Square footage for boiler & breaching insulation removed.
 - 4. Square footage of non pipe and boiler areas removed, patched, enclosed, sealed, or painted.
 - 5. Square footage of encapsulation, sealing, patching, and painting involved.
 - 6. Total cost associated with compliance with the assigned task.
 - 7. Architectural, Electrical, HVAC, Plumbing, etc. work incidental to the Asbestos Abatement Work.
 - 8. A certified copy (in form 4312-39) to the Comptroller or Financial Officer of the New York City to the effect that the financial statement is true.
 - 9. A signed copy (in form 6506q-6) of certificate of compliance with non-discriminatory provisions of the Contract.

- 10. Attach a copy of valid workmen compensation insurance.
- 11. Valid asbestos insurance per occurrence.
- 12. General liability insurance when required.
- C. Each payment request shall include a grand total for all work completed that billing period, the landfill waste manifests and a copy of waste transporter permit. The Department of Design and Construction will inspect the work performed, review the cost and approve or disapprove requests for payment.
- D. EXPOSURE LOG: With this final payment, the Asbestos abatement contractor shall submit a listing of the names and social security numbers of all employees actively engaged in the abatement work of this Contract. This list shall include a summary showing each part of the abatement work in which the employee was engaged and the dates thereof.

1.08 QUANTITY CALCULATIONS

In order to determine the square footage involved for the various pipe sizes of pipe insulation that might be encountered, the following table is to be used.

Ilibaiation de la		
PIPE INSULATION	PIPE SIZE O.D.	SQUARE FOOTAGE PER LINEAR FOOT
SIZE O.D.		0.65
2-1/2"	1/2"	0.72
2-3/4"	3/4"	0.79
3"	1"	
3-1/4"	1-1/4"	0.85
	1-1/2"	0.92
3-1/2"	2"	1.05
4"		1.18
4-1/2"	2-1/2"	1.31
5"	3"	1.57
6"	3-1/4"	
7"	3-1/2"	1.83
	4"	2.09
8"	5"	2.36
9"		2.62
10"	6"	3.14
12"	8"	3.67
14"	10"	
16"	12"	4.19
	14"	4.71
18"	1 1	

METHOD OF PAYMENT 1.09

Payment shall be made in accordance with Items A through R below. Payment shall be calculated based on the actual quantity of the item performed by the asbestos abatement contractor, times the unit price specified below. Credits may apply to certain times, as

A. REMOVAL, DISPOSAL AND REPLACEMENT CONTAINING PIPE INSULATION: Actual linear footage, multiplied by the **OF** square footage factor listed for the respective pipe size in Section 1.08, multiplied by the unit price in Section 1.04.

EXAMPLE: 100 lin.ft. of 1/2" pipe and 100 lin.ft. of 6" pipe, including elbows, tees. Flanges, etc.

 $100 \times 0.65 = 65 \text{ sq.ft.}$ 65 x unit price = Payment

100 X 2.62 = 262 sq.ft.262 x unit price = Payment

B. REMOVAL, DISPOSAL AND REPLACEMENT INSULATION: (all types including Silicate Block and including the OF removal/replacement of metal jacketing) Payment shall be made at 1.5 times the unit price per square foot.

EXAMPLE: Item B. removal and replacement of 1000 S.F. of boiler insulation (incl. Silicate block)

1000 S.F. X (1.5) X the Unit Price = Payment

- C. REMOVAL, DISPOSAL AND REPLACEMENT OF TANK INSULATION: (all types including removal/replacement of metal jacketing) Payment shall be made at 1.5 times the unit price per square foot.
- D. REMOVAL, DISPOSAL AND REPLACEMENT OF BOILER UPTAKE, & BREACHING INSULATION: (all types including stiffening angles and wire lath) Payment shall be made at 2.0 times the unit price per square foot.
- E. REMOVAL, DISPOSAL AND REPLACEMENT OF DUCT INSULATION: Payment shall be made at 1.0 times the unit price per square foot.
- F. REMOVAL, DISPOSAL AND REPLACEMENT OF SOFT ASBESTOS CONTAINING MATERIAL: (Including sprayed-on fire proofing and sound proofing) Payment shall be made at 1.0 times the unit price per square foot of surface area. Area of irregular surfaces must be calculated and confirmed with DDC representative.
- G. ACOUSTIC PLASTER REPAIR AND/OR ENCAPSULATION: Payment shall be made at 0.5 times the unit price per square foot.

- H. PATCHING OR REPAIR of items listed in A through F will be paid at 0.33 times the unit price per square foot.
- I. REMOVAL, DISPOSAL AND REPLACEMENT OF WATERPROOFING ASBESTOS CONTAINING MATERIAL: (including friable and non-friable waterproofing material from interior and exterior walls, floors, foundations, penetrations, louvers, vents and openings other than windows, doors and skylights) Payment shall be made at 0.5 times the unit price per square foot.
- J. REMOVAL, DISPOSAL AND REPLACEMENT OF ASBESTOS CONTAINING ELECTRICAL WIRING INSULATION: (including friable and non-friable wiring insulation) Payment shall be made at 0.33 times the unit price per square foot.
- K. PAINTING: Payment shall be made at 0.05 times the unit price per square foot.
- L. REMOVAL AND DISPOSAL OF ASBESTOS-CONTAINING PLASTER: from ceilings and walls, including any wire lath and disposal as asbestos containing waste. Payment shall be made at 0.80 times the unit price per square foot.
- M. REMOVAL AND DISPOSAL OF ASBESTOS-CONTAINING FLOOR TILES, CEILING TILES, TRANSITE PANELS: (including any adhesive, glue, mastic and/or underlayment) and disposal as asbestos containing waste. Payment shall be made at 0.40 times the unit price per square foot. If multiple layers are discovered, each additional layer shall be paid at 0.20 times the unit price per square foot.
- N. ADDITIONAL CLEAN UP/HOUSEKEEPING OF WORK AREA: (excluding pre-cleaning of work area required by regulations) HEPA vacuuming and wet cleaning of asbestos contaminated surface. Payment shall be made at 0.20 times the unit price per square foot. When GLOVE BAG is employed to remove ACM, cost of HEPA vacuuming and wet cleaning of floor area up to 3 feet on each side of glove-bag shall be included in unit price and no extra payment will be made.
- O. REMOVAL, DISPOSAL OF ASBESTOS-CONTAINING ROOFING MATERIAL: including mastic, flashing and sealant compound and provide temporary asbestos-free roof covering consisting of one layer of rolled roofing paper sealed with asphaltic roofing compound. Payment shall be made at 0.8 times the unit price per square foot. Credit at a rate of 0.33 times the unit price will be taken for each square foot of temporary roof covering which the Asbestos abatement contractor is directed not to install.
- P. PICK-UP AND DISPOSAL OF GROSS DEBRIS: (excluding any waste generated from abatement under Item A-R) at a rate of \$150 per cubic yard for asbestos contaminated waste and \$75 per cubic yard for non-asbestos contaminated waste. This cost includes all labor and material cost associated with work.

- Q. REMOVAL OF ASBESTOS-CONTAINING BRICK, BLOCK, MORTAR, CEMENT OR CONCRETE: along with all surfacing materials including wire lath and/or other supporting structures and disposal as ACM waste. Payment shall be made at a rate of \$25.00 per cubic foot of material removed.
- R. REMOVAL AND DISPOSAL OF ASBESTOS CONTAINING WINDOW/DOOR CAULKING: including friable and non-friable caulking, weather-stripping, glazing, sealants or other waterproofing materials applied to windows, doors, skylights, etc. Payment shall be made at the rate of \$400.00 per opening regardless of size or configuration. This cost includes labor, consumable materials, set-up/breakdown, removal and disposal, as required.

Note 1: CREDIT: For items listed in A through F, a credit at a rate of 0.33 times the unit price, times the respective multiplier (for each item) will be taken for each square foot of insulation which the asbestos abatement contractor is not directed to reapply.

Note 2: MINIMUM PAYMENT: The minimum payment per call at any individual job sites or various job sites during the same day will be eight hundred dollars (\$800.00).

Note 3: All payments shall be made as described in paragraph 1.09 herein.

Note 4: WORKING HIGHER THAN 12 FEET ABOVE FLOOR LEVEL OR WORK REQUIRING COMPLEX SCAFFOLDING OR CONSTRUCTION WORK PLATFORMS: Provisions are made in this Contract to compensate the Asbestos abatement contractor for work performed in locations that are difficult to access due to work at elevations that are significantly higher than the normal work level. The unit price for these items will be paid at 1.20 times the unit price described in Paragraphs 1.09, A through R for those portions of the work that are more than twelve (12) feet above the grade for that would be judged as the normal working level.

1.10 **GUARANTEE**

- A. Work performed in compliance with each task shall be guaranteed for a period of one year from the date the completed work is accepted by the Department of Design and Construction.
- B. The Commissioner of The Department of Design and Construction will notify the Asbestos abatement contractor in writing regarding defects in work under the guarantee.

1.11 OCCUPANCY OF SITE NOT EXCLUSIVE

Attention is specifically drawn to the fact that contractors, performing the work of other Contracts, may be brought upon any of the work sites of this Contract. Therefore, the Asbestos abatement contractor shall not have exclusive rights to any site of his work and shall fully cooperate and coordinate his work with the work of other contractors who may

be brought upon any site of the work of this Contract. This paragraph applies to those areas outside the regulated Work Area as defined by Title 15, Chapter I of RCNY.

1.12 **SUBMITTALS**

A. Pre-Construction Submittals:

- 1. Attend a pre-construction meeting scheduled by the City of New York Department of Design and Construction. This meeting shall also be attended by a designated representative of the City of New York third party air monitoring firm, facility manager and the Construction Project Manager. At this meeting, the Asbestos abatement contractor shall present three copies of the following items:
 - a. Asbestos abatement contractor's scope of work, work plan and schedule.
 - b. Asbestos project notifications, approved variances and plans to Government Agencies.
 - c. Copies of Permits, clearance and licenses if required.
 - d. Schedules: the Asbestos abatement contractor shall provide to the Construction Project Manager a copy of the following schedules for approval. Once approved, schedules shall be maintained and updated as received. Asbestos abatement contractor shall post a copy of all schedules at the site:
 - (1) A construction schedule stating critical dates of the project including, but not limited to, mobilization, Work Area preparation, demolition, gross removal, fine cleaning, encapsulation, inspections, clearance monitoring, and phase of refinishing and final inspections. The schedule shall be updated biweekly, at a minimum.
 - (2) A schedule of staffing stating number of workers per shift per activity, name and number of supervisor(s) per shift, shifts per day, and total days to be worked.
 - (3) Submit all changes in schedule or staffing to the Construction Project Manager prior to implementation.
 - e. Written description of emergency procedures to be followed in case of injury or fire. This section must include evacuation procedures, source of medical assistance (name and telephone number to nearest

hospital) and procedures to be used for access by medical personnel (examples: first aid squad and physician). NOTE: Necessary Emergency Procedures Shall Take Priority Over All Other Requirements of These Specifications.

- f. Material Safety Data Sheets (MSDS) for encapsulants, sealants, firestopping foam, cleaners/disinfectants, spray adhesive and any and all potentially hazardous materials that may be employed on the project. No work involving the aforementioned will be allowed to proceed until MSDS are reviewed.
- g. Worker Training and Medical Surveillance: The Asbestos abatement contractor shall submit a list of the persons who will be employed by him /her to perform the removal work. Present evidence that workers have received proper training required by the regulations and the medical examinations required by OSHA 29 CFR 1926.1101.
- h. Logs: Specimen copies of daily progress log, visitor's log, and disposal log.
 - (1) The Asbestos abatement contractor shall provide a permanently bound log book of minimum 8-1/2" x 11" size at the entrance to the Worker and Waste Decontamination enclosure system as hereinafter specified. Log book shall contain on title page the project name, name, address and phone number of the Asbestos abatement contractor; name, address and phone number of Asbestos abatement contractor and City's third party air monitoring firm; emergency numbers including, but not limited to local Fire/Rescue Department. Log book shall contain a list of personnel approved for entry into the Work Area.
 - (2) All entries into the log shall be made in non-washable, permanent ink and such pen shall be strung to or otherwise attached to the log to prevent removal from the log-in area. Under no circumstances shall pencil entries be permitted. Any significant events occurring during the abatement project shall be entered into the log. Upon completion of the job, the Asbestos abatement contractor shall submit the logbook containing a day-to-day record of personnel log entries countersigned by the Construction Project Manager every day.
- i. Worker's Acknowledgments: Submit statements signed by each employee that the employee has received training in the proper handling of ACM, understands the health implications and risks

involved; and understands the use and limitations of the respiratory equipment to be used.

B. During Construction Submittals:

- 1. Security and safety logs showing names of person entering workspace, date and time of entry and exit, record of any accident, emergency evacuation, and any other safety and/or health incident.
- 2. Progress logs showing the number of workers, supervisors, hours of work and tasks completed shall be submitted daily to the Construction Project Manager.
- 3. Floor plans indicating Asbestos abatement contractor's current work progress shall be submitted for review by the Construction Project Manager.
- All Asbestos abatement contractors' air monitoring and inspection results.

C. Project Closeout Submittals:

Upon completion of the project and as a condition of acceptance, the Asbestos abatement contractor shall present two copies of the following items, bound and indexed:

- 1. Lien Waivers from Asbestos abatement contractor, Sub-Asbestos abatement contractors and Suppliers,
- 2. Daily OSHA air monitoring results,
- 3. All Waste Manifests (Asbestos and Construction Debris), seals and disposal logs,
- 4. Field Sign-In/Sign-Out Logs for every shift,
- 5. Copies of all Building Department Forms and Permits,
- A Letter of Compliance stating that all the work on this project was performed in accordance with the Specifications and all applicable Federal, State and Local regulations,
- 7. All Warranties as stated in the Specifications,
 - a. Fully executed disposal certificates and transportation manifest.
- 8. Project Record: The Asbestos abatement contractor shall maintain a project record for all small and large asbestos projects. During the project, the

project record shall be kept on site at all times. Upon completion of the project, the project record shall be maintained by the building owner. The project record shall be submitted to DDC as part of the close out documents. The project record shall consist of:

- a. Copies of licenses of all asbestos abatement contractors involved in the project;
- b. Copies of NYCDEP and NYSDOL supervisor and handler certificates for all workers engaged in the project;
- Copies of all project notifications and reports filed with NYCDEP, NYSDOL and USEPA for the project, with any amendments or variances;
- d. Copies of all asbestos abatement permits, including associated approved plans and work place safety plan;
- e. A copy of the air sampling log and all air sampling results;
- f. A copy of the abatement asbestos abatement contractor's daily log book;
- g. Copies of all asbestos waste manifests;
- h. A copy of all Project Monitor's Reports (ACP-15).
- A copy of each ATR-1 Form completed for the asbestos project (if required).
- A copy of each Asbestos Project Conditional Closeout Report (ACP-20) if required.
- k. A copy of the Asbestos Project Completion Form (ACP-21).

1.13 PROTECTION OF FURNITURE AND EQUIPMENT

Cover all furniture and equipment that cannot be removed from Work Areas. Movable furniture and equipment will be removed from Work Areas by the Asbestos abatement contractor prior to start of work. At the conclusion of the work (after final air testing), the Asbestos abatement contractor will remove all plastic covering on walls, floors, furniture, equipment and reinstall furniture and equipment. He shall remove and store all sheaths, curtains and drapes, and reinstall same following final clean up.

1.14 UTILITIES

A. General:

All temporary facilities shall be subject to the approval of the Commissioner. Prior to starting work at any site, locations and/or sketches (if required) of temporary facilities must be submitted to the Construction Project Manager for the required approval.

B. Water:

The Department of Design and Construction will furnish all water needed for construction, at no cost to the Asbestos abatement contractor in buildings under their jurisdiction. However, it is the responsibility of the Asbestos abatement contractor to ensure that hot water is provided for showering in the decontamination unit. The Asbestos abatement contractor shall furnish, install and maintain any needed equipment to meet these requirements at his own expense.

C. Electricity:

The Department of Design and Construction will furnish all electricity needed for construction, at no cost to the Asbestos abatement contractor in a building, under their jurisdiction. The Asbestos abatement contractor is responsible for routing the electric power to the abatement Work Area.

All temporary lighting and temporary electrical service for Work Area shall be in weatherproof enclosures and be ground fault protected.

D. In leased spaces, arrangements for water supplies and electricity must be made with the landlord. However, all such arrangements must be made through and are subject to approval of the Department of Design and Construction. Utilities will be provided at no cost to the Asbestos abatement contractor. However, it is the Asbestos abatement contractor's (or the General contractor's) responsibility to furnish and install a suitable distribution system to the Work Area. This system will be provided at no cost to the City.

1.15 **FEES**

The Asbestos abatement contractor shall be responsible for any and all fees or charges imposed by Local, State or Federal Law, Rule and Regulation applicable to the work specified herein, including fees or charges which may be imposed subsequent to the date of the Bid opening.

END OF SECTION

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SECTION 028213

ASBESTOS ABATEMENT

PART 1 - GENERAL

1.01 DESCRIPTION

- A. The Contract Documents are as defined in the "Agreement". The General Conditions shall apply to all Work of this Section.
- B. Work specified herein shall be the removal and disposal of Asbestos-Containing Materials (ACM) and asbestos-contaminated materials from designated areas of the Queens Supreme Court, located at 88-11 Sutphin Boulevard, Queens, NY 11435.
- C. The following documents were reviewed and utilized to generate this abatement design specification which serves to locate and quantify the amount of ACM, and asbestos contaminated material, to be abated in support of this project.
 - 1. Set of 100% Submission set of drawings labeled "Modernization of Elevators at Queens Supreme Court", dated 12/01/14, prepared by AECOM;
 - 2. Asbestos Survey Report performed by Louis Berger & Assoc., P.C. (LBA) dated 03/18/14.
- D. The phasing and scheduling of work for this project shall be coordinated with and approved by the Construction Project Manager and Facility Manager. The Construction Project Manager and Facility Manager will make the final determination on all issues under this Contract covered by this Specification.

1.02 SCOPE OF WORK

- A. The asbestos abatement contractor is to provide all labor, materials, equipment, services, testing, appurtenances, permits and agreements necessary to perform the work required for the abatement of ACM as required by these contract documents. All work shall be performed in accordance with this Specification, EPA regulations, OSHA regulations, New York City Local Law 70, Title 15, Chapter I RCNY, New York State Industrial Code 56, NIOSH recommendations, and any other applicable federal, state or local government regulations. Whenever there is a conflict or overlap of the above references, the most stringent provisions are applicable.
- B. The intent of this Specification section is to ensure that the asbestos abatement contractor is responsible for the following:
 - 1. Abatement of all ACM.

- 2. Cleaning and decontamination of the entire affected area.
- 3. Demolition that may be required to access ACM in each area, Asbestos abatement contractor shall dispose of all debris associated with demolition activities as ACM waste.
- 4. Removal and disposal of all ACM found within these areas such as 12"x12" floor tile and associated mastic; tar/paint over metal roof; tar on vent/skylight and assumed elevator motor brake pads.
- 5. Provide all scaffolding, platform installation, equipment, tools, transportation and any other equipment required and/or necessary to complete all work described in the Contract Documents.
- 6. The Asbestos abatement contractor shall be responsible for and shall include any and all fees or changes imposed by Local, State or Federal Law, Rule or Regulation applicable to the work specified herein, including fees or charges which may be imposed subsequent to the work.
- Prior to destructive demolition activities, the DDC may elect to collect bulk samples of assumed asbestos-containing materials and analyze the bulk samples for asbestos content.
- C. The Asbestos abatement contractor shall perform the following work as described below and indicated on the drawings. The drawings are only a diagrammatic representation of the Work Areas and do not constitute the actual quantities of material. Asbestos abatement contractor is responsible for the confirmation of the actual total quantities of the Work.

1. Drawing H002.00: First Floor Plan

a. Remove and dispose of asbestos-containing 12"x12" white with gray spots floor tile and associated mastic within **Work Area 1**. Asbestos-containing floor tiles shall be removed utilizing NYCDEP Title 15, Chapter 1, § 1-108 Procedures for Foam/Viscous Liquid Use in Flooring Removal. In areas where VAT is to be removed, the contractor shall be responsible to remove all layers of floor tile and associated mastic to the substrate surface. Multiple layers of floor tile will not be cause for additional compensation to the contractor. All layers of VAT and its associated mastics as well as any plywood and/or particle board in-between layers shall be disposed of as asbestos contaminated waste.

Work Area	Removal Procedure	Approximate Square Feet (Sq. Ft.)	Approximate Linear Feet (Ln. Ft.)
1	NYCDEP Section § 1-108 Foam/Viscous Liquid Use in Flooring Removal	240 Sq. Ft. of 12"x12" White with Gray Spots Floor Tile and Associated Mastic	_

2. Drawing H003.00: Attic Plan

a. Remove and dispose of assumed asbestos-containing elevator motor brake pads within **Work Area 2.** Assumed asbestos-containing elevator motor brake pads shall be removed utilizing NYCDEP Title 15, Chapter 1, § 1-106 Tent Containment Procedures.

Work Area	Removal Procedure	Approximate Square Feet (Sq. Ft.)	Approximate Linear Feet (Ln. Ft.)
2	NYCDEP Section § 1-106 Tent Containment Procedures	4 Sq. Ft. of Assumed Elevator Motor Brake Pads	-

3. Drawing H004.00: Roof Plan

- a. Remove and dispose of assumed asbestos-containing elevator motor brake pads within **Work Area 3.** Assumed asbestos-containing elevator motor brake pads shall be removed utilizing NYCDEP Title 15, Chapter 1, § 1-106 Tent Containment Procedures.
- b. Remove and dispose of asbestos-containing tar/paint over metal roof, silver and tar on vent/skylight, black within **Work Area 4.** Asbestos-containing tar/paint over metal roof, silver and tar on vent/skylight, black shall be removed utilizing NYCDEP Title 15, Chapter 1 § 1-107 Foam Procedure for Roof Removal. The asbestos abatement contractor shall be responsible for the removal and disposal of all roofing components down to the substrate/deck.

Work Area	Removal Procedure	Approximate Square Feet (Sq. Ft.)	Approximate Linear Feet (Ln. Ft.)
3	NYCDEP Section § 1-106 Tent Containment Procedures	6 Sq. Ft. of Assumed Elevator Motor Brake Pads	-
4	NYCDEP Section § 1-107 Foam Procedure for Roof Removal	350 Sq. Ft. of Tar/Paint Over Metal Roof, Silver and Tar on Vent/Skylight, Black	

- D. The facility is under the jurisdiction of the Queens Supreme Court. The asbestos abatement contractor shall perform the work of this contract in a manner that will be least disruptive to the normal use of the building.
- E. Asbestos abatement contractor's attention is directed to the fact that patents cover certain methods of asbestos abatement indicated in the specifications. To date, patents have been issued with regard to negative pressure enclosures or negative or reduced pressure and glove-bag.
- F. Asbestos abatement contractor shall be solely responsible for and shall hold the City of New York Department of Design and Construction and the City harmless from, any and all damages, losses and expenses resulting from any infringement by Asbestos abatement contractor of any patent, including but not limited to the patents described above, used by Asbestos abatement contractor during performance of this agreement.
- G. Prior to starting, the asbestos abatement contractor must notify the Commissioner of the City of New York Department of Design and Construction if he anticipates any difficulty in performing the work as directed and required by these Specifications. Asbestos abatement contractor shall be required to attend an on-site job meeting with the Construction Project Manager prior to start of work to examine conditions of the site for removal and plan the sequence for removal operations.
- H. The asbestos abatement contractor shall retain a certified Project Designer for the preparation of an Asbestos Variance Application (ACP-9), if required.
- I. The asbestos abatement contractor shall be responsible for preparing and submitting all filings, notifications, amendments and variances, etc. required by all City, State and Federal regulatory agencies having jurisdiction, at no additional cost to the NYC DDC.

- J. The general contractor shall retain a Registered Design Professional (person licensed and registered to practice the professions of architecture or engineering under the Education Law of the State of New York) to prepare a Work Place Safety Plan (WPSP), if required.
- K. The general contractor shall retain a Registered Design Professional (person licensed and registered to practice the professions of architecture or engineering under the Education Law of the State of New York) to perform final inspections required pursuant to Title 28 of the Administrative Code, including but not limited to special inspections required under Chapter 17 of the Building Code. Such special inspections and A-TR1 forms shall be completed by the Registered Design professional.
- L. For coordination with other Asbestos abatement contractors, see the General Conditions governing all Contracts.
- M. Related Asbestos Removal Work Under Other Contracts:
 - Each asbestos abatement contractor shall be responsible for the removal of incidental asbestos not identified in this section and found prior to or during the Work.
 - 2. Incidental asbestos is defined as ACM that is discovered during the course of their work that must be abated to enable them to perform the work of their Contract.

N. Work Hours:

- 1. The asbestos abatement contractor shall establish his work schedule in a way that avoids interference or conflict with the normal functioning of the facility. Work in the evenings shall be done at no additional cost to the City.
- 2. All work shall be done during regular working hours unless the Asbestos abatement contractor requests authorization to work other than regular working hours and such authorization is granted by the Commissioner (Regular working hours are those during which any given facility in which work is to be done is customarily open and functioning). If such work schedule is authorized by the Commissioner the work shall be done at no additional cost to the City.
- 3. The order of phases and start dates associated with each will be determined by the Construction Project Manager.
- 4. Asbestos abatement contractor shall be required to schedule waste transfer during evening hours, when activity within the facility is at a minimum. Evening hours are defined as 6:00 p.m. to 6:00 a.m. Waste transfer must be approved by the Construction Project Manager and Facility Manager.

- O. The following conditions shall apply to all temporary shutdowns of existing services:
 - 1. All temporary lighting and temporary electrical services for use in the Work Area shall be in weather proof enclosures and be ground fault protected and:
 - 2. Shall be performed at no additional charge to the City.
 - 3. Shall be performed at times not interfering with the other activities in the building.
 - 4. Shall be performed only with written consent from the Commissioner and the Facility Manager.
 - 5. Shall be made through written request to the Commissioner at least 10 days in advance with complete written description of the work to be performed.
- P. Stages of Asbestos Removal Work:
 - a. The asbestos abatement contractor will be required to perform the work and it is the intent of this Specification to remove all asbestos containing and asbestos contaminated materials from the Work Area. The asbestos abatement contractor is responsible for verifying all quantities of materials listed.
- Q. Certain equipment in the Work Area may need to remain operational during removal. Therefore, the removal of ACM from this equipment shall be performed as the last removal activities within the Work Area. The Asbestos abatement contractor shall coordinate the scheduling for the removal of ACM on functioning equipment with the Construction Project Manager.

1.03 QUALIFICATIONS OF ASBESTOS ABATEMENT CONTRACTOR

- A. Requirements: The asbestos abatement contractor must demonstrate compliance with the special experience requirements set forth in subparagraphs (1) through (5) below. The asbestos abatement contractor must submit documentation demonstrating compliance with all listed requirements. Such documentation shall include without limitation, all required licenses, certificates, and documentation.
 - 1. The asbestos abatement contractor must, whether an individual, corporation, partnership, joint venture or other legal entity, demonstrate for the three year period prior to the work, that it has been licensed by the New York State Department of Labor, as an "Asbestos Abatement Contractor".

- 2. The asbestos abatement contractor must, for the three year period prior to the work, have been in the business of providing asbestos abatement services as a routine part of its daily operations.
- 3. The asbestos abatement contractor proposing to do asbestos abatement work must be thoroughly experienced in such work and must provide evidence of having successfully performed and completed in a timely fashion at least five (5) asbestos abatement projects of similar size and complexity. The aggregate cost of these projects must be at least \$1,000,000 in each of the three years.
- 4. For each project submitted to meet the experience requirements set forth above, the asbestos abatement contractor must submit the following information for the project; name and location of the project; name title and telephone number of the owner or the owner's representative who is familiar with the asbestos abatement contractor's work; brief description of the work completed as a prime or sub-asbestos abatement contractor; amount of contract or subcontract and the date of completion.
- 5. The asbestos abatement contractor must demonstrate that it has the financial resources, supervisory personnel and equipment necessary to carry out the work and to comply with the required performance schedule, taking into consideration other business commitments. The asbestos abatement contractor must submit such documentation as may be required by the Department of Design and Construction to demonstrate that it has the requisite capacity to perform the required services of this contract.
- B. Throughout the specifications, reference is made to codes and standards which establish qualities and types of workmanship and materials, and which establish methods for testing and reporting on the pertinent characteristics thereof. Provide materials or workmanship that meet or exceed the specifically named codes or standards where required by these specifications.
- C. Site Investigation: Asbestos abatement contractor shall inspect all the specifications and related drawings, and will investigate and confirm the site conditions affecting the work, including, but not limited to:
 - 1. Physical considerations and conditions of both the material and structure. These considerations include any obstacles or obstructions encountered in accessing or removing the material.
 - 2. Handling, storage, transportation and disposal of the material.
 - 3. Availability of qualified and skilled labor.
 - 4. Availability of utilities.

5. Exact quantities of all materials to be disturbed and/or removed.

1.04 WORK BY OTHERS

The City reserves the right during the term of this Contract to have work performed on asbestos abatement projects by other asbestos abatement contractors as the situation warrants.

1.05 **DEFINITIONS**

A. General Explanation: Certain terms used in this Specification Section are defined below. Definitions and explanations of this Specification Section are not necessarily complete or exclusive, but are general for the Work to the extent they are not stated more explicitly in another element of the Contract Documents.

B. Definitions in General Use:

- 1. Approve: Where used in conjunction with Engineer's response to submittals, requests, applications, inquiries, reports and claims by Asbestos abatement contractor, the meaning of term "approved" will be held to limitations of Engineer's responsibilities and duties as specified in Contract Documents. In no case will "approval" by Engineer be interpreted as a release of Asbestos abatement contractor from responsibilities to fulfill requirements of Contract Documents.
- 2. Directed, Requested, etc.: Where not otherwise explained, terms such as "directed," "requested," "authorized," "selected," "approved," "required," "accepted," and "permitted" mean "directed by Engineer," "requested by Engineer," and similar phrases. However, no such implied meaning will be interpreted to extend Engineer's responsibility into Asbestos abatement contractor's responsibility for construction supervision.
- 3. Furnish: Except as otherwise defined in greater detail, term "furnish" is used to mean supply and deliver to project site, ready for unloading, unpacking, assembly, installation, etc., as applicable in each instance.
- 4. Indicated: The term "indicated" is a cross-reference to graphic representations, notes or schedules on Drawings, to other paragraphs or schedules in the Specifications, and to similar means of recording requirements in Contract Documents. Where terms such as "shown," "noted," "scheduled," and "specified" are used in lieu of "indicated," it is for purpose of helping reader locate cross-reference, and no limitation of location is intended except as specifically noted.

- 5. Install: Except as otherwise defined in greater detail, term "install" is used to describe operations at Project site including unloading, unpacking, assembly, erection, placing, anchoring, applying, working to dimension, finishing, curing, protecting, cleaning and similar operations, as applicable in each instance.
- 6. Installer: The term "installer" is defined as the entity (person or firm) engaged by the asbestos abatement contractor, or its sub-asbestos abatement contractor for performance of a particular unit of work at Project site, including installation, erection, application and similar required operations. It is a general requirement that such entities (installers) be expert in operations they are engaged to perform.
- 7. Provide: Except as otherwise defined in greater detail, term "provide" means furnish and install, complete and ready for intended use, as applicable in each instance.
- 8. Third-Party Air Monitor: The term "Third-Party Air Monitor" is defined as an entity engaged by City and Construction Project Manager to perform specific inspections or tests of the work, either at Project site or elsewhere; and to report and (if required) interpret results of those inspections or tests.

C. Definitions Relative to Asbestos Abatement:

- 1. Abatement: Any and all procedures physically taken to control fiber release from asbestos-containing materials. This includes removal, encapsulation, enclosure, cleanup and repair.
- 2. Adequately Wet: The complete penetration of a material with amended water to prevent the release of particulates. If visible emissions are observed coming from asbestos-containing material, then the material has not been adequately wetted. However, the absence of visible emissions is not evidence of being adequately wet. ACM must be fully penetrated with the wetting agent in order to be considered adequately wet. If the ACM being abated is resistant to amended water penetration, wetting agent shall be applied to the material prior to and during removal as necessary to minimize fiber release.
- 3. Aggressive Sampling: Method of sampling in which the individual collecting the air sample creates activity by the use of mechanical equipment during the sampling period to stir up settled dust and simulate activity in that area of the building.
- 4. AHERA: Asbestos Hazard Emergency Response Act of 1986
- 5. AIHA: American Industrial Hygiene Association.

- 6. Airlock: System for permitting entrance and exit while restricting air movement between a contaminated area and an uncontaminated area. It consists of two curtained doorways separated by a distance of at least three feet such that one passes through one doorway into the airlock, allowing the doorway sheeting to overlap and close off the opening before proceeding through the second doorway, thereby preventing flow-through contamination.
- 7. Air Sampling: Process of measuring the fiber content of a known volume of air collected during a specific period. The procedure utilized for asbestos follows the NIOSH Standard Analytical Method 7400, or the provisional transmission electron microscopy methods developed by the US EPA which is utilized for lower detection levels and specific fiber identification.
- 8. Ambient Air Monitoring: "Ambient air monitoring" shall mean measurement or determination of airborne asbestos fiber concentrations outside but in the general vicinity of the worksite.
- 9. Amended Water: Water to which a surfactant has been added.
- 10. ANSI: American National Standards Institute
- 11. Area Air Sampling: Any form of air sampling or monitoring where the sampling device is placed at some stationary location.
- 12. Asbestos: Any hydrated mineral silicate separable into commercially usable fibers, including but not limited to chrysotile (serpentine), amosite (cumingtonite-grunerite), crocidolite (riebeckite), tremolite, anthophyllite and actinolite.
- 13. Asbestos-Containing Material (ACM): Asbestos or any material containing more than one-percent asbestos.
- 14. Asbestos-Containing Waste Material: ACM, asbestos-contaminated objects or debris associated with asbestos abatement requiring disposal.
- 15. Asbestos-Contaminated Objects: Any objects which have been contaminated by asbestos or asbestos-containing material.
- 16. Asbestos Assessment Report: "Asbestos Assessment Report" shall mean the "Form ACP-5" form, as approved by NYCDEP, by which a NYCDEP-certified asbestos investigator certifies that a building or structure (or portion thereof) is free of ACM or the amount of ACM to be abated constitutes a minor project.

- 17. Asbestos Handler: Individual who disturbs, removes, repairs, or encloses asbestos material. This individual shall have completed approved training course(s) and be in possession of certification issued by NYCDEP and NYSDOL.
- 18. Asbestos Handler Supervisor: Individual who supervises the handlers during an asbestos project and ensures that proper asbestos abatement procedures as well as individual safety procedures are being adhered to. This individual shall have completed approved training course(s) and be in possession of certification issued by NYCDEP and NYSDOL.
- 19. Asbestos Investigator: An individual certified by NYCDEP as having successfully demonstrated his or her ability to identify the presence of and evaluate the condition of asbestos in a building or structure.
- 20. Asbestos Project: Any form of work performed in a building or structure which will disturb (e.g., remove, enclose, encapsulate) more than 25 linear feet or more than 10 square feet of asbestos-containing material.
- 21. ASTM: American Society for Testing and Materials.
- 22. Asbestos Project Notification: The "Form ACP-7" asbestos project notification form as approved by DEP.
- 23. Authorized Visitor: Authorized visitor shall mean the building owner and his/her representative, and any representative of a regulatory or other agency having jurisdiction over the project.
- 24. Building Owner: Person in whom legal title to the premises is vested unless the premises are held in land trust, in which instance Building Owner means the person in whom beneficial title is vested.
- 25. Building Materials: Any and all manmade materials, including but not limited to interior and exterior finishes, equipment, bricks, mortar, concrete, plaster, roofing, flooring, caulking, sealants, tiles, insulation, and outdoor paving such as sidewalks, paving tiles and asphalt.
- 26. Certified Industrial Hygienist (CIH): Individual with a minimum of five years experience as an industrial hygienist and who has successfully completed both levels of the examination administered by the American Board of Industrial Hygiene and who is currently certified by that board.
- 27. Certified Safety Professional (CSP): Individual having a bachelor's degree from an accredited college or university and a minimum of four years experience as a safety professional and who has successfully completed both levels of the examination administered by the Board of Certified Safety Professionals and who is currently certified by that board.

- 28. Chain of Custody: "Chain of Custody" shall mean the form or set of forms that document the collection and transfer of a sample.
- 29. City: City of New York
- 30. Clean Room: An uncontaminated area or room that is part of worker decontamination enclosure system with provisions for storage of workers' street clothes and protective equipment.
- 31. Clearance Air Monitoring: Employment of aggressive sampling techniques with a volume of air collected to determine the airborne concentration of residual fibers and shall be performed as the final abatement activity.
- 32. Commissioner: shall mean the head of the Agency that has entered into this contract or his/her duly authorized representative.
- 33. Competent Person: Shall mean the designated person as defined by OSHA in 29 CFR1926.1101.
- 34. Curtained Doorway: Device that consists of at least three overlapping sheets of fire retardant plastic over an existing or temporarily framed doorway. One sheet shall be secured at the top and left side, the second sheet at the top and right side, and the third sheet at the top and left side. All sheets shall have weights attached to the bottom to ensure that the sheets hang straight and maintain a seal over the doorway when not in use.
- 35. Decontamination Enclosure System: Series of connected rooms, separated from the Work Area and from each other by air locks, for the decontamination of workers, materials, waste containers, and equipment.
- 36. Demolition: The dismantling or razing of a building, including all operations incidental thereto (except for asbestos abatement activities), for which a demolition permit from the New York City Department of Buildings is required.
- 37. NYCDEP or DEP: The New York City Department of Environmental Protection.
- 38. Disturb: Any action taken which may alter, change, or stir, such as but not limited to the removal, encapsulation, enclosure or repair of asbestoscontaining material.
- 39. DOB: The New York City Department of Buildings.

- 40. Egress: A continuous and unobstructed path of vertical and horizontal egress travel from any occupied portion of a building or structure to a public way. A means of egress consists of three separate and distinct parts: the exit access, the exit and the exit discharge.
- 41. ELAP: Environmental Laboratory Approval Program administered by the New York State Department of Health.
- 42. Encapsulant (sealant) or Encapsulating Agent: Liquid material which can be applied to ACM and which temporarily controls the possible release of asbestos fibers from the material either by creating a membrane over the surface (bridging encapsulant) or by penetrating into the material and binding its components together (penetrating encapsulant). A thin coat of lockdown encapsulant shall be applied to all surfaces in the work area which were not the subject of removal or abatement, including the cleaned layer of the surface barriers, but excepting sprinklers, standpipes, and other active elements of the fire suppression system.
- 43. Encapsulation: The coating or spraying of asbestos-containing material encapsulant. A thin coat of lockdown encapsulant shall be applied to all surfaces in the work area which were not the subject of removal or abatement, including the cleaned layer of the surface barriers, but excepting sprinklers, standpipes, and other active elements of the fire suppression system.
- 44. Enclosure: Construction of airtight walls and/or ceilings between ACM and the facility environment, or around surfaces coated with ACM, or any other appropriate procedure as determined by the NYCDEP which prevents the release of asbestos fibers.
- 45. EPA or USEPA: United States Environmental Protection Agency.
- 46. Equipment Room: Contaminated area or room that is part of the worker decontamination enclosure system with provisions for the storage of contaminated clothing and equipment.
- 47. Exit: That portion of a means of egress system which is separated from other interior spaces of a building or structure by fire-resistance-rated construction to provide a protected path of egress travel between the exit access and the exit discharge.
- 48. FDNY: The Fire Department of the City of New York.

- 49. Fiber: An acicular single crystal or a similarity elongated polycrystalline aggregate which displays some resemblance to organic fibers by having such properties as flexibility, high aspect ratio, silky luster, axial lineation, and others, and which has attained its shape primarily through growth rather than cleavage.
- 50. Fixed Object: A unit of equipment, furniture, or other item in the work area which cannot be removed from the work area. Fixed objects shall include equipment, furniture, or other items that are attached, in whole or in part, to a floor, ceiling, wall, or other building structure or system or to another fixed object and cannot be reasonably removed from the work area. Fixed objects shall also include pipes and other equipment inside the work area which are not the subject of the asbestos project. Active fire suppression system components shall not be considered fixed objects.
- 51. Glovebag technique: shall mean a method for removing asbestos-containing material from heating, ventilation and air conditioning (HVAC) ducts, short piping runs, valves, joints, elbows, and other nonplanar surfaces. The glovebag assembly is a manufactured device consisting of a large bag (constructed of at least 6-mil transparent plastic), two inward-projecting long sleeve gloves, one inward-projecting waterwand sleeve, an internal tool pouch, and an attached, labeled receptacle for asbestos waste. The glovebag is constructed and installed in such a manner that it surrounds the object or area to be decontaminated and contains all asbestos fibers released during the removal process.
- 52. HEPA-Filter: High efficiency particulate air filter capable of trapping and retaining 99.97 percent of particles (asbestos fibers) greater than 0.3 micrometers mass median aerodynamic equivalent diameter.
- 53. HEPA vacuum equipment: "HEPA vacuum equipment" shall mean vacuuming equipment with a HEPA filter.
- 54. Holding Area: Chamber in the equipment decontamination enclosure located between the washroom and an uncontaminated area.
- 55. Homogeneous Work Area: Portion of the Work Area that contains one type of ACM and/or where one type of abatement is used.
- 56. Industrial Hygiene: Science and art devoted to the recognition, evaluation, and control of those environmental factors or stresses, arising in or from the work place, which may cause sickness, impaired health and well being, or significant discomfort and inefficiency among worker or among the citizens of the community.

- 57. Industrial Hygienist: Individual having a college or university degree or degrees in Engineering, Chemistry, Physics or Medicine, or related Biological Sciences who, by virtue of special studies and training, has acquired competence in industrial hygiene. Such special studies and training must have been sufficient in all of the above cognate sciences to provide the abilities:
 - a. To recognize the environmental factors and to understand their effect on people and their well being; and
 - b. To evaluate, on the basis of experience and with the aid of quantitative measurement techniques, the magnitude of these stresses in terms of ability to impair people's health and well being; and
 - c. To prescribe methods to eliminate, control, or reduce such stresses when necessary to alleviate their efforts.
- 58. Isolation Barrier: The construction of partitions, the placement of solid materials, and the plasticizing of apertures to seal off the work place from surrounding areas and to contain asbestos fibers in the work area.
- 59. Large Asbestos Project: Asbestos project involving the disturbances (e.g., removal, enclosure, encapsulation) of 260 linear feet or more of ACM or 160 square feet or more of ACM.
- 60. Log: An official record of all activities that occurred during the project. At a minimum, the log shall identify the building owner, agent, asbestos abatement contractor, and workers, and other pertinent information including daily activities, cleanings and waste transfers, names and certificate numbers of asbestos handler supervisors and asbestos handlers; results of inspections of decontamination systems, barriers, and negative pressure ventilation equipment; summary of corrective actions and repairs; work stoppages with reason for stoppage; manometer readings at least twice per work shift; daily checks of emergency and fire exits and any unusual events.
- 61. Minor Project: A project involving the disturbance (e.g., removal, enclosure, encapsulation, repair) of 25 linear feet or less of asbestos containing material or 10 square feet or less of asbestos containing material.
- 62. Movable Object: Unit of equipment or furniture in the Work Area that can be removed from the Work Area.
- 63. Negative Air Pressure Equipment: Portable local exhaust system equipped with HEPA filtration. The system shall be capable of creating a negative pressure differential between the outside and inside of the Work Area.

- 64. NESHAPS: National Emission Standards for Hazardous Air Pollutants.
- 65. NFPA: The National Fire Protection Association.
- 66. NIOSH: National Institute for Occupational Safety and Health.
- 67. DEP or NYCDEP: New York City Department of Environmental Protection
- 68. NYSDOL: New York State Department of Labor.
- 69. NYSDOL ICR 56: "NYSDOL ICR 56" shall mean Part 56 of the Official Compilation of Codes, Rules and Regulations of the State of New York or 12 NYCRR Part 56.
- 70. NYSDOH: The New York State Department of Health.
- 71. Obstruction: The blocking of a means of egress with any temporary structure or barrier. A double layer of fire-retardant 6-mil polyethylene sheeting shall not be considered an obstruction when it is prominently marked as an exit with photo luminescent signage or paint and cutting tools (knife, razor) are attached to the work area side of the sheeting for use in the event that the sheeting must be cut to permit egress. A corridor shall not be considered obstructed when there is a clear path measuring at least three (3) feet wide.
- 72. Occupied Area: Area of the work site where abatement is not taking place and where personnel or occupants normally function or where workers are not required to use personal protective equipment.
- 73. OSHA: Occupational Safety and Health Administration.
- 74. Outside air: "Outside air" shall mean the air outside the work place.
- 75. Person: Individual, partnership, company, corporation, association, firm, organization, governmental agency, administration, or department, or any other group of individuals, or any officer or employee thereof.
- 76. Personal Air Monitoring: Method used to determine employees' exposure to airborne asbestos fibers. The sample is collected outside the respirator in the worker's breathing zone.
- 77. Personal Protective Equipment (PPE): Appropriate protective clothing, gloves, eye protection, footwear, and head gear.
- 78. Phase Contrast Microscopy (PCM): The measurement protocol for the assessment of the fiber content of air. (NIOSH Method 7400).

- 79. Physician: Person licensed or otherwise authorized under Article 131 Section 65.22 of the New York State Education Law.
- 80. Plasticize: To cover floors and walls with fire retardant plastic sheeting as herein specified or by using spray plastics as acceptable to the Department.
- 81. Polarized Light Microscopy (PLM): The measurement protocol for the assessment of the asbestos content of bulk materials. (Interim Method for the Determination of Asbestiform Materials in Bulk Insulation Samples- 40 CFR Part 763, Subpart F, Appendix A as amended on September 1, 1982)
- 82. Project Designer: A person who holds a valid Project Designer Certificate issued by the New York State Department of Labor.
- 83. Project Monitor: A person who holds a valid Project Monitor Certificate issued by the New York State Department of Labor.
- 84. Qualitative Fit Test: Individual test subject's responding (either voluntarily or involuntarily) to a chemical challenge outside the respirator face-piece. Acceptable methods include irritant smoke test, odorous vapor test, and taste test.
- 85. Quantitative Fit Test: Exposing the respiratory wearer to a test atmosphere containing an easily detectable, nontoxic aerosol, vapor or gas as the test agent. Instrumentation, which samples the test atmosphere and the air inside the face-piece of the respirator, is used to measure quantitatively the leakage into the respirator. There are a number of test atmospheres, test agents, and exercises to perform during the test.
- 86. Registered Design Professional: A person licensed and registered to practice the professions of architecture or engineering under the Education Law of the State of New York.
- 87. Removal: Stripping of any asbestos- containing materials from surfaces or components of a facility or taking out structural components in accordance with 40 CFR 61 Subparts A and M.
- 88. Renovation: An addition or alteration or change or modification of a building or the service equipment thereof, that is not classified as an ordinary repair as defined in §27-125 of the Administrative Code of the City of New York.
- 89. Repair: Corrective action using specified work practices (e.g., glovebag, plastic tent procedures, etc.) to minimize the likelihood of fiber release from minimally damaged areas of ACM.

- 90. Replacement material: Any material used to replace ACM that contains less than .01 percent asbestos.
- 91. Shift: A worker's, or simultaneous group of workers', complete daily term of work.
- 92. Shower Room: Room between the clean room and the equipment room in the worker decontamination enclosure with hot and cold running water controllable at the tap and arranged for complete showering during decontamination.
- 93. Small Asbestos Project: Asbestos project involving the disturbance (e.g., removal, enclosure, encapsulation) of more than 25 and less than 260 linear feet of ACM or more than ten and less than 160 square feet of ACM.
- 94. Staging Area: Work Area near the waste transfer airlock where containerized asbestos waste has been placed prior to removal from the Work Area.
- 95. Strip: To remove asbestos materials from any part of the facility.
- 96. Structural Member: Load-supporting member of a facility, such as beams and load-supporting walls, or any non-load-supporting member, such as ceiling and non-load-supporting walls.
- 97. Surface barriers: The plasticizing of walls, floors, and fixed objects within the work area to prevent contamination from subsequent work.
- 98. Surfactant: Chemical wetting agent added to water to improve penetration.
- 99. Transmission Electron Microscopy (TEM): The measurement protocol for the assessment of the asbestos fiber content of air. Interim Transmission Electron Microscopy Analytical Methods-40 CFR Part 763, Subpart E, Appendix A.
- 100. Visible Emissions: Emissions containing particulate material that are visually detectable without the aid of instruments.
- 101. Washroom: Room between the Work Area and the holding area in the equipment decontamination enclosure system where equipment and waste containers are wet cleaned and/or HEPA-vacuumed prior to disposal.
- 102. Waste decontamination enclosure system: "Waste decontamination enclosure system" shall mean the decontamination enclosure system designated for the controlled transfer of materials and equipment, consisting of a washroom and a holding area.

- 103. Wet Cleaning: "Wet cleaning" shall mean the removal of asbestos fibers from building surfaces and objects by using cloths, mops, or other cleaning tools which have been dampened with water.
- 104. Wet methods: "Wet methods" shall mean the use of amended water or removal encapsulants to minimize the generation of fibers during ACM disturbance.
- 105. Work Area: Designated rooms, spaces, or areas of the building or structure where asbestos abatement activities take(s) place.
- 106. Worker Decontamination Enclosure System: Portion of a decontamination enclosure system designed for controlled passage of workers and authorized visitors, consisting of a clean room, a shower room, and an equipment room separated from each other and from the Work Area by airlocks and curtained doorways.
- 107. Work Place: The work area and the decontamination enclosure system(s).
- 108. Work Place Safety Plan: Construction documents prepared by a registered design professional and submitted for review by DEP in order to obtain an asbestos abatement permit. Such plan shall include, but not be limited to, plans, sections, and details of the work area clearly showing the extent, sequence, and means and methods by which the work is to be performed.
- 109. Work Site: Premises where abatement activity is being performed. May be composed of one or more Work Areas.

1.06 STANDARD OPERATING PROCEDURES

A. Develop and implement a written standard procedure for abatement work to ensure maximum protection and safeguard from asbestos exposure of the workers, visitors, employees, public, and environment.

B. TELEPHONE PAGING DEVICE

The asbestos abatement contractor or his authorized representative shall, at all times during the normal workday or during periods of overtime work under this Contract, carry a digital telephone paging device ("Beeper") and/or cellular telephones which can be activated by a telephone number in the 212 or 646 or 718 or 917 or 929 area code. He shall supply the Department of Design and Construction with the activation number for the device and he is liable to respond back to the calls from DDC within the next one (1) hour period after he receives calls from DDC. The cost to the asbestos abatement contractor for this device and all charges accruing thereto is deemed included in the work.

C. The standard operating procedure shall ensure:

- 1. Tight security from unauthorized entry into the workspace.
- 2. Restriction of asbestos abatement contractor's personnel to the immediate Work Area and access/egress routes.
- 3. Donning of proper protective clothing and respiratory protection prior to entering the Work Area.
- 4. Safe work practices in the work place, including provisions for inter-room communications, exclusion of eating, drinking, smoking, or in any way breaking the respiratory protection.
- 5. Proper exit practices from the work space to the outside through the showering and decontamination facilities.
- 6. Removing asbestos in a way that minimizes release of fibers.
- 7. Packing, labeling, loading, transporting, and disposing of contaminated material in a way that minimizes exposure and contamination.
- 8. Emergency evacuation procedures, for medical or safety situations, to minimize the potential exposure to airborne asbestos fibers for emergency personnel, building occupants, and building environment.
- 9. Safety from accidents in the workspace, especially from electrical shocks, fall hazards associated with scaffolding, slippery surfaces, and entanglements in loose hoses and equipment.
- 10. Provisions for effective supervision, air monitoring and personnel monitoring for exposure during the work.
- 11. Engineering controls that minimize exposure to fibers within the workspace.
- 12. The asbestos abatement contractor shall provide a 24-hour fire watch throughout the entire term of the project, to protect against fire and unauthorized entry into the workspace. Fire watch shall be performed by an individual who is a certified asbestos worker capable of entering the Work Area for regular inspections.
- D. Provide an Asbestos Handler Supervisor to provide continuous supervision of all work, and to be responsible for the following:
 - 1. Ensure that individuals are using proper personal protective equipment, are trained in its use and hold valid NYCDEP and NYSDOL Asbestos Handler certificates

- 2. Maintain entry log records and ensure that they are recorded in accordance with the provisions of Title 15, Chapter 1 of RCNY and NYSDOL ICR 56.
- 3. Surveillance of the Work Areas at a minimum of once per work shift or as required by Title 15, Chapter 1 of RCNY and NYSDOL ICR 56 -7.3, to ensure the integrity of work place isolation, negative pressure equipment and workers personal protective equipment is not torn or ripped and that respiratory protection is worn at all times.
- 4. Ensure that sufficient personal protective equipment is stored in the clean room.
- 5. Take precautions to prevent heat stress. Precautions include, but are not limited to, selecting lightweight protective clothing, reducing the work rate, and providing adequate fluid breaks.
- 6. Perform work area inspection with project monitor prior to the commencement of final clearance air monitoring.
- 7. The asbestos abatement contractor shall retain the asbestos handler supervisor to perform a visual inspection prior to the post-abatement clearance air monitoring to confirm that all containerized waste has been removed from work and holding areas and there is no visible ACM debris or residue on or about all abated surfaces.

E. ENGINEERING CONTROLS

- 1. The 8-hour time weighted average airborne concentration of fibers to which any passerby may be exposed shall not exceed 0.01 fibers per cubic centimeter of air when fibers have a physical dimension longer than 5 micrometers as determined by the method prescribed in these Specifications.
- 2. All asbestos projects shall utilize negative pressure ventilation equipment.
 - a. The asbestos abatement contractor shall use a manometer to document the pressure differential. The asbestos abatement contractor shall install and make the manometer operational once the negative pressure has been established in the work area. Magnahelic manometers shall be calibrated at least every six months and a copy of the current calibration certification shall be available at the work site.
- 3. Negative pressure ventilation equipment shall be installed and operated to provide at least one air change in the work area every 15 minutes. Where there are no floor or wall barriers because floor or wall material is being abated, there shall be at least one air change in the work area every ten minutes.

- 4. The negative pressure ventilation equipment shall operate continuously, 24 hours a day, from the establishment of isolation barriers through successful clearance air monitoring. If such equipment shuts off, adjacent areas shall be monitored for asbestos fibers.
- 5. A static negative air pressure of 0.02 inches (minimum) water column shall be maintained at all times in the work place during abatement to ensure that contaminated air in the Work Area does not filter back to uncontaminated areas.
- 6. If the contaminated area of an asbestos project covers the entire floor of the affected building, or an area greater than 15,000 square feet on any given floor, the installation of a negative air cut off switch or switches shall be required at a single location outside the work place, such as inside a stairwell, or at a secured location in the ground floor lobby when conditions warrant. The required switch or switches shall be installed by a licensed electrician pursuant to a permit issued by the Department of Buildings. If negative pressure ventilation equipment is used on multiple floors, the cut off switch shall be able to turn off the equipment on all floors.
- 7. On loss of negative pressure or electric power to the negative pressure ventilating units, abatement shall stop immediately and shall not resume until power is restored and negative pressure ventilation equipment is operating again.
- 8. Negative pressure ventilation equipment shall be exhausted to the outside of the building away from occupied areas.
 - a. All openings (including but not limited to operable windows, doors, vents, air intakes or exhausts of any mechanical devices) less than 15 feet from the exterior exhaust duct termination location shall be plasticized with two layers of fire retardant 6-mil polyethylene sheeting, or a second negative pressure ventilation unit with the primary unit's capacity shall be connected in series prior to exhausting to the outside.
 - b. Negative pressure ventilation equipment shall exhaust away from areas accessible to the public.
 - c. All ducting shall be sealed and braced or supported to maintain airtight joints. Ducts shall be reinforced and shall be installed so as to prevent breakage. Damage to ducts must be repaired immediately.

- 9. Where ducting to the outside is not possible, a second negative pressure ventilation unit compatible with the primary unit's capacity shall be connected in series. The area receiving the exhaust shall have sufficient, non-recycling exhaust capacity to the outside of the structure.
- 10. In the event that there is a failure of the containment system or a breach in the Isolation Barriers, all abatement work will cease and the asbestos abatement contractor will immediately correct the condition. Abatement work will not resume until the Work Area has been smoke tested by the third party laboratory and approved by the Construction Project Manager.

F. LOCKDOWN ENCAPSULATION PROCEDURES

- 1. The following procedures shall be followed to seal in non-visible residue while conducting lockdown encapsulation on all surfaces from which ACM has not been removed:
 - a. Only encapsulants rated as acceptable or marginally acceptable on the basis of Battelle Columbus Laboratory test procedures and rating requirements developed under the 1978 USEPA Contract shall be used for lockdown encapsulation.
 - b. The encapsulant solvent or vehicle shall not contain a volatile hydrocarbon unless reviewed and approved by DEP.
 - c. Latex paint with solids content greater than 15 percent shall be considered a lockdown sealant for coating all non-metallic surfaces.
 - d. Encapsulants shall be applied using airless spray equipment. Spraying is to occur at the lowest pressure range possible to minimize fiber release from encapsulant impact at the surface. It shall be applied with a consistent horizontal or vertical motion.
 - e. The cleaned layer of the surface barriers shall be removed from walls and floors.

The isolation barriers shall remain in place throughout cleanup. Decontamination enclosure systems shall remain in place and be utilized. A thin coat of lockdown encapsulant shall be applied to all surfaces in the work area which were not the subject of removal or abatement, including the cleaned layer of the surface barriers, but excepting sprinklers, standpipes, and other active elements of the fire suppression system.

1.07 NOTIFICATIONS, PERMITS, WARNING SIGNS, LABELS, AND POSTERS

- A. The asbestos abatement contractor shall submit an Asbestos Project Notification (ACP-7) to the NYCDEP listing each work area within the building separately one week in advance of the start of work.
- B. The registered design professional shall obtain an asbestos abatement permit authorizing the performance of construction work as required for asbestos projects involving one or more of the following activities:
 - 1. Obstruction of an exit door leading to an exit stair or the exterior of the building;
 - 2. Obstruction of an exterior fire escape or access to that fire escape;
 - 3. Obstruction of a fire-rated corridor leading to an exit door;
 - 4. Removal of handrails in an exit stair or ramp;
 - 5. Removal or dismantling of any fire alarm system component including any fire alarm-initiating device (e.g., smoke detectors, manual pull station);
 - 6. Removal or dismantling of any exit sign or any component of the exit lighting system, including photo luminescent exit path markings;
 - 7. Removal or dismantling of any part of a sprinkler system including piping or sprinkler heads;
 - 8. Removal or dismantling of any part of a standpipe system including fire pumps or valves;
 - 9. Removal of any non-load bearing / non-fire-rated wall (greater than 45 square feet or 50 percent of a given wall);
 - 10. Any plumbing work other than the repair or replacement of plumbing fixtures;
 - 11. Removal of any fire-resistance rated portions of a wall, ceiling, floor, door, corridor, partition, or structural element enclosure including spray-on fire resistance rated materials:
 - 12. Removal of any fire damper, smoke damper, fire stopping material, fire blocking, or draft stopping within fire-resistance rated assemblies or within concealed spaces;
 - 13. Any work that otherwise requires a permit from the DOB (full demolitions, alterations, renovations, modifications or plumbing work).

- C. The asbestos abatement contractor shall provide a floor plan showing the areas of the building under abatement and the location of all fire exits in said areas. It shall be prominently posted in the building lobby or comparable location, along with a notice stating the location within the building of the negative air cutoff switch, if applicable.
- D. The general contractor shall submit, as required, an asbestos abatement permit due to one or more of the activities listed in 1.07 (B) (1-8) and (B) (13) of this specification. The asbestos abatement contractor is responsible for submitting, with an asbestos project notification, a work place safety plan (WPSP) and any other applicable construction documents. These documents must be prepared by a registered design professional.
- E. A WPSP is not required for projects requiring an asbestos abatement permit due to one or more of the activities listed in 1.07 (B) (9-12) of this specification. The asbestos abatement contractor shall submit, together with the asbestos project notification, all applicable asbestos abatement permit construction documents.
- F. The general contractor shall retain a Registered Design Professional to perform the inspections required pursuant to Title 28 of the Administrative Code, including but not limited to special inspections required by Chapter 17 of the Building Code, as follows:
 - 1. A final inspection shall be performed by a registered design professional retained by the asbestos abatement contractor after all work authorized by the asbestos abatement permit is completed. The person performing the inspection shall note all failures to comply with the provisions of the Building Code or approved asbestos abatement permit and shall promptly notify the owner in writing. All defects noted in such inspection shall be corrected. The final inspection report shall either:

a. Confirm:

- (1) That the construction work is complete, including the reinstallation or reactivation of any building fire safety or life safety component.
- (2) That any defects previously noted have been corrected.
- (3) That all required inspections were performed.
- (4) That the work is in substantial compliance with the approved asbestos abatement permit construction documents, the Building Code, and other applicable laws and rules.

b. Confirm:

- (1) That the construction work does not return the building (or portion thereof) affected by the abatement project to a condition compliant with the building code and other applicable laws and rules, but that the registered design professional has reviewed an application for asbestos abatement permit construction documents approval that has been approved by the department of buildings, and the subsequent scope of work as approved will, upon completion, render all areas affected by the asbestos project in full compliance with the building code and all applicable laws and rules.
- (2) That any defects previously noted that are not addressed by the subsequent scope of work as approved by the department of buildings, have been corrected.
- (3) That all required inspections that are not addressed by the subsequent scope of work as approved by the department of buildings were performed.
- (4) That all completed work pursuant to an asbestos abatement permit is in substantial compliance with the approved asbestos abatement permit construction documents.
- G. The general contractor shall provide the final inspection reports to be filed with DEP on A-TR1 form. Records of final inspections made by registered design professionals shall be submitted to DDC as part of the close out document package.
- H. Erect bilingual (English-Spanish) warning signs around the work space and at every point of potential entry from the outside and at main entrance to building which can be viewed by the public without obstruction, in accordance with OSHA 29 CFR 1926.1101 (K) (Sign Specifications) and Title 15, Chapter 1 of RCNY. The warning signs shall be a bright color so that they will be easily noticeable. The size of the sign and the size of the lettering shall be no less than OSHA requirements.
- I. Provide the required labels for all polyethylene bags and all drums utilized to transport contaminated material to the landfill in accordance with OSHA 29 CFR 1926.1101 (K)(2) and by 49 CFR Parts 171 and 172 of the Department of Transportation regulations.

- J. Provide any other signs, labels, warnings, and posted instructions that are necessary to protect, inform and warn people of the hazard from asbestos exposure. Post in a prominent and convenient place for the workers a copy of the latest applicable regulations from OSHA, EPA, NIOSH, State of New York and New York City and any additional items mandated for posting by the aforementioned regulations.
- K. Furnish all permits, variances and notices required to perform the Work.

1.08 EMERGENCY PRECAUTIONS

- A. Establish emergency and fire exits from the Work Area. The clean side of all emergency exits shall be equipped with two full sets of protective clothing and respirators at all times.
- B. Notify local medical emergency personnel, both ambulance crews and hospital emergency room staff prior to commencement of abatement operations as to the possibility of having to handle contaminated or injured workmen, and shall be advised on safe decontamination.
- C. Prepare to administer first aid to injured personnel after decontamination. Seriously injured personnel shall be treated immediately or evacuated immediately for decontamination. When an injury occurs, precautions shall be taken to reduce airborne fiber concentrations (i.e., misting of the air with water) until the injured person has been removed from the Work Area.
- D. Notify, before actual removal of the asbestos material, the local police and fire departments to the danger of entering the Work Area. Asbestos abatement contractor shall make every effort to help these agencies form plans of action should their personnel need to enter the contaminated area.

1.09 SUBMITTALS

A. Pre-Construction Submittals:

- 1. Attend a pre-construction meeting scheduled by the City of New York Department of Design and Construction. This meeting shall also be attended by a designated representative of the City of New York third party air monitoring firm, facility manager and the Construction Project Manager. At this meeting, the asbestos abatement contractor shall present three copies of the following items, bound and indexed. The detailed plan of action must be submitted at least five (5) days prior to the pre-construction meeting.
 - a. Asbestos abatement contractor's scope of work, work plan and schedule.

- b. Asbestos project notifications, approved variances and plans to Government Agencies.
- c. Copies of Permits, clearance and licenses if required.
- d. Schedules: the asbestos abatement contractor shall provide to the Construction Project Manager a copy of the following schedules for approval. Once approved, schedules shall be maintained and updated as received. Asbestos abatement contractor shall post a copy of all schedules at the site:
 - (1) A construction schedule stating critical dates of the project including, but not limited to, mobilization, Work Area preparation, demolition, gross removal, fine cleaning, encapsulation, inspections, clearance monitoring, and phase of refinishing and final inspections. The schedule shall be updated biweekly, at a minimum.
 - (2) A schedule of staffing stating number of workers per shift per activity, name and number of supervisor(s) per shift, shifts per day, and total days to be worked.
 - (3) Submit all changes in schedule or staffing to the Construction Project Manager prior to implementation.
 - (4) A schedule of equipment to be used including numbers and types of all major equipment such as HEPA Air Filtration Units, HEPA-vacuums, airless sprayers, Water Atomizing Devices and Type "C" compressors.
- e. A written plan and shop drawings for preparation of work site and decontamination chamber.
- f. Description of protective clothing and approved respirator to be used, make, model, NIOSH approval numbers.
- g. Delineation of responsibility of work site supervision, including competent person, with names, resumes, and home telephone numbers.
- h. Explanation of decontamination sequence and isolation techniques.
- i. Description of specific equipment to be utilized, including make and model number of air filtration devices, vacuums, sprayers, etc.
- j. Description of any prepared methods, procedures, techniques, or equipment other than those specified in the Contract Documents.

- k. Explanation of the handling of asbestos contaminated wastes including EPA and NYCDEP identification numbers of Waste Hauler.
- 1. Description of the final clean-up procedures to be used.
- m. Name and qualifications of asbestos abatement asbestos abatement contractor's Air Monitor including AIHA accreditation, and proof of NIOSH PAT and NIST/NVLAP Bulk Quality Assurance Proficiency of OSHA samples for approval by the City of New York Department of Design and Construction.
- n. Written description of emergency procedures to be followed in case of injury or fire. This section must include evacuation procedures, source of medical assistance (name and telephone number) and procedures to be used for access by medical personnel (examples: first aid squad and physician). NOTE: Necessary Emergency Procedures Shall Take Priority Over All Other Requirements of These Specifications.
- o. Material Safety Data Sheets (MSDS) for encapsulants, sealants, firestopping foam, cleaners/disinfectants, spray adhesive and any and all potentially hazardous materials that may be employed on the project. No work involving the aforementioned will be allowed to proceed until MSDS are reviewed.
- p. Worker Training and Medical Surveillance: Asbestos abatement contractor shall submit a list of the persons who will be employed by him in the removal work. Present evidence that workers have received proper training required by the regulations and the medical examinations required by OSHA 29 CFR 1926.1101.
- q. Logs: Specimen copies of daily progress log, visitor's log, and disposal log.
 - (1) The asbestos abatement contractor shall provide a permanently bound log book of minimum 8-1/2" x 11" size at the entrance to the Worker and Waste Decontamination enclosure system as hereinafter specified. Log book shall contain on title page the project name, name, address and phone number of Environmental Control Representative; name, address and phone number of asbestos abatement contractor; name, address and phone number of asbestos abatement contractor and City's air testing entity; emergency numbers including, but not limited to local Fire/Rescue Department. Log book shall

contain a list of personnel approved by the laboratory for entry into the Work Area.

- (2) All entries into the log shall be made in non-washable, permanent ink and such pen shall be strung to or otherwise attached to the log to prevent removal from the log-in area. Under no circumstances shall pencil entries be permitted. Any significant events occurring during the abatement project shall be entered into the log. Upon completion of the job, the Asbestos abatement contractor shall submit a copy of the logbook containing a day-to-day record of personnel log entries countersigned by the Construction Project Manager every day.
- r. Worker's Acknowledgments: Submit statements signed by each employee that the employee has received training in the proper handling of ACM, understands the health implications and risks involved; and understands the use and limitations of the respiratory equipment to be used.
- B. Submit copies of the following items to the Construction Project Manager during the work:
 - 1. Security and safety logs showing names of person entering workspace, date and time of entry and exit, record of any accident, emergency evacuation, and any other safety and/or health incident.
 - 2. Progress logs showing the number of workers, supervisors, hours of work and tasks completed shall be submitted daily to the Construction Project Manager.
 - 3. Floor plans indicating asbestos abatement asbestos abatement contractor's current work progress shall be submitted for review by the Construction Project Manager at weekly progress meetings.
 - 4. All asbestos abatement contractors' air monitoring and inspection results.

C. Project Closeout Submittals:

Upon completion of the project and as a condition of acceptance, the asbestos abatement contractor shall present two copies of the following items, bound and indexed:

- 1. Lien Waivers from asbestos abatement contractor, Sub-asbestos abatement contractors and Suppliers,
- Daily OSHA air monitoring results,

- 3. All Waste Manifests (Asbestos and Construction Debris), seals and disposal logs,
- 4. Field Sign-In/Sign-Out Logs for every shift,
- 5. Copies of all Building Department Forms and Permits,
- 6. A Letter of Compliance stating that all the work on this project was performed in accordance with the Specifications and all applicable Federal, State and Local regulations,
- 7. All Warranties as stated in the Specifications,
 - a. Fully executed disposal certificates and transportation manifest.
- 8. Project Record: The asbestos abatement contractor shall maintain a project record for all small and large asbestos projects. During the project, the project record shall be kept on site at all times. Upon completion of the project, the project record shall be maintained by the building owner. The project record shall be submitted to DDC as part of the close out documents. The project record shall consist of:
 - Copies of licenses of all asbestos abatement contractors involved in the project;
 - b. Copies of DEP and NYSDOL supervisor and handler certificates for all workers engaged in the project;
 - c. Copies of all project notifications and reports filed with DEP and NYSDOL for the project, with any amendments or variances;
 - d. Copies of all asbestos abatement permits, including associated approved plans and work place safety plan;
 - e. A copy of the air sampling log and all air sampling results;
 - f. A copy of the abatement asbestos abatement contractor's daily log book;
 - g. All data related to bulk sampling including the results of any asbestos surveys performed by an asbestos investigator;
 - h. Copies of all asbestos waste manifests;
 - i. A copy of all Project Monitor's Reports (ACP-15).

- j. A copy of each ATR-1 Form completed for the asbestos project (if required).
- k. A copy of each Asbestos Project Conditional Closeout Report (ACP-20).
- l. A copy of the Asbestos Project Completion Form (ACP-21).
- 9. The asbestos abatement contractor shall submit one of the following certifications to the DOB, with a copy provided to DDC:
 - a. Asbestos Project Completion Form. If an asbestos project has been performed, a copy of the asbestos project completion form issued by DEP shall be submitted to DOB, with a copy being provided to DDC, prior to the issuance of a DOB permit and to any amendment of the underlying construction document approval which increases the scope of the project to include (a) work area(s) not previously covered.
 - b. An Asbestos Project Conditional Close-out Form. If an asbestos project has been performed a copy of the asbestos project conditional close-out form issued by DEP shall be submitted to DOB, with a copy being provided to DDC, prior to the issuance of a DOB permit and to any amendment of the underlying construction document approval which increases the scope of the project to include (a) work area(s) not previously covered.

1.10 QUALITY ASSURANCE

- A. All work required for the completion of this project or called for in this Specification must be executed in a workmanlike manner by using the appropriate methods established by regulatory requirements and/or industrial standards. All workmanship or work methods are subject to review and acceptance by the Construction Project Manager. Throughout the Specification, reference is made to codes and standards which establish qualities, levels or types of workmanship which will be considered acceptable. It is the asbestos abatement asbestos abatement contractor's responsibility to comply with these codes and standards during the execution of this work.
- B. All materials and equipment required or consumed during the work of this Contract must meet the minimum acceptable criteria established by codes and standards referenced elsewhere in this Specification. Materials and equipment must be submitted for prior approval as part of the asbestos abatement contractor's "Shop Drawings".

- C. It is the asbestos abatement a contractor's responsibility, when so required by the Specification or upon written request from the Commissioner or his representative to furnish all required proof that workmanship, materials and/or equipment meet or exceed the codes and standards referenced. Such proof shall be in the form requested, typically a certified report or test conducted by a testing entity approved for that purpose by DDC.
- D. The asbestos abatement contractor shall furnish proof that employees working under his supervision have had instruction on the dangers of asbestos exposure, on respirator use, decontamination, and OSHA regulations. This proof shall be in the form of a notarized affidavit to the effect that the above requirements have been satisfied.
- E. The a asbestos abatement contractor will have at all times in his possession and in view at the job site the OSHA regulations 29 CFR 1910.1001, and 1926.1101 Asbestos, and Environmental Protection Agency 40 CFR, Part 61, subpart B: National Emission Standard for asbestos, asbestos stripping, work practices and disposal of asbestos waste. He shall also have one copy of NYC Title 15, Chapter 1 of RCNY and NYS DOL ICR 56 at the job site at all times.
- F. Familiarity with Pertinent Codes and Standards: In procuring all items used in this work, it is the a asbestos abatement contractor's responsibility to verify the detailed requirements of the specifically named codes and standards and to verify that the items procured for use in this work meet or exceed the specified requirements, and are suitable for their intended use.
- G. Rejection of Non Complying Items: The Commissioner reserves the right to reject items incorporated into the work that fail to meet the specified minimum requirements. The Commissioner further reserves the right, and without prejudice to other recourse that maybe taken, to accept non-complying items subject to an adjustment in the Contract amount as approved by the City.
- H. Applicable Regulations, Codes and Standards: Applicable standards listed in these Specifications include, but are not necessarily limited to, standards promulgated by the following agencies and organizations:
 - American National Standards Institute (ANSI)
 (Successor to USASI and ASA)
 25 West 43rd Street (between 5th and 6th Avenue) 4th Floor
 New York, NY 10036
 212-642-4900
 - American Society for Testing and Materials (ASTM) 100 Bar Harbor Drive West Conshohocken, PA 19428-2959 610-832-9500

- National Institute for Occupational Safety and Health (NIOSH)
 Robert A. Taft Laboratory
 4676 Columbia Pkwy
 Mailstop R12 Cincinnati, Ohio 45226
 513-841-4428
- 4. National Electrical Code (NEC)
 See NFPA
- 5. National Fire Protection Association (NFPA)
 1 Batterymarch Park
 Quincy, Massachusetts 02169-7471
 617-770-3000
- New York City Fire Department (FDNY)
 9 Metrotech Center
 Brooklyn, NY 11201-5431
 718-999-2117
- New York City Department of Buildings (NYC DOB) Enforcement Division
 280 Broadway, New York, New York 10007
 212- 566-2850
- New York City Department of Environmental Protection (NYCDEP)
 Bureau of Environmental Compliance
 Asbestos Control Program
 59-17 Junction Boulevard, 8th Floor
 Corona, New York 11368
 718-595-3682
- 9. New York City Department of Health and Mental Hygiene (NYC DOHMH)
 Environmental Investigation
 125 Worth Street
 New York, New York 10013
 212-442-3372
- 10. New York State Department of Labor (NYSDOL) Division of Safety and Health Engineering Services Unit State Office Building Campus Albany, New York 12240-0010
- New York City Department of Sanitation125 Worth Street, Room 714New York, New York 10013212-566-1066

- Occupational Safety and Health Administration (OSHA)
 Region II Regional Office
 201Varick Street, Room 908
 New York, New York 10014
 212-337-2378
- 13. United States Environmental Protection Agency (EPA or USEPA) Region II Asbestos NESHAPS Contact Air and Waste Management Division (Air Compliance Branch) – USEPA 290 Broadway, 21st Floor New York, New York 10007-1866 212-637-3660
- I. Post all applicable regulations in a conspicuous place at the job site. Assure that the regulations are not altered, defaced or covered by other materials. One copy of each regulation must also be kept at the Asbestos abatement contractor's office.

1.11 CITY/ASBESTOS ABATEMENT CONTRACTOR RESPONSIBILITIES

- A. The normal occupants of the Work Areas will be relocated by the City prior to the performance of the abatement work and returned there to at the conclusion of the abatement work, at no cost to the asbestos abatement contractor. However, the asbestos abatement contractor shall protect all furniture and equipment in the Work Areas in a manner as hereinafter specified. In addition, the asbestos abatement contractor shall perform the work of this Contract in a manner that will be least disruptive to the normal use of the non-Work Areas in the building.
- B. Asbestos abatement contractor shall be responsible for cleaning all portable items not specifically addressed by the Facility, in the Work Areas, or dispose of same as asbestos contaminated waste.
- C. Facility to provide asbestos abatement contractor with a list of items that cannot be removed and need special attention.
- D. Facility to stop all deliveries that may be scheduled to the Work Area while work is in progress.
- E. Facilities to have authorized personnel on site at all times or supply the asbestos abatement contractor with means of contacting such personnel without unreasonable delay. Such personnel shall have access to all areas, have knowledge of electrical, and air handling equipment. Such personnel shall assist the asbestos abatement contractor in case of any power failure or breakdown to shut down air supply systems, to reset and control all protective systems such as alarms,

- sprinklers, locks, etc. The Facility shall ensure no active air handling systems are operating within the Work Area.
- F. City will not occupy the portions of the building, in which work is being performed during the entire asbestos removal operation, including completion of clean up.
- G. Asbestos abatement contractor shall provide a plan for 24 hour job security both for prevention of theft and for barring entry of curious but unprotected personnel into Work Areas.
- H. Asbestos abatement contractor shall provide surveillance by a fire watch and set forth procedures to be taken for the safety of building occupants in the event of an emergency, in accordance with the WPSP.
- I. Should the failure of any utility occur, the City will not be responsible to the asbestos abatement contractor for loss of time or any other expense incurred.
- J. Facility will be responsible to notify the asbestos abatement contractor of any planned electrical power shutdowns in order to ensure that there are no power interruptions in the negative air pressure systems.
- K. Asbestos abatement contractor shall remove all flammable materials from the work area and all sources of ignition (including but not limited to pilot lights) shall be extinguished.
- L. Asbestos abatement contractor shall require a competent person (as defined in OSHA 1926.1101) to perform the following functions and to be on-site continuously for the duration of the project:
 - 1. Monitor the set up of the Work Area enclosure and ensure its integrity.
 - 2. Control entry and exit into the work enclosure.
 - 3. Ensure that employees are adequately trained in the use of engineering controls, proper work practices, proper personal protective equipment and in decontamination procedures.
 - 4. Insure that employees use proper engineering controls, proper work practices, proper personal protective equipment and proper decontamination procedures.
 - 5. The competent person (as defined in OSHA1926.1101) shall check for rips and tears in work suits, and ensure that they are mended immediately or replaced.

1.12 USE OF BUILDING FACILITIES

- A. City shall make available to the asbestos abatement contractor, from existing outlets and supplies, all reasonably required amounts of water and electric power at no charge.
- B. Electric power to all Work Areas shall be shut down and locked out except for electrical equipment that must remain in service. Safe temporary power and lighting shall be provided by asbestos abatement contractor in accordance with applicable codes. All power to Work Areas shall be brought in from outside the area through ground-fault interrupter circuits installed at the source. Stationary electrical equipment within the Work Area, which must remain in service, shall be adequately protected, enclosed and ventilated. The Facility will identify all electric lines that must remain in service. Asbestos abatement contractor shall protect all lines.
- C. Asbestos abatement contractor shall provide, at his own expense, all electrical, water, and waste connections, tie-ins, extensions, and construction materials, supplies, etc. All water tie-ins shall be hard piped with polyethylene or copper piping. At the end of each shift, asbestos abatement contractor shall disconnect all hoses within the work zone and place in equipment room of the worker decontamination unit. Asbestos abatement contractor shall ensure positive shutoff of all water to Work Area during non-working hours.

D. Utilities:

1. General:

All temporary facilities required to be installed, shall be subject to the approval of the Commissioner. Prior to starting the work at any site; specify clearly the temporary locations of facilities preferably with sketches and submit the same to the Construction Project Manager for approval.

2. Water:

The Department of Design and Construction will furnish all water needed for construction, at no cost to the asbestos abatement contractor in buildings under their jurisdiction. All temporary plumbing or adaptations to supply the needs of the Work Area shall be installed and removed by the asbestos abatement contractor and the cost thereof included in the Lump Sum price for abatement work. Shower water for the decontamination unit shall be provided hot. Heating of water, if necessary, shall be provided by the asbestos abatement contractor.

3. Electricity:

The Department of Design and Construction will furnish all electricity needed for construction, at no cost to the asbestos abatement contractor in buildings under their jurisdiction. All temporary electrical work or

adaptations to supply the needs of the Work Area shall be installed and removed by the asbestos abatement contractor and the cost thereof included in the Lump Sum price for abatement work.

In leased spaces, arrangements for water supplies and electricity must be made with the landlord. However, all such arrangements must be made through and are subject to approval of the Department of Design and Construction. Utilities will be provided at no cost to the Asbestos abatement contractor. However, it is the asbestos abatement contractor's (or the General contractor's) responsibility to furnish and install a suitable distribution system to the Work Area. This system will be provided at no cost to the City.

A dedicated power supply for the negative pressure ventilating units shall be utilized. The negative air equipment shall be on a ground fault circuit interrupter (GFCI) protected circuit separate from the remainder of the work area temporary power circuits.

- E. Asbestos abatement contractor shall shut down and lock out all electric power to all work areas except for electrical equipment that must remain in service. Safe temporary power and lighting shall be provided in accordance with all applicable codes. Existing light sources (e.g., house lights) shall not be utilized. All power to work areas shall be brought in from outside the area through ground-fault circuit interrupter at the source.
 - 1. If electrical circuits, machinery, and other electrical systems in or passing though the work area must stay in operation due to health and safety requirements, the following precautions must be taken:
 - a. All unprotected cables, except low-voltage (less than 24 volts) communication and control system cables, panel boxes of cables and joints in live conduit that run through the work area shall be covered with three (3) independent layers of six (6) mil fire retardant polyethylene. Each layer shall be individually duct taped and sealed. All three (3) layers of polyethylene sheeting shall be left in place until satisfactory clearance air sampling results have been obtained.
 - b. Any energized circuits remaining in the work area shall be posted with a minimum two (2) inch high lettering warning sign which reads: DANGER LIVE ELECTRICAL KEEP CLEAR. A sign shall be placed on all live covered barriers at a maximum of ten (10) foot intervals. These signs shall be posted in sufficient numbers to warn all persons authorized to enter the work area of the existence of the energized circuits.

- 2. Any source of emergency lighting which is temporarily blocked as a result of work place preparation shall be replaced for the duration of the project by battery operated or temporary exit signs, exit lights, or photo luminescent path markings.
- F. Asbestos abatement contractor shall provide a separate temporary electric panel board to power asbestos abatement contractor's equipment. The Facility will designate an existing electrical source in proximity to the Work Area. Asbestos abatement contractor's licensed electrician shall provide temporary tie-in via cable, outlet boxes, junction boxes, receptacles and lights, all with ground fault interruption. At no time shall extension cords greater than 50-feet in length be allowed. All temporary electrical installation shall be in accordance with OSHA regulations. The electric shut down for power panel tie-in will be on off-hours and must be coordinated with the Facility. Asbestos abatement contractor shall provide to the City a specification and drawing outlining his power requirements at the preconstruction meeting.
- G. Additional electrical equipment (i.e., transformers, etc.), which is necessary due to the lack of existing power on the floor, shall be at the asbestos abatement contractor's expense.
- H. Asbestos abatement contractor shall provide fire protection in accordance with all State and Local fire codes.
- I. Sprinklers, standpipes, and other fire suppression systems shall remain in service and shall not be plasticized.
- J. When temporary service lines are no longer required, they shall be removed by the asbestos abatement asbestos abatement contractor. Any parts of the permanent service lines, grounds and buildings, disturbed or damaged by the installation and/or removal of the temporary service lines, shall be restored to their original condition by the asbestos abatement asbestos abatement contractor. Senior Stationary Engineer will inspect and test all switches, controls, gauges, etc. and shall submit a list to the Construction Project Manager of any equipment damaged by the asbestos abatement asbestos abatement contractor.
- K. Asbestos abatement contractor shall supply hot shower water necessary for use in the decontamination unit.

1.13 USE OF THE PREMISES

A. Asbestos abatement contractor shall confine his apparatus, the storage of materials, and supplies, and the operation of his workmen to limits established by law, ordinances, and the directions of the Construction Project Manager and the Facility. All flammable or combustible materials shall be properly stored to obviate fire and in areas approved by the Facility.

- B. Asbestos abatement contractor shall assure that no exits from the building are obstructed, that appropriate safety barriers are established to prevent access, and that Work Areas are kept neat, clean, and safe.
- C. Asbestos abatement contractor shall maintain exits from the work area or alternative exits shall be established, in accordance with section 1027 of the New York City Fire Code. Exits shall be checked at the beginning and end of each work shift against blockage or impediments to exiting.
- D. If the openings of temporary structural partitions related to abatement work areas block egress, the partition shall consist of two sheets of fire retardant 6-mil plastic, prominently marked as an exit with photo luminescent paint or signage. Cutting tools (e.g., knife, razor) shall be attached to the work area side of the sheeting for use in the event that the barrier must be cut open to allow egress.
- E. All surrounding work, fixtures, soil lines, drains, water lines, gas pipes, electrical conduit, wires, utilities, duct work railings, shrubbery, landscaping, etc. which are to remain in place shall be carefully protected and, if disturbed or damaged, shall be repaired or replaced as directed by the City, at no additional cost.
- F. All routes through the building to be used by the asbestos abatement contractor shall first be approved by the Construction Project Manager and the Facility.
- G. Attention is specifically drawn to the fact that other asbestos abatement contractors, performing the work of other Contracts, may be (or are) brought upon any of the work sites of this Contract. Therefore, the asbestos abatement contractor shall not have exclusive rights to any site of his work and shall fully cooperate and coordinate his work with the work of other asbestos abatement contractors who may be on (or are on) any site of the work of this Contract. Regulated area exempted.
- H. Temporary toilet facilities must be provided by the asbestos abatement contractor on the site. Coordinate location of facilities with Construction Project Manager. No toilet facilities will be allowed in the Work Area.

1.14 PROTECTION AND DAMAGE

A. The asbestos abatement contractor is responsible to cover all furniture and equipment that cannot be removed from Work Areas. Moveable furniture and equipment will be removed from Work Areas by asbestos abatement contractor prior to start of work and returned upon successful completion of the final air testing. At the conclusion of the work (after clearance level of air testing reaches the acceptable limit), the asbestos abatement contractor will remove all plastic covering from the walls, floors, furniture, equipment and reinstall furniture and equipment in the cleaned Work Area. The asbestos abatement contractor shall remove all shades, curtains and drapes from the Work Area, and reinstall the same following the final clean up.

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- B. Prior to plasticizing, the proposed work areas shall be pre-cleaned using HEPA filtered vacuum equipment and/or wet cleaning methods. Methods that raise dust, such as sweeping or vacuuming with equipment not equipped with HEPA filters, are prohibited.
- C. Use rubber tired vehicles that use non-volatile fuels for conveying material inside building and provide temporary covering, as necessary, to protect floors.
- D. No materials or debris shall be thrown from windows or doors of the building. Building waste system shall NOT be used to remove refuse.
- E. Debris shall be removed from the work site daily. Premises shall be left neat and clean after each work shift, so that work may proceed the next regular workday without interruption. Limited bag storage may take place within the Work Area when approved by the Construction Project Manager.
- F. Protect floors and walls along removal routes from damage, wear and staining with contamination control flooring. All finished surfaces to be protected with Masonite or other rigid sheathing material.
- G. A preliminary inspection for pre-existing damage shall be conducted by asbestos abatement contractor and representative of the City before commencement of the project.

1.15 RESPIRATORY PROTECTION REQUIREMENTS

- A. Respiratory protection shall be worn by all individuals who may be exposed to asbestos fibers from the initiation of the asbestos project until all areas have successfully passed clearance air monitoring in accordance with Regulations and these Specifications.
- B. Asbestos abatement contractor shall develop and implement a written respiratory protection program with required site-specific procedures and elements. The program shall be administered by a properly trained individual. The written respiratory protection program shall include the requirements set forth in OSHA Standard 29 CFR 1910.134, at a minimum.
- C. The Asbestos abatement contractor shall provide workers with individually issued and marked respiratory equipment. Respiratory equipment shall be suitable for the asbestos exposure level(s) in the Work Area(s), as specified in OSHA Standards 26 CFR 1910.134 and 29 CFR 1926.1101, NIOSH Standard 42 CFR 84, or as more stringently specified otherwise, herein.
- D. Where respirators with disposable filter parts are employed, the asbestos abatement contractor will provide sufficient filter parts for replacement as necessary or as required by the applicable regulation.

- E. All respiratory protection shall be NIOSH approved. All respiratory protection shall be provided by asbestos abatement contractor, and used by workers in conjunction with the written respiratory protection program.
- F. Asbestos abatement contractor shall provide respirators selected by an Industrial Hygienist that meet the following requirements:

Table 1. -- Assigned Protection Factors⁵

Type of Respirator ^{1,2}	Half mask	Full facepiece	Helmet/hood
Air-Purifying Respirator	³ 10	50	
Powered Air-Purifying Respirator (PAPR)	50	1,000	⁴ 25/1,000
 3. Supplied-Air Respirator (SAR) or Airline Respirator Demand mode Continuous flow mode Pressure-demand or other positive-pressure mode 	10 50 50	50 1,000 1,000	⁴ 25/1,000
 4. Self-Contained Breathing Apparatus (SCBA) Demand mode Pressure-demand or other positive-pressure mode (e.g., open/closed circuit) 	10	50 10,000	50 10,000

Notes:

¹Employers may select respirators assigned for use in higher workplace concentrations of a hazardous substance for use at lower concentrations of that substance, or when required respirator use is independent of concentration.

²The assigned protection factors in Table 1 are only effective when the employer implements a continuing, effective respirator program as required by this section (29 CFR 1910.134), including training, fit testing, maintenance, and use requirements.

⁴The employer must have evidence provided by the respirator manufacturer that testing of these respirators demonstrates performance at a level of protection of 1,000 or greater to receive an APF of 1,000. This level of performance can best be demonstrated by performing a WPF or SWPF study or equivalent testing. Absent such testing, all other PAPRs and SARs with helmets/hoods are to be treated as loose-fitting facepiece respirators, and receive an APF of 25.

³This APF category includes filtering facepieces, and half masks with elastomeric facepieces.

⁵These APFs do not apply to respirators used solely for escape. For escape respirators used in association with specific substances covered by 29 CFR 1910 subpart Z, employers must refer to the appropriate substance-specific standards in that subpart. Escape respirators for other IDLH atmospheres are specified by 29 CFR 1910.134 (d)(2)(ii).

- G. Selection of high efficiency filters:
 - 1. All high efficiency filters shall have a nominal efficiency rating of 100 (99.97-percent effective) when tested against 0.3-micrometer monodisperse diethyl-hexyl phthalate (DOP) particles.
 - 2. Choose N-, R-, or P-series filters based upon the presence or absence of oil particles.
 - a. N-series filters shall only be used for non-oil solid and water based aerosols or fumes.
 - b. R- and P-series filters shall be used when oil aerosols or fumes (i.e., lubricants, cutting fluids, glycerin, etc.) are present. The R-series filters are oil resistant and the P-series filters are oil proof.
 - c. Follow filter manufacture recommendations.
 - 3. If a vapor hazard exists, use an organic vapor cartridge in combination with the high efficiency filter.
- H. Historical airborne fiber level data may serve as the basis for selection of the level of respiratory protection to be used for an abatement task. Historical data provided by the asbestos abatement contractor shall be based on personal air monitoring performed during work operations closely resembling the processes, type of material, control methods, work practices, and environmental conditions present at the site. Documentation of aforementioned results may be requested by the City and/or Third-Party Air Monitor for review. This will not relieve the asbestos abatement contractor from providing personal air monitoring to determine the time-weighted average (TWA) for the work under contract. The TWA shall be determined in accordance with 29 CFR 1926.1101.
- I. At no time during actual removal operations shall half-mask air purifying respirators be allowed unless a full 8-hour TWA and excursion limit have been conducted, and reviewed by the Construction Project Manager. If the TWA and excursion limit have not been conducted, a Supplied-Air Respirator (SAR) or Airline Respirator or Self-Contained Breathing Apparatus (SCBA) must be used. Use of single use dust respirators is prohibited for the above respiratory protection.

- J. Workers shall be provided with personally issued and individually marked respirators. Respirators shall not be marked with any equipment that will alter the fit of the respirator in any way. Only waterproof identification markers shall be used.
- K. Asbestos abatement contractor shall ensure that the workers are qualitatively or quantitatively fit tested by an Industrial Hygienist initially and every 12 months thereafter with the type of respirator he/she will be using.
- L. Whenever the respirator design permits, workers shall perform the positive and negative air pressure fit test each time a respirator is worn. Powered air-purifying respirators shall be tested for adequate flow as specified by the manufacturer.
- M. No facial hairs (beards) shall be permitted to be worn when wearing respiratory protection that requires a mask-to-face seal.
- N. If a worker wears glasses, a spectacle kit to fit their respirator shall be provided by the asbestos abatement contractor at the asbestos abatement contractor's expense.
- O. Respiratory protection maintenance and decontamination procedures shall meet the following requirements:
 - 1. Respiratory protection shall be inspected and decontaminated on a daily basis in accordance with OSHA 29 CFR 1910.134 (b); and
 - 2. High efficiency filters for negative pressure respirators shall be changed after each shower; and
 - 3. Respiratory protection shall be the last piece of worker protection equipment to be removed. Workers must wear respirators in the shower when going through decontamination procedures as stated in Section 3.03 and/or 3.04.
 - 4. Airline respirators with high efficiency filtered disconnect shall be disconnected in the equipment room and worn into the shower. Powered air-purifying respirator face pieces shall be worn into the shower. Filtered/power pack assemblies shall be decontaminated in accordance with manufacturers recommendations; and
 - 5. Respirators shall be stored in a dry place and in such a manner that the facepiece and exhalation valves are not distorted; and
 - 6. Organic solvents shall not be used for washing of respirators.
- P. Authorized visitors shall be provided with suitable respirators and instruction on the proper use of respirators whenever entering the Work Area. Qualitative fit test shall be done to ensure proper fit of respirator.

1.16 PROTECTIVE CLOTHING

- A. Provide worker protection as required by the most stringent OSHA and/or EPA standards applicable to the work. Provide to all workers, foremen, superintendents, authorized visitors and inspectors, protective disposable clothing consisting of full body coveralls, head covers, gloves and 18-inch high boot type covers or reusable footwear.
- B. In addition to personal protective equipment for workers, the asbestos abatement contractor shall make available at each worksite at least four (4) additional uniforms and required respiratory equipment each day for personnel who are authorized to inspect the work site. He/she shall also provide, for the duration of the work at any site involving a decontamination unit for worksite access, a lockable storage locker for use by the Construction Project Manager. In addition to respiratory masks for workers, the asbestos abatement contractor must have on hand at the beginning of each work day, at least four (4) masks each with two sets of fresh filters, for use by personnel who are authorized to inspect the worksite. The asbestos abatement contractor shall check for proper fit of the respirators of all City personnel authorized to enter the Work Area.
- C. Asbestos handlers involved in tent procedures shall wear two (2) disposable suits, including gloves, hood and footwear, and appropriate respiratory equipment. All street clothes shall be removed and stored in a clean room within the work site. The double layer personal protective equipment shall be used for installation of the tent and throughout the procedure, if a decontamination unit (with shower and clean room) is contiguous to the Work Area, only one (1) layer of disposable personal protective equipment shall be required; in this case, prior to exiting the tent the worker shall HEPA vacuum and wet clean the disposable suit.
- D. The outer disposable suit (if 2 suits are worn) shall be removed and remain in the tent upon exiting. Following the tent disposal and work site clean up the workers shall immediately proceed to a shower at the work site. The inner disposal unit and respirator shall be removed in the shower after appropriate wetting. The disposal clothing shall be disposed of as asbestos-containing waste material. The workers shall then fully and vigorously shower with supplied liquid bath soap, shampoo, and clean dry towels.
- E. Coveralls: provide disposable full-body coveralls and disposable head covers. Require that they be worn by all workers in the Work Area. Provide a sufficient number for all required changes for all workers in the Work Area.
- F. Boots: provide work boots with non-skid soles, and where required by OSHA, foot protection, for all workers. Provide boots at no cost to workers. Paint uppers of all boots yellow with waterproof enamel. Do not allow boots to be removed from the Work Area for any reason after being contaminated with ΛCM and/or dust.

- G. Hard Hats: provide hard hats as required by OSHA for all workers, and provide a minimum of four spares for Inspectors, visitors, etc. Label all hats with same warning label as used on disposal bags. Require hard hats to be worn at all times that work is in progress that may cause potential head injury. Provide hard hats of the type with polyethylene strap suspension. Require hats to remain in the Work Area throughout the work. Thoroughly clean and decontaminate and bag hard hats prior to removing them from the Work Area at the end of the work.
- H. Goggles: provide eye protection (goggles) as required by OSHA for all workers involved in any activity that may potentially cause eye injury. Require them to be worn at all times during these activities. Thoroughly clean and decontaminate goggles before removing them from the Work Area.
- I. Gloves: provide work gloves to all workers, of the type dictated by the Work and OSHA Standards. Do not remove gloves from the Work Area. Dispose of as asbestos-asbestos contaminated waste at the end of the work. Gloves shall be worn at all times, except during Work Area Preparation activities that do not disturb ACM.
- J. Reusable footwear, hard hats and eye protection devices shall be left in the contaminated Equipment Room until the end of the Asbestos Abatement Work.
- K. Disposable protective clothing shall be discarded and disposed of as asbestos waste every time the wearer exits from the workspace to the outside through the decontamination facility.
- L. Respirators, disposable coveralls, head covers and foot covers shall be provided by the asbestos abatement contractor for the Facilities Representative, Construction Project Manager and any other authorized representative who may inspect the Work Area. Provide two respirators and six respirator filter changes per day.

1.17 AIR MONITORING - ASBESTOS ABATEMENT CONTRACTOR

- A. Asbestos abatement contractor shall employ a qualified industrial hygiene laboratory to analyze air samples in accordance with OSHA Regulations, 1926.1101 (Asbestos Standards for Construction) and New York City regulations.
- B. The industrial hygiene laboratory shall be a current proficient participant in the American Industrial Hygiene Association (AIHA) PAT Program. The laboratory identification number shall be submitted and approved by the City. The laboratory shall be accredited by the AIHA and New York State Department of Health Environmental Laboratory Approval Program (ELAP).
- C. Industrial hygiene laboratory shall also be a current proficient participant in the NIST/NVLAP Quality Assurance Program for the identification of bulk samples. Laboratory identification number shall be submitted to and approved by the City.

- D. Air monitoring responsibilities for the asbestos abatement contractor's employees, shall be performed by a representative of the industrial hygiene laboratory retained by the asbestos abatement contractor.
- E. Asbestos abatement contractor shall submit to the City all credentials of the designated (as defined in OSHA 1926.1101) and industrial hygiene laboratory representative for approval.
- F. Air monitoring and inspection shall be conducted by the Asbestos abatement contractor's competent person (as defined in OSHA 1926.1101).
- G. Continuous (daily or per shift) monitoring and inspection will include Work Area samples, personnel samples from the breathing zone of a worker to accurately determine the employees' 8-hour TWA (unless Type C respirators are used) and decontamination unit clean room samples.
- H. Work Area samples and employee personnel samples shall be taken using pumps whose flow rates can be determined to an accuracy of +5-percent, at a minimum of two liters per minute. This must be demonstrated at the job site.
- I. Sampling and analysis methods shall be per NIOSH 7400A.
- J. Test Reports:
 - 1. Promptly process and distribute one copy of the test results, to the Commissioner.
 - 2. Prompt reports are necessary so that if required, modifications to work methods and/or practices may be implemented as soon as possible.
 - 3. Asbestos abatement contractor shall by facsimile notify the Commissioner within 24 hours of the results of each test, followed by written notification within three days.
- K. Competent person shall conduct inspections and provide written reports daily. Inspections will include checking the standard operating procedures, engineering control systems, respiratory protection and decontamination systems, packaging and disposal of asbestos waste, and any other aspects of the project which may affect the health and safety of the people and environment.
- L. All costs for required air monitoring by the asbestos abatement contractor's competent person shall be borne by the asbestos abatement contractor.
- M. The City reserves the right to conduct air and surface dust sampling in conjunction with and separate from the Third-Party Air Monitor for the purposes of Quality Assurance.

N. All samples shall be accompanied by a Chain of Custody Record that shall be submitted to the Construction Project Manager upon completion of analysis.

1.18 THIRD PARTY MONITORING AND LABORATORY

- A. The NYCDDC, at its own expense, will employ the services of an independent Third Party Air Monitoring Firm and Laboratory. The Third Party Air Monitor will perform air sampling activities and project monitoring at the Work Site.
- B. The Laboratory will perform analysis of air samples utilizing Phase Contrast Microscopy (PCM) and/or Transmission Electron Microscopy (TEM). This laboratory shall meet the standards stated in Paragraph 1.17. B.
- C. Observations will include, but not be limited to, checking the standard operating procedures, engineering control systems, respiratory protection, decontamination systems, packaging and disposal of asbestos waste, and any other aspects of the project that may affect the health and safety of the environment, Asbestos abatement contractor, and/or facility occupants.
- D. The Third Party Air Monitoring Firm and the designated Project Monitor shall have access to all areas of the asbestos removal project at all times and shall continuously inspect and monitor the performance of the asbestos abatement contractor to verify that said performance complies with this Specification. The Third-Party Air Monitor shall be on site throughout the entire abatement operation.
- E. The NYCDDC will be responsible for costs incurred with the Third Party Air Monitoring Firm and laboratory work. Any subsequent additional testing required due to limits exceeded during initial testing shall be paid for by the Asbestos abatement contractor.
- F. At a minimum, air sampling shall be conducted in accordance with the following schedule:

Abatement Activity	Pre- Abatement	During Abatement	Post- Abatement
Equal to or greater than 10,000 square feet or 10,000 linear feet of ACM	PCM	PCM	ТЕМ
Less than 10,000 square feet or 10,000 linear feet of ACM	PCM	PCM	PCM

Note: TEM is acceptable wherever PCM is required.

G. The number of air samples required per stage of abatement and size of abatement project is listed in the table below:

		Pre-Abatement	During Abatement	Post Abatement	
	Large Asbestos Projects				
1.	Full Containment	10	5	10	
2.	Glovebag inside Tent	5 ^a	5 ^a	5ª	
3.	Exterior Foam and Vertical Surfaces	-	5°	5 ^d	
4.	Interior Foam	10	5°	10 ^d	
	Small Asbestos Projects				
1.	Full Containment	6	3	6	
2.	Glovebag inside Tent	3 ^b	3 ^b	3 ^b	
3.	Tent	3 ^b	3 ^b	3 ^b	
4.	Exterior Foam and Vertical Surfaces	-	3 ^e	3 ^d	
5.	Interior Foam	6	3°	6 ^d	
		Minor Project	ts		
1.	Glovebag inside Tent	-	-	1 ^d	
2.	Tent	**	-	1 ^d	
3.	Exterior Foam and Vertical Surfaces	-	-	1 ^d	
4.	Interior Foam	-	-	1 ^d	

Notes:

- a. if more than three (3) tents then two (2) samples required per enclosure.
- b. if more than three (3) tents then one (1) sample required per enclosure.
- c. samples shall be taken within the work area(s).
- d. area sampling is required only if:
 - visible emissions are detected during the project
 - during-abatement area sampling results exceeded 0.01 f/cc or the pre-abatement area sampling result(s) for interior projects where applicable.
 - work area to be reoccupied is an interior space at a school, healthcare, or daycare facility.
- H. Prior to commencement of abatement activities, the Third Party Air Monitoring Firm will collect a minimum number of area samples inside each homogeneous work area.
 - 1. Samples will be taken during normal occupancy activities and circumstances at the work site.
 - 2. Samplers shall be located within the proposed work area and at all proposed isolation barrier locations.
 - 3. Samples shall be analyzed using PCM.

- 4. The number of samples to be collected will be determined by the size of the project and the abatement methods to be utilized.
- I. Frequency and duration of the air sampling during abatement shall be representative of the actual conditions during the abatement. The size of the asbestos project will be a factor in the number of samples required to monitor the abatement activities. The following minimum schedule of samples shall be required daily.
 - 1. For large asbestos projects employing full containment, area air sampling shall be performed at the following locations:
 - a. Two area samples outside the work area in uncontaminated areas of the building, remote from the decontamination facilities.
 - (1) Primary location selection shall be within 10 feet of isolation barriers.
 - (2) Where negative ventilation exhaust runs through uncontaminated building areas, one of the area samples will be required in these areas to monitor any potential fiber release.
 - (3) Where exhaust tubes have been grouped together in banks of up to five (5) tubes, with each tube exhausting separately and the bank of tubes terminating together at the same controlled area, one area air sample shall be taken.
 - b. One area sample within the uncontaminated entrance to each decontamination enclosure system.
 - c. Where adjacent non-work areas do not exist, an exterior area sample shall be taken.
 - d. One area sample within 5 feet of the unobstructed exhaust from a negative pressure ventilation system exhausting indoors but not within a duct.
 - e. One area sample outside, but within 25 feet of, the building or structure, if the entire building or structure is the work area.
 - 2. For large asbestos projects involving interior foam method, area air sampling shall be performed at the following sampling locations:
 - a. One area sample taken outside the work area within 10 feet of isolation barriers.

- One area sample taken within the uncontaminated entrance to each worker decontamination and waste decontamination enclosure system.
- c. One area sample within 5 feet of the unobstructed exhaust from a negative pressure ventilation system exhausting indoors but not within a duct, if applicable.
- d. Three area samples inside the work area.
- e. One area sample where the negative ventilation exhaust ducting runs through uncontaminated building areas, if applicable.
- 3. For large asbestos projects employing the glovebag procedure within a tent, a minimum of five continuous air samples shall be taken concurrently with the abatement for each work area, unless there are more than three enclosures, in which case two area samples per enclosure are required.
 - a. Four area samples taken outside the work area within ten feet of tent enclosure(s).
 - b. One area sample taken within the uncontaminated entrance to each worker and waste decontamination enclosure system.
 - c. One area sample within five feet of the unobstructed exhaust from a negative pressure ventilation system exhausting indoors, but not within a duct, if applicable.
 - d. One area sample where negative ventilation exhaust ducting runs through uncontaminated building areas, if applicable.
- 4. For large asbestos projects involving exterior foam method or removal of ACM from vertical surfaces, a minimum of five continuous area samples shall be taken concurrently with the abatement for each work area using the following minimum requirements:
 - a. Three area samples inside the work area and remote from the decontamination systems.
 - b. One area sample within the uncontaminated entrance to each worker and waste decontamination enclosure system.
 - c. One area sample outside the work area within 25 feet of the building or structure, if the entire building or structure is the work area.
 - d. One area sample inside the building or structure at the egress point to the work area, if applicable.

- 5. For small asbestos projects employing full containment, a minimum of three continuous area samples shall be taken concurrently with the abatement for each work area at the following locations:
 - a. Two area samples taken outside the work area within ten feet of the isolation barriers.
 - b. One area sample within the uncontaminated entrance to each worker or waste decontamination enclosure system.
 - c. One area sample within five feet of the unobstructed exhaust from a negative pressure ventilation system exhausting indoors, but not within a duct, if applicable.
 - d. One area sample where negative ventilation exhaust ducting runs through an uncontaminated building area, if applicable.
- 6. Tent Procedures:

For projects involving more than 25 linear feet or 10 square feet, a minimum of three continuous samples shall be taken concurrently throughout abatement.

- J. Post-abatement clearance air monitoring for projects not solely employing glove-bag procedures shall include a minimum number of area samples inside each homogeneous work area and outside each homogeneous work area (five samples inside/five samples outside for Large Projects and three samples inside/three samples outside for Small Projects). In addition to the five sample inside/five sample outside minimum for Large Projects, one additional representative area sample shall be collected inside and outside the work area for every 5,000 square feet above 25,000 square feet of floor space where ACM has been abated.
- K. Post-abatement clearance air monitoring for Small Projects solely employing glove-bag procedures is not required unless one or more of the following events occurs. In such cases, post-abatement clearance air monitoring procedures shall be followed. The events requiring post-abatement clearance air monitoring are:
 - 1. The integrity of the glove-bag was compromised,
 - 2. Visible emissions are detected outside the glove-bag, and/or
 - 3. Ambient levels exceed 0.01 f/cc during abatement.
- L. Monitoring requirements for other than post-abatement clearance air monitoring are as follows:

- 1. The sampling zone for indoor air samples shall be representative of the building occupants' breathing zone.
- 2. If possible, outdoor ambient and baseline samplers should be placed about 6 feet above the ground surface in reasonable proximity to the building and away from obstructions and drafts that may unduly affect airflow.
- 3. For outdoor samples, if access to electricity and concerns about security dictate a rooftop site, locations near vents and other structures on the roof that would unduly affect airflow shall be avoided.
- 4. Air sampling equipment shall not be placed in corners of rooms or near obstructions such as furniture.
- 5. Samples shall have a chain of custody record.
- M. Area air sampling during abatement shall be conducted as specified in the following documents except as restricted or modified herein:
 - 1. Measuring Airborne Asbestos Following an Abatement Action, US EPA document 600/4-85-049 (Nov., 1985);
 - 2. Guidance for Controlling Asbestos-Containing Materials in Buildings; US EPA Publication 560/5-85-024 (June, 1984);
 - 3. Methodology for the Measurement of Airborne Asbestos by Electron Microscopy US EPA Contract No. 68-02- 3266;
 - 4. Mandatory and non-mandatory Electron Microscopy Methods set forth in 40 CFR Part 763, Subpart E, Appendix A.
 - 5. NIOSH 7400 method using "A" counting rules
- N. In accordance with the above criteria, area samples (see NYCDEP Asbestos Control Program Regulations) shall conform to the following schedule:

Area Samples for Analysis by	Minimum Volume	Flow Rate
PCM, 25mm cassettes	560 liters	5 to 15 liters/minute
TEM, 25mm cassettes	560 liters	1 to 10 liters/minute
TEM, 37mm cassettes	1,250 liters	1 to 10 liters/minute

- O. Post-abatement clearance air monitoring requirements are as follows:
 - 1. Sampling shall not begin until at least one hour after wet cleaning has been completed and no visible pools of water or condensation remain.
 - 2. Samplers shall be placed at random around the work area. If the work area contains the number of rooms equivalent to the number of required samples based on floor area, a sampler shall be placed in each room. When the number of rooms is greater than the required number of samples, a representative sample of rooms shall be selected.
 - 3. The representative samplers placed outside the work area but within the building shall be located to avoid any air that might escape through the isolation barriers and shall be approximately 50 feet from the entrance to the work area, and 25 feet from the isolation barriers.
- P. The following aggressive sampling procedures shall be used within the work area during all clearance air monitoring:
 - Before starting the sampling pumps, use forced air equipment (such as a one horsepower leaf blower) to direct exhaust air against all walls, ceilings, floors, ledges and other surfaces in the work area. This pre-sampling procedure shall take at least five minutes per 1,000 square feet of floor area; then
 - 2. Place a 20-inch diameter fan in the center of the room. Use one fan per 10,000 cubic feet of room space. Place the fan on slow speed and point it toward the ceiling.
 - 3. Start the sampling pumps and sample for the required time or volume.
 - 4. Turn off the pump and then the fan(s) when sampling is completed.
 - 5. Collect a minimum number of area samples inside and outside each homogeneous work area (five inside/five outside samples for Large Projects and three inside/three outside samples for Small Projects). In addition to the minimum for Large Projects, one representative area samples shall be collected inside and outside the work area for every 5,000 square feet above 25,000 square feet of floor space where ACM has been abated.
- Q. For post-abatement monitoring, area samples shall conform to the following schedule:

rea Samples for Analysis by Minimum Volume		Flow Rate	
PCM	1,800 liters	5 to 15 liters/minute	
TEM	1,250 liters	1 to 10 liters/minute	

- 1. Each homogeneous work area that does not meet the clearance criteria shall be thoroughly re-cleaned using wet methods, with the negative pressure ventilation system in operation. New samples shall be collected in the work area as described above. The process shall be repeated until the work site meets the clearance criteria.
- 2. For an asbestos project with more than one homogeneous work area, the release criterion shall be applied independently to each work area.
- 3. Should airborne fiber concentrations exceed the clearance criteria, the asbestos abatement contractor shall re-clean the work area utilizing wet wiping and HEPA-vacuuming techniques. Following completion of re-cleaning activities, the Third-Party Air Monitor will perform an observation of the Work Area. If the Third-Party Air Monitor determines that the work was performed in accordance with the specifications, the appropriate settling period will be observed and additional air sampling will be performed.
- 4. All costs resulting from additional air tests and observations shall be borne by the asbestos abatement contractor. These costs may include, but are not limited to, labor, analysis fees, materials, and expenses.
- 5. After the area has been found to be in compliance, the asbestos abatement contractor may remove Isolation Barriers and perform final cleaning as specified.

R. Clearance and/or Re-occupancy Criteria:

- 1. The clearance criteria shall be applied to each homogeneous work area independently.
- 2. For PCM analysis, the clearance air monitoring shall be considered satisfactory when each of the 5 inside/5 outside samples for Large Projects and/or 3 inside/3 outside samples for Small Projects is less than or equal to 0.01 f/cc or the background concentrations, whichever is greater.
- 3. For TEM analysis, the clearance air monitoring shall be considered satisfactory when the requirements stated in 40 CFR Part 763, Subpart E, Appendix A, Section IV are met.
- 4. As soon as the air monitoring tests are completed, the Third-Party Air Monitor will send the results of such tests to the City and notify the Asbestos abatement contractor.

- 5. The asbestos abatement contractor shall initiate the appropriate closeout information into the DEP ARTS database within 24 hours of work area completion to allow the Third Party Air Monitoring Firm to complete and submit the ACP-15 forms for each specific work area.
- 6. The asbestos abatement contractor shall provide the ACP-20 and ACP-21 forms to the Third Party Air Monitoring Firm within 48 hours of receipt.

1.19 TAMPERING WITH TEST EQUIPMENT

All parties to this Contract are hereby notified that any tampering with testing equipment will be considered an attempt at falsifying reports and records to federal and state agencies and each offense will be prosecuted under applicable state and federal criminal codes to the fullest extent possible.

1.20 GUARANTEE

- A. Work performed in compliance with this Contract shall be guaranteed for a period of one year from the date the completed work is accepted by the City.
- B. The asbestos abatement contractor shall not be held liable for the guarantee where the repair required under the guarantee is a result of obvious abuse or vandalism, as determined by the Commissioner.
- C. The City will notify the asbestos abatement contractor in writing regarding defects in work under the guarantee.

PART 2 – PRODUCTS

2.01 MATERIAL HANDLING

- A. Deliver all materials to the job site in their manufacturer's original container, with the manufacturer's label intact and legible.
 - 1. Maintain packaged materials with seals unbroken and labels intact until time of use.
 - 2. Store all materials on pallets, away from any damp and/or wet surface. Cover materials in order to prevent damage and/or contamination.
 - 3. Promptly remove damaged materials and unsuitable items from the job site, and promptly replace with material meeting the specified requirements, at no additional cost to the City.
- B. The Construction Project Manager may reject as non-complying such material and products that do not bear identification satisfactory to the Construction Project Manager as to manufacturer, grade, quality and other pertinent information.

2.02 MATERIALS

- A. Wetting agents: (Surfactant) shall consist of resin materials in a water base, which have been tested to ensure materials are non-toxic and non-hazardous. Surfactants shall be installed according to the manufacturer's written instructions.
- B. Encapsulants: Liquid material which can be applied to asbestos-containing material which temporarily controls the possible release of asbestos fibers from the material or surface either by creating a membrane over the surface (bridging encapsulant) or by penetrating into the material and binding its components together (penetrating encapsulant). A thin coat of lockdown encapsulant shall be applied to all surfaces in the work area which were not the subject of removal or abatement, including the cleaned layer of the surface barriers, but excepting sprinklers, standpipes, and other active elements of the fire suppression system.
- C. During abatement activities, replacement materials shall be stored outside the work area in a manner to prevent contamination. Materials required for the asbestos project (i.e., plastic sheeting, replacement filters, duct tape, etc.) shall be stored to prevent damage or contamination.
- D. Framing Materials and Doors: As required to construct temporary decontamination facilities and isolation barriers. Lumber shall be high grade, new, finished one side and fire retardant
- E. Fire Retardant Polyethylene Sheeting: minimum uniform thickness of 6-mil. Provide largest size possible to minimize seams. All materials used in the construction of temporary enclosures shall be noncombustible or fire-retardant in accordance with NFPA 701 and 255.
- Fire Retardant Reinforced Polyethylene Sheeting: For covering floor of decontamination units, provide translucent, nylon reinforced or woven polyethylene laminated, fire retardant polyethylene sheeting. Provide largest size possible to minimize seams, minimum uniform thickness 6-mil. All materials used in the construction of temporary enclosures shall be noncombustible or fire-retardant in accordance with NFPA 701 and 255.
- G. Drums: Asbestos-transporting drums, sealable and clearly marked with warning labels as required by OSHA and EPA.
- H. Polyethylene Disposal Bags: Asbestos disposal bags, minimum of fire retardant 6-mil thick. Bags shall be clearly marked with warning labels as required by OSHA and EPA.
- I. Signs: Asbestos warning signs for posting at perimeter of Work Area, as required by OSHA and EPA.

- J. Waste Container Bag Liners and Flexible Trailer Trays: One piece leak-resistant flexible tray with absorbent pad.
- K. Tape: Provide tape which is of high quality with an adhesive that is formulated to aggressively stick to sheet polyethylene.
- L. Spray Adhesive: Provide spray adhesive in aerosol cans which is specifically formulated to stick tenaciously to sheet polyethylene.
- M. Flexible Duct: Spiral reinforced flex duct for air filtration devices.
- N. Protective Clothing: Workers shall be provided with sufficient sets of properly fitting, full-body, disposable coveralls, head covers, gloves, and 18-inch high boot-type foot covers. Protective clothing shall conform to OSHA Standard 29 CFR 1926.1101.
- O. Surfactants, strippers, sealers, or any other chemicals used shall be non-carcinogenic and non-toxic.
- P. Materials used in the construction of temporary enclosures shall be noncombustible or fire-retardant in accordance with NFPA 701 and 255.

2.03 TOOLS AND EQUIPMENT

- A. Air Filtration Device (AFD): AFDs shall be equipped with High Efficiency Particulate Air (HEPA) filtration systems and shall be approved by and listed with Underwriter's Laboratory.
- B. Scaffolding: All scaffolding shall be designed and constructed in accordance with OSHA (29 CFR 1926/1910), New York City Building Code, and any other applicable federal, state and local government regulations. Whenever there is a conflict or overlap of the above references the most stringent provisions are applicable. All scaffolding and components shall be capable of supporting without failure a minimum of four times the maximum intended load, plus an allowance for impact. All scaffolding and staging must be certified in writing by a Professional Engineer licensed to practice in the State of New York.
 - 1. Equip rungs of all metal ladders, etc., with an abrasive, non-slip surface.
 - Provide non-skid surface on all scaffold surfaces subject to foot traffic. Scaffold ends and joints shall be sealed with tape to prevent penetration of asbestos fibers.

- C. Transportation Equipment: Transportation Equipment, as required, shall be suitable for loading, temporary storage, transit and unloading of asbestos contaminated waste without exposure to persons or property. Any temporary storage containers positioned outside the building for temporary storage shall be metal, closed and locked.
- D. Vacuum Equipment: All vacuum equipment utilized in the Work Area shall utilize HEPA filtration systems.
- E. Vacuum Attachments: Soft Brush Attachment, Asbestos Scraper Tool, Drill Dust Control Kit.
- F. Electric Sprayer: An electric airless sprayer suitable for application of encapsulating material and shall be approved by and listed with Underwriters Laboratory.
- G. Water Sprayer: The water sprayer shall be an airless or other low-pressure sprayer for amended water application.
- H. Water Atomizer: Powered air-misting device equipped with a ground fault interrupter and equipped to operate continuously.
- I. Brushes: All brushes shall have nylon bristles. Wire brushes are excluded from use due to their potential to shred asbestos fibers into small, fine fibers. Wire brushes maybe used for cleaning pipe joints within glove-bags upon written approval of the Construction Project Manager.
- J. Power tools used to drill, cut into, or otherwise disturb ACM shall be manufacturer-equipped with HEPA filtered local exhaust ventilation. Abrasive removal methods, including the use of beadblasters, are prohibited.
- K. Other Tools and Equipment: Asbestos abatement contractor shall provide other suitable tools for the stripping, removal, encapsulation, and disposal activities including but not limited to: hand-held scrapers, sponges, rounded-edge shovels, brooms, and carts.
- L. Fans and Leaf Blower: Provide Leaf Blower (one leaf blower per floor) and one 20-inch diameter fans for each 10,000 cubic feet of Work Area volume to be used for aggressive sampling technique for clearance air testing.
- M. Fire Extinguishers: At least one fire extinguisher with a minimum rating 2-A:10-B:C shall be required for each work place. In the case of large asbestos projects, at least two such fire extinguishers shall be required.

N. First Aid Kits: Asbestos abatement contractor shall maintain adequately stocked first aid kits in the clean rooms of the decontamination units and within Work Areas. The first aid kit shall be approved by a licensed physician for the work to be performed under this Contract.

O. Water Service:

- 1. Temporary Water Service Connection: All connections to the Facilities water system shall include back flow protection. Valves shall be temperature and pressure rated for operation of the temperature and pressures encountered. After completion of use, connections and fittings shall be removed without damage or alteration to existing water piping, and equipment. Leaking or dripping fittings/valves shall be repaired and or replaced as required.
- 2. Water Hoses: Employ new heavy-duty abrasion-resistant hoses with a pressure rating greater than the maximum pressure of the water distribution system to provide water into each Work Area and to each Decontamination Enclosure Unit. Provide fittings as required for connection to existing wall hydrants or spouts, as well as temporary water heating equipment, branch piping, showers, shut-off nozzles and equipment.
- 3. Water Heater: Provide UL rated 40-gallon electric water heaters to supply hot water for Personal Decontamination Enclosure System Shower. Activate from 30 Amp Circuit breakers located within the Decontamination Enclosure sub panel. Provide relief valve compatible with water heater operations, pipe relief valve down to drip pan at floor level with type 'L' copper piping. Drip pans shall be 6-inch deep and securely fastened to water heater. Wiring of the water heater shall comply with NEMA, NECA, and UL standards.

P. Electrical Service:

- 1. General: Comply with applicable NEMA, NECA and UL standards and governing regulations for materials and layout of temporary electric service.
- 2. Temporary Power: Provide service to decontamination unit sub panel with minimum 60 AMP, two pole circuit breaker or fused disconnect connected to the building's main distribution panel. Sub panel and disconnect shall be sized and equipped to accommodate all electrical equipment required for completion of the work.
- 3. Voltage Differences: Provide identification warning signs at power outlets that are other than 110-120 volt power. Provide polarized outlets for plug-in type outlets, to prevent insertion of 110-120 volt plugs into higher voltage outlets. Dry type transformers shall be provided where required to provide voltages necessary for work operations.

- 4. Ground Fault Protection: Equip all circuits for any purpose entering Work Area with ground fault circuit interrupters (GFCI). Locate the GFCIs outside the Work Area so that all circuits are protected prior to entry to Work Area. Provide circuit breaker type ground fault circuit interrupters (GFCI) equipped with test button and reset switch for all circuits to be used for any purpose in Work Area, decontamination units, exterior, or as otherwise required by NEC, OSHA or other authority.
- 5. Power Distribution System: Provide circuits of adequate size and proper characteristics for each use. In general run wiring overhead, and rise vertically where wiring will be least subject to damage from operations.
- 6. Temporary Wiring: In the Work Area shall be type UF non-metallic sheathed cable located overhead and exposed for surveillance. Provide liquid tight enclosures or boxes for all wiring devices. Do not wire temporary lighting with plain, exposed (insulated) electrical conductors.
- 7. Electrical Power Cords: Use only grounded extension cords; use hard service cords where exposed to traffic and abrasion. Use single lengths of cords only.
- 8. Temporary Lighting: All lighting within the Work Area shall be liquid and moisture proof and designed for the use intended.
 - a. Provide sufficient temporary lighting to ensure proper workmanship everywhere; by combined use of daylight, general lighting, and portable plug-in task lighting.
 - b. Provide lighting in the Decontamination Unit as required to supply a minimum 50-foot candle light level.
- 9. If electrical circuits, machinery, and other electrical systems in or passing though the work area must stay in operation due to health and safety requirements, the following precautions must be taken:
 - a. All unprotected cables, except low-voltage (less than 24 volts) communication and control system cables, panel boxes of cables and joints in live conduit that run through the work area shall be covered with three (3) independent layers of six (6) mil fire retardant polyethylene. Each layer shall be individually duct taped and sealed. All three (3) layers of polyethylene sheeting shall be left in place until satisfactory clearance air sampling results have been obtained.

2.04 CLEANING

- A. Throughout the construction period, the asbestos abatement contractor shall maintain the building as described in this Section.
 - 1. The asbestos abatement contractor shall prevent building areas other than the Work Area from becoming contaminated with asbestos-containing dust or debris. Should areas outside the Work Area become contaminated with asbestos-containing dust or debris as a consequence of the asbestos abatement contractor's work practices, the asbestos abatement contractor shall be responsible for cleaning these areas in accordance with the procedures appended in Title 15, Chapter 1 of RCNY and NYSDOL ICR56. All costs incurred in cleaning or otherwise decontaminating non-Work Areas and the contents thereof shall be borne by the asbestos abatement contractor at no additional cost to the City.
 - 2. The asbestos abatement contractor shall provide to all personnel and laborers the required equipment and materials needed to maintain the specified standard of cleanliness.

B. General

- 1. Waste water from asbestos removal operations, including shower water, may be discharged into the public sewer system only after approved filtration is on operation to remove asbestos fibers.
- 2. Asbestos wastes shall be double bagged in six mil (.006") fire retardant polyethylene bags approved for ACM disposal and shall be properly labeled and handled before disposal.
- 3. All waste generated shall be bagged, wrapped or containerized immediately upon removal. The personal and waste decontamination enclosure systems and floor and scaffold surfaces shall be HEPA vacuumed and wet cleaned at the end of each work shift at a minimum.
- 4. The asbestos abatement contractor shall use corrugated cartons or drums for disposal of asbestos-containing waste having sharp edged components (e.g., nails, screws, metal lathe and tin sheeting) that may tear polyethylene bags and sheeting. The waste within the drums or cartons must be double bagged.
- 5. The asbestos abatement contractor shall transport all bags of waste to disposal site in thirty gallon capacity metal or fiber drums with tight lids, or in locked steel dumpster.
- 6. Dumping of debris, waste or bagged waste will not be permitted.

- 7. The waste decontamination enclosure system shall be wet cleaned twice using wet cleaning methods upon completion of waste removal. When the worker decontamination enclosure shower room alternates as a waste container wash room, the shower room shall be washed immediately with cloths or mops saturated with a detergent solution prior to wet cleaning.
- 8. Excessive water accumulation or flooding in the work area shall require work to stop until the water is collected and disposed of properly.
- 9. ACM shall be collected utilizing rubber dust pans and rubber squeegees.
- 10. HEPA vacuums shall not be used on wet materials unless specifically designed for that purpose.
- 11. Metal shovels shall not be used within the work area.
- 12. Mastic solvent when used will be applied in moderation (e.g., by airless sprayer). Saturation of the concrete floor with mastic solvent must be avoided.
- 13. The asbestos abatement contractor shall retain all items in the storage area in an orderly arrangement allowing maximum access, not impeding traffic, and providing the required protection of all materials.
- 14. The asbestos abatement contractor shall not allow accumulation of scrap, debris, waste material, and other items not required for use in this work. When asbestos contaminated waste must be kept on the work site overnight or longer, it shall be double bagged and stored in accordance with New York City Department of Sanitation (NYCDOS) regulation Title 16 Chapter 8, and Federal, State and City laws.
- 15. At least twice a week (more if necessary), the asbestos abatement contractor shall completely remove all scrap, debris and waste material from the job site.
- 16. The asbestos abatement contractor shall provide adequate storage space for all items awaiting removal from the job site, observing all requirements for fire protection and concerns for the environment.
- 17. All respiratory protection equipment shall be selected from the latest NIOSH Certified Equipment list.
- 18. Daily and more often, if necessary, the asbestos abatement contractor shall inspect the Work Areas and adjoining spaces, and pick up all scrap, debris, and waste material. All such items shall be removed to the place designated for their storage.

- 19. Weekly, and more often, if necessary, the asbestos abatement contractor shall inspect all arrangements of materials stored on the site; re-stack and tidy them or otherwise service them to meet the requirements of these Specifications.
- 20. The asbestos abatement contractor shall maintain the site in a neat and orderly condition at all times.

PART 3 – EXECUTION

3.01 WORKER DECONTAMINATION FACILITY

- A. Large Asbestos Projects (Small Project Option):
 - 1. Provide a worker decontamination facility in accordance with, Title 15, Chapter 1, OSHA Standard 29 CFR 1926.1101, 12NYCRR Part 56 and as specified herein. Unless approved by NYCDEP and the City, worker decontamination facilities shall be attached to the Work Areas
 - a. Structure:
 - (1) Use modular systems or build using wood or metal frame studs, joists, and rafters placed at a maximum of 16 inches oncenter.
 - (2) When worker decontamination unit is located outdoors, in areas with public access, or in correctional facilities, frame work shall be lined with minimum 3/8" thickness fire rated plywood sheathing. Sheathing shall be caulked or taped airtight at all joints and seams.
 - (3) Interior shall be covered with two layers of fire retardant 6-mil polyethylene sheeting, with a minimum overlap of 12 inches at seams. Seal seams airtight using tape and adhesive. The interior floor shall be covered with two (2) layers of reinforced fire-retardant polyethylene sheeting with a minimum overlap on the walls of twelve inches.
 - (4) Entrances to the decontamination unit shall be secured with lockable hinged doors. Doors shall be open at all times when abatement operations are in progress. Doors shall be louvered to allow for air movement through the decontamination units into Work Area.
 - b. Curtained Doorways: A device to allow ingress or egress from one room to another while permitting minimal air movement between the rooms.

- c. Air Locks: Air locks shall consist of two curtained doorways placed a minimum of three feet apart.
- d. Decontamination Enclosure System shall be placed adjacent to the Work Area and shall consist of three totally enclosed chambers, separated from Work Area and each other by airlocks, as follows:
 - (1) Equipment Room: The equipment room shall have a curtain doorway to separate it from the Work Area, and share a common airlock with the shower room. The equipment room shall be large enough to accommodate at least one worker (allowing them enough room to remove their protective clothing and footwear), and a fire retardant 6-mil disposal bag for collection of discarded clothing and equipment. The equipment room shall be utilized for the storage of equipment and tools after decontamination using a HEPA-vacuum and/or wet cleaning. A one-day supply of replacement filters, in sealed containers, for HEPA-vacuums and negative air machines, extra tools, containers of surfactant, and other materials and equipment required for the project shall be stored here. A walk-off pan filled with water shall be placed in the Work Area just outside the equipment room for persons to clean foot coverings when leaving the Work Area. Contaminated footwear and reusable work clothing shall be stored in this room.
 - (2) Shower Room: The shower room shall have two airlocks (one that separates it from the equipment room and one that separates it from the clean room). The shower room shall contain at least one shower, with hot and cold water adjustable at the tap, per six workers. Careful attention shall be given to the shower to ensure against leaking of any kind and shall contain a rigid catch basin at least six inches deep. Asbestos abatement contractor shall supply towels, shampoo and liquid soap in the shower room at all times. Shower water shall be continuously drained, collected, and filtered through a system with at least a 5-micron particle size collection capacity. A system containing a series of several filters with progressively smaller pore sizes shall be used to avoid rapid clogging of the filters by large particles. Pumps shall be installed, maintained and utilized in accordance with manufacturer's recommendations. Filtered water shall be discharged in accordance with applicable codes. Contaminated filters shall be disposed of as asbestos waste.

(3) Clean Room: The clean room shall share a common airlock with the shower room and shall have a curtained doorway to separate it from outside non-contaminated areas. Lockers, for storage of workers' street clothing, and shelves, for storing respirators, shall be provided in this area. Clean disposable clothing, replacement filters for respirators, and clean dry towels shall be provided in the clean room. The clean room shall not be used for the storage of tool, equipment or other materials.

B. Small Asbestos Projects:

- 1. Provide a worker decontamination facility in accordance with, Title 15, Chapter 1, OSHA Standard 29 CFR 1926.1101, 12NYCRR Part 56 and as specified herein. Unless approved by NYCDEP and the City, worker decontamination facilities shall be attached to the Work Areas.
- 2. The worker decontamination enclosure system shall consist of, as a minimum, an equipment room, a shower room, and a clean room separated from each other and from the work area by curtained doorways. The equipment storage, personnel gross decontamination and removal of disposal clothing shall occur in the equipment room prior to entering the shower. All other requirements shall be the same as described above for a large asbestos project.
- 3. For small asbestos projects with only one exit from the work area, the shower room may be used as a waste washroom. The clean room shall not be used for waste storage. All other requirements shall be the same as described above for a large asbestos project.
- C. Decontamination Enclosure System Utilities: Lighting, heat, and electricity shall be provided as necessary by the Asbestos abatement contractor, and as specified herein.

3.02 WASTE DECONTAMINATION FACILITY

- A. Large Asbestos Project (Small Project Option)
 - 1. Provide a worker decontamination facility in accordance with, Title 15, Chapter 1, OSHA Standard 29 CFR 1926.1101, 12NYCRR Part 56 and as specified herein. Unless approved by NYCDEP and the City, worker decontamination facilities shall be attached to the Work Areas.
 - a. Structure:

- (1) Use modular systems or build using wood or metal frame studs, joists, and rafters placed at a maximum of 16 inches oncenter.
- (2) When worker decontamination unit is located outdoors, in areas with public access, or in correctional facilities, frame work shall be lined with minimum 3/8" thickness fire rated plywood sheathing. Sheathing shall be caulked or taped airtight at all joints and seams.
- (3) Interior walls shall be covered with two layers of fire retardant 6-mil polyethylene sheeting, with a minimum overlap of 12 inches at seams. Seal seams airtight using tape and adhesive. The interior floor shall be covered with two (2) layers of reinforced fire-retardant polyethylene sheeting with a minimum overlap on the walls of twelve inches.
- (4) Entrances to the decontamination unit shall be secured with lockable hinged doors. Doors shall be open at all times when abatement operations are in progress. Doors shall be louvered to allow for air movement through the decontamination units into the Work Area.
- b. Curtained Doorways: A device to allow ingress or egress from one room to another while permitting minimal air movement between the rooms.
- c. Air Locks: Air locks shall consist of two curtained doorways placed a minimum of three feet apart.
- d. Decontamination Enclosure System shall be located outside the work area and attached to all locations through which ACM waste will be removed from the work area and shall consist of two totally enclosed chambers, separated from the Work Area and each other by airlocks, as follows:
 - (1) Washroom: An equipment washroom shall have two air locks (one separating the unit from the Work Area and one common air lock that separates it from the holding area). The washroom shall have facilities for washing material containers and equipment. Gross removal of dust and debris from contaminated material containers and equipment shall be accomplished in the Work Area, prior to moving to the washroom.

(2) Holding Area: A holding area shall share a common air lock with the equipment washroom and shall have a curtained doorway to outside areas. A hinged, lockable door shall be placed at the holding area entrance to prevent unauthorized access into the Work Area.

B. Small Asbestos Project:

- 1. The worker decontamination enclosure system shall consist of, as a minimum, an equipment room, a shower room, and a clean room separated from each other and from the work area by curtained doorways. The equipment storage, personnel gross decontamination and removal of disposal clothing shall occur in the equipment room prior to entering the shower. All other requirements shall be the same as described above for a large asbestos project.
- 2. For small asbestos projects with only one exit from the work area, the shower room may be used as a waste washroom. The clean room shall not be used for waste storage. All other requirements shall be the same as described above for a large asbestos project.
- C. Decontamination Enclosure System Utilities: Lighting, heat, and electricity shall be provided as necessary by the Asbestos abatement contractor, and as specified herein.

3.03 PERSONNEL ENTRANCE AND DECONTAMINATION PROCEDURES FOR REMOVAL OPERATIONS UTILIZING REMOTE DECONTAMINATION FACILITIES

- A. All individuals who enter the Work Area shall sign the entry log, located in the clean room, upon each entry and exit. The log shall be permanently bound and shall fully identify the facility, agents, asbestos abatement contractor(s), the project, each Work Area, and worker respiratory protection employed. The job supervisor shall be responsible for the maintenance of the log during the abatement activity. The log shall be submitted to the NYC DDC within 48 hours of request.
- B. Each worker shall remove street clothes in the clean room; wear two disposable suits, including gloves, hoods and non-skid footwear; and put on a clean respirator (with new filters) before entering the Work Area.
- C. Each worker shall, before leaving the Work Area or tent, clean the outside of the respirators and outer layer of protective clothing by wet cleaning and/or HEPA-vacuuming. The outer disposable suit shall be removed in the airlock prior to proceeding to the Worker Decontamination Unit. The inner disposable suit and respirator shall be wet wiped and HEPA vacuumed thoroughly before removing and prior to aggressive shower.

D. Following showering and drying off, each worker or authorized visitor shall proceed directly to the clean room, dress in street clothes, and exit the decontamination enclosure system immediately.

3.04 PERSONNEL ENTRANCE AND DECONTAMINATION PROCEDURES FOR REMOVAL OPERATIONS UTILIZING ATTACHED DECONTAMINATION FACILITIES

- A. All workers and authorized visitors shall enter the Work Area through the worker decontamination facility.
- B. All individuals who enter the Work Area shall sign the entry log, located in the clean room, upon each entry and exit. The log shall be permanently bound and shall identify fully the facility, agents, asbestos abatement contractor(s), the project, each Work Area and worker respiratory protection employed. The site supervisor shall be responsible for the maintenance of the log during the abatement activity. The log shall be submitted to the NYC DDC within 48 hours of request.
- C. Each worker or authorized visitor shall, upon entering the job site, remove street clothes in the clean room and put on a clean respirator with filters, and clean protective clothing before entering the Work Area through the shower room and equipment room.
- D. Each worker or authorized visitor shall, each time he leaves the Work Area, remove gross contamination from clothing before leaving the Work Area; proceed to the equipment room and remove clothing except the respirator; still wearing the respirator, proceed to the shower room; clean the outside of the respirator with soap and water while showering; remove filters, wet them, and dispose of them in the container provided for that purpose; wash and rinse the inside of the respirator; and thoroughly shampoo and wash himself/herself.
- E. Following showering and drying off, each worker or authorized visitor shall proceed directly to the clean room, dress in street clothes, and exit the decontamination enclosure system immediately. Disposable clothing of the type worn inside the Work Area is not permitted outside the Work Area.

3.05 MAINTENANCE OF DECONTAMINATION ENCLOSURE FACILITIES AND BARRIERS

The following procedures shall be followed during abatement activities.

A. All polyethylene barriers inside the work place and partitions constructed to isolate the Work Area from occupied areas shall be inspected by the asbestos handler supervisor at least twice per shift.

- B. Smoke tubes shall be used to test the integrity of the Work Area barriers and the decontamination enclosure systems daily before abatement activity begins and at the end of each shift.
- C. Damage and defects in the decontamination enclosure system shall be repaired immediately upon discovery. The decontamination enclosure system shall be maintained in a clean and sanitary condition at all times.
- D. At any time during the abatement activity, if visible emissions are observed, or elevated asbestos fiber counts outside the Work Area are measured, or if damage occurs to barriers, abatement shall stop. The source of the contamination shall be located, the integrity of the barriers shall be restored and extended to include the contaminated area, and visible residue shall be cleaned up using appropriate HEPA-vacuuming and wet cleaning.
- E. Inspections and observations shall be documented in the daily project log by the asbestos handler supervisor.
- F. The daily inspection to ensure that exits have been checked against exterior blockage or impediments to exiting shall be documented in the log book. If exits are found to be blocked, abatement activities shall stop until the blockage is cleared.

3.06 MODIFICATIONS TO HVAC SYSTEMS

- A. Shut down, isolate or seal, all existing HVAC units, fans, exhaust fans, perimeter convection air units, supply and/or return air ducts, etc., situated in, traversing or servicing the work zone.
- B. Seal all seams with duct tap. Wrap entire duct with a minimum of two layers of fire retardant 6-mil polyethylene sheeting. All shutdowns are to be coordinated with the Facility. Where systems must be maintained, i.e., traversing Work Areas to non-Work Areas, only supply ducts will be maintained, protect as described above. All returns must be blanked off in Work Area and adjacent areas, including floor above and below Work Area. When required Asbestos abatement contractor shall apply for a clarification from NYCDEP. The Asbestos abatement contractor shall implement the following engineering procedures:
 - 1. Maintenance of a positive pressure within the HVAC system of 0.01 inch water gauge (or greater) with respect to the ambient pressure outside the Work Area. The conditions for this system shall be maintained and be operational 24 hours per day from the initiation of Work Area preparation until successful final air clearance. Positive pressurization of HVAC system shall be applied only under the direction and control of professional engineer, or other knowledgeable licensed professional;

- 2. The positive pressurization of the duct shall be tested, inspected and recorded both at the beginning and at the end of each shift;
- 3. The positive pressurization shall be monitored using instrumentation which will provide a written record of pressurization and that will trigger an audible alarm, if the static pressure falls below the set value;
- 4. The supply air fan and the supply air damper for the active positivepressurized duct shall be placed in the manual "on" positions to prevent shutdown by fail-safe mechanisms;
- 5. The return air fan and the return air dampers shall be shut down and lockedout;
- 6. All the seams of the HVAC ducts that pass through the Work Area shall be sealed;
- 7. The HVAC ducts that pass through the Work Area shall be covered with two (2) layers of fire retardant 6-mil polyethylene sheeting, and all seams and edges of both layers shall be sealed airtight;
- 8. The supply air fans, return air fans, and all dampers servicing the Work Area itself shall be shut down and locked-out. All openings within the Work Area of supply and return air ducts shall be sealed with 3/8-inch fire rated plywood and two layers of fire retardant 6-mil polyethylene;
- 9. When abatement occurs during periods while the HVAC system is shut down an alternative method of pressurization of the duct passing through the Work Area should be employed (e.g., by low-pressure "blowers", etc., directly coupled into the duct). Item #4 above shall be deleted and shall be replaced by the requirement to set the dampers of the HVAC duct in the manual closed positions, in order to effect pressurization.
- C. Asbestos abatement contractor to coordinate this item with the Facility and Construction Project Manager at the commencement of work. Where present HVAC systems (ducts) service an area and that air system cannot be shut down, asbestos abatement contractor shall isolate and seal the ducts, both supply and return, at the boundary of that zone.
 - To isolate, cap, or seal a duct, the asbestos abatement contractor shall remove insulation from duct (if necessary), then disconnect linkage to fold shut all fire dampers. Asbestos abatement contractor shall seal all edges and seams with caulk and duct-tape.
 - 2. Asbestos abatement contractor shall then cut existing duct and fold metal in and secure with approved fasteners. Asbestos abatement contractor shall caulk and duct-tape all seams and edges.

- 3. All ducts shall then be completely wrapped and sealed with duct-tape and three (3) layers of reinforced polyethylene sheeting.
- 4. All ducts shall be restored to original working order at the end of the project.
- D. Where present HVAC systems (ducts) service occupied areas (non-Work Areas), the Asbestos abatement contractor shall blank off the ducts.
 - 1. To isolate or seal the return duct, the asbestos abatement contractor shall remove any insulation (if necessary) from the duct. Then disconnect linkage to fold shut all fire dampers and insert a fiberglass board within the duct. Asbestos abatement contractor shall seal all edges and seams with caulk, duct-tape and three (3) layers of reinforced polyethylene sheeting.
 - 2. All isolation of return ducts and any other activity that requires removal of ceiling by the asbestos abatement contractor shall be conducted under controls. Work is to be coordinated with the Construction Project Manager and the Facility and is described as follows:
 - a. Work shall occur as scheduled.
 - b. Horizontal surfaces near the blanking operations shall be protected with fire retardant 6-mil polyethylene sheeting.
 - c. Plastic drapes shall be used to enclose the immediate area.
 - d. Asbestos abatement contractor to position and operate air filtration devices and HEPA-vacuums in the area to clean space after blanking operations.
 - e. All personnel involved with this work shall receive personal protection (i.e., respirators and disposable suits).
- E. Upon loss of negative pressure or electric power, all work activities in an area shall cease immediately and shall not resume until negative pressure and/or electric power has been fully restored. When a power failure or loss of negative pressure lasts, or is expected to last, longer than thirty (30) minutes, the following sequence of events shall occur.
 - 1. All make up air inlets shall be sealed airtight.
 - 2. All decontamination facilities shall be sealed airtight after evacuation of all personnel from the Work Area.
 - 3. All adjacent areas shall be monitored for potential fiber release upon discovery of and subsequently throughout, power failure.

3.07 LOCKOUT OF HVAC SYSTEMS, ELECTRIC POWER, AND ACTIVE BOILERS

Prior to the start of any prep work, the asbestos abatement contractor shall employ skilled tradesmen with limited asbestos licenses for the following work:

- A. Disable all ventilating systems or other systems bringing air into or exhausting air out of the Work Area. Disable system by disconnecting wires removing circuit breakers, by lockable switch or other positive means to ensure against accidental restarting of equipment.
- B. Lock out power to the Work Area by switching off all breakers and removing them from panels or by switching and locking entire panel. Label panel with following notation: "DANGER CIRCUIT BEING WORKED ON". Give all keys to Facility.
- C. Lock out power to circuits running through Work Area whenever possible by switching off and removing breakers from panel. If circuits must remain live, the Facility shall notify asbestos abatement contractor in order that he may secure a variance from NYCDEP. The asbestos abatement contractor shall protect all conduit and wires to remain and label all active circuits at intervals not to exceed 3 feet with tags having the following notation: "DANGER LIVE ELECTROCUTION HAZARD". The asbestos abatement contractor shall label all circuits in all locations including hidden locations that may be affected by the work in a similar manner.
- D. All boilers and other equipment within the work area shall be shut down, locked out, tagged out and the burner/boiler/equipment accesses and openings shall be sealed until abatement activities are complete. If the boiler or other exhausted equipment will be subject to abatement, all breeching, stacks, columns, flues, shafts, and double-walled enclosures serving as exhausts or vents shall be segregated from the affected boiler or equipment and sealed airtight to eliminate potential chimney effects within the work area.

PART 4 – PREPARATION OF WORK AREA AND REMOVAL PROCEDURES

4.01 REMOVAL OF ASBESTOS-CONTAINING MATERIAL

A. Asbestos abatement contractor Responsibility

Asbestos abatement contractor shall be responsible for the proper removal of ACM from the Work Area using standard industry techniques. The Third-Party Air Monitor representative shall observe the Work.

1. General Requirements:

- a. Removal of ACM shall be performed using wet methods. Dry removal of ACM is prohibited.
- b. Spray ACM with amended water with sufficient frequency and quantity to enhance penetration. Sufficient time shall be allowed for amended water to penetrate the material to the substrate prior to removal. All ACM shall be thoroughly wetted while work is being conducted.
- c. Accumulation of standing water on the floor of the Work Area is prohibited.
- d. Apply removal encapsulants, when used, in accordance with the manufacturer's recommendations and guidelines.
- e. Containerize ACM immediately upon detachment from the substrate. Alternately, ACM may be dropped in to a flexible catch basin and promptly bagged. Detached ACM is not permitted to lie on the floor for any period of time. Excess air within the bag shall be removed before sealing. ACM shall not be dropped from a height of greater than 10 feet. Above 10 feet, dust free inclined chutes may be used. Maximum inclination from horizontal shall be 60-degrees for all chutes.
- f. Exits from the work area shall be maintained, or alternative exits shall be established, in accordance with section 1027 of the New York City Fire Code. Exits shall be checked at the beginning and end of each work shift against blockage or impediments to exiting.
- g. Signs clearly indicating the direction of exits shall be maintained and prominently displayed within the work area.
- h. No smoking signs shall be maintained and prominently displayed within the work place.
- i. At least one fire extinguisher with a minimum rating 2-A:10-B:C shall be required for each work place. In the case of large asbestos projects, at least two such fire extinguishers shall be required.
- j. If the containment area of an asbestos project covers the entire floor of the affected building, or an area greater than 15,000 square feet on any given floor, the installation of a negative air cut off switch or switches shall be required at a single location outside the work place, such as inside a stairwell, or at a secured location in the ground floor lobby when conditions warrant. The required switch or switches shall

be installed by a licensed electrician pursuant to a permit issued by the Department of Buildings. If negative pressure ventilation equipment is used on multiple floors the cut off switch shall be able to turn off the equipment on all floors.

- B. Removal of ACM Utilizing Full Containment Procedures shall be as follows:
 - 1. Preparation Procedures:
 - a. Ensure that the Third-Party Air Monitor has performed area monitoring and established a background count prior to the preparatory operations for each removal area, as applicable.
 - b. Shut down, isolate, and lock out or tag heating, ventilating, and air conditioning (HVAC) systems which serve or which pass through the Work Area. Vents within the Work Area and seams in HVAC components shall be sealed with tape and two layers of fire retardant polyethylene sheeting. Filters in HVAC systems shall be removed and treated as asbestos-asbestos contaminated waste.
 - c. Shut down, disconnect, and lock out or tag all electric power to the Work Area so that there is no possibility of its reactivation until after clearance testing of the Work Area.
 - d. Provide and install decontamination enclosure systems in accordance with Sections 3.01 and 3.02 of this Section.
 - e. Remove ACM that may be disturbed by the erection of partitions using tent procedures and wet removal methods. Removal shall be limited to a one-foot wide strip running the length/height of the partition.
 - f. Pre-clean and remove moveable objects from the Work Area. Precleaning shall be accomplished using HEPA-vacuum and wetcleaning techniques. Store moveable objects at a location determined by the City.
 - g. Protect carpeting that will remain in the Work Area.
 - (1) Pre-clean carpeting utilizing wet-cleaning techniques.
 - (2) Install a minimum of two layers of fire retardant 6-mil reinforced polyethylene sheeting over carpeting.
 - (3) Place a rigid flooring material, minimum thickness of 3/8-inch, over polyethylene sheeting.

- h. Pre-clean all fixed objects to remain within the Work Area using HEPA-vacuum and wet-cleaning techniques.
- i. Seal fixed objects with two individual layers, minimum, of 6-mil fire retardant polyethylene sheeting.
- j. Pre-clean entire Work Area utilizing HEPA-vacuum and wet-cleaning techniques. Methods of cleaning that raise dust; such as dry sweeping or use of vacuum equipment not equipped with HEPA-filters, is prohibited.
- k. Install isolation barriers (i.e., sealing of all openings, including but not limited to windows, corridors, doorways, skylights, ducts, grills, diffusers, and other penetrations within the Work Area) using two layers of 6-mil fire retardant polyethylene sheeting and duct-tape.
- l. Construct rigid framework to support Work Area barriers.
 - (1) Framework shall be constructed using 2-inch by 4-inch wooden or metal studs placed 16 inch on center when existing walls and/or ceiling do not exist for all openings greater than 32 square feet. Framework is not required except where one dimension is one foot or less or the opening will be used as an emergency exit.
 - (2) Apply a solid construction material, minimum thickness of 3/8-inch to the Work Area side of the framing. In secure interior areas, not subject to access from the public or building occupants, an additional layer of 6-mil fire retardant polyethylene sheeting may be substituted for the rigid construction material.
 - (3) Caulk all wall, floor, ceiling, and fixture joints to form a leak tight seal.
- m. Seal floor drains, sumps, shower tubs, and other collection devices with two layers of 6-mil fire retardant plastic and fire rated plywood, as necessary, and provide a system to collect all water used by the asbestos abatement contractor. Collected water shall be passed through a water filtration system prior to being discharged into the sanitary sewer.
- n. Remove ceiling mounted objects not previously sealed that will interfere with removal operations. Mist object and surrounding ACM with amended water prior to removal to minimize fiber dispersal. Clean all moveable objects using HEPA-vacuum and wet-cleaning techniques prior to removal from the Work Area.

- o. Fiberglass insulation with intact coverings shall be protected in place during abatement activities. These materials shall be protected with two layers of 6-mil fire retardant polyethylene sheeting as isolation barriers and two additional layers of 6-mil fire retardant polyethylene sheeting serving as primary and secondary surface barriers.
- p. Install and initiate operation of AFDs to provide a negative pressure and a minimum of four air changes per hour within the Work Area relative to surrounding non-Work Areas. Do not shut down AFDs until the Work Area is released to the City following final clearance procedures. The use of HEPA-filtered vacuum to produce a negative air pressure inside the enclosure is prohibited.
- q. Maintain emergency and fire exits from the Work Areas or establish alternative exits satisfactory to the local fire officials. Emergency exits and routes shall be established and clearly marked with florescent paint or other effective designations to permit easy location from anywhere within the Work Area. Cutting tools (e.g., knife, razor) shall be attached to the work area side of the sheeting for use in the event that the barrier must be cut open to allow egress. Emergency exits shall be secured to prevent access from uncontaminated areas and yet permit emergency exiting. Exits shall be checked daily against exterior blockage or impediments to exiting.
- r. Temporary lighting within the Work Area and decontamination system shall be provided as required to achieve minimum illumination levels.
- s. Hand power tools used to drill, cut into, or otherwise disturb ACM shall be manufacturer-equipped with HEPA filtered local exhaust ventilation.
- t. Prior to being plasticized, the Work Areas shall be cleaned using HEPA vacuum equipment and/or wet cleaning methods as appropriate. Methods that raise dust, such as dry sweeping or vacuuming with equipment not equipped with HEPA filters, shall not be used.
- u. Plasticize the area after pre-cleaning, using the following procedures.
 - (1) Cover floors with one layer of 6-mil fire retardant polyethylene sheeting, turning layer a minimum of 6 inches up wall, and seal layer to wall.

- (2) Cover walls with one layer of 6-mil fire retardant polyethylene sheeting, overlapping wall layer a minimum of 6 inches, and seal layer to floor layer.
- (3) Cover floors with a second layer of 6-mil fire retardant polyethylene sheeting, turning layer a minimum of 12 inches up wall, and seal layer to wall.
- (4) Cover walls with a second layer of fire retardant 6-mil polyethylene sheeting, overlapping wall layer a minimum of 12 inches, and seal layer to floor layer.
- (5) In areas where demolition is required to access ACM, a layer of fire retardant 6-mil reinforced polyethylene sheeting shall be placed on the floor of the enclosure.
- (6) Perform demolition required to access ACM. Debris resulting from demolition activities shall be disposed of as ACM waste as described in this Specification.
- (7) Repeat preparation of areas accessed by demolition activities as described above.
- v. Suspended ceiling tiles and T-grid components shall remain in place until the preparation of the Work Area below the ceiling tiles are completed and personnel and equipment decontamination enclosures have been constructed.
- w. Scaffolds shall be provided for workers engaged in work that cannot safely be performed from the ground or other solid Work Area surface.
- x. Means of egress shall not be obstructed by hardwall barriers.
- y. Pre-Removal Inspections.
 - (1) Prior to removal of any ACM, the asbestos abatement contractor shall notify the Third-Party Air Monitor and request a pre-removal inspection. Posting of warning signs, building of decontamination enclosure systems, and all other preparatory steps have been taken prior to notification of the Third-Party Air Monitor.
 - (2) Asbestos abatement contractor shall correct any deficiencies observed by Third-Party Air Monitor at no additional cost to City.

(3) Following the Third-Party Air Monitor's approval of the Work Area preparations, removal of ACM may commence.

2. Removal of ACM Within Full Containment:

- a. Mist material with amended water. Allow sufficient time for the amended water to penetrate the material to be removed.
- b. Remove the material using hand tools such as scrapers or putty knives. Wire-mesh or wood lathe reinforcing, when present, shall be cut into manageable pieces and disposed of as ACM.
- c. Remove any residual material from the substrate using wet cleaning methods and nylon-bristled hand brushes.
- d. Place the removal material immediately into a properly labeled fire retardant 6-mil polyethylene bag. All material shall be properly containerized and decontaminated prior to removal from the Work Area.
- e. Following the completion of removal of insulation, all visible residue shall be removed from the substrate.
- 3. Following Removal of ACM utilizing Full Containment Procedures:
 - a. First Cleaning:
 - (1) Remove any visible accumulation of asbestos material and debris. HEPA-vacuuming and wet cleaning shall be performed on all surfaces inside the Work Area. All sealed drums, plastic bags, and equipment used in the Work Area shall be removed from the Work Area.
 - (2) Upon request of the asbestos abatement contractor, the Third-Party Air Monitor will perform a visual inspection. Evidence of asbestos contamination identified during the inspection will necessitate further cleaning as heretofore specified.
 - (3) Remove first layer of plastic sheathing inside the Work Area. The isolation barriers and decontamination facility shall remain in place and be utilized.
 - b. Second Cleaning:
 - (1) After the first cleaning, the Work Area shall be vacated for twelve hours to allow fibers to settle.

- (2) All objects and surfaces in the Work Area shall be HEPA vacuumed and wet cleaned for a second cleaning.
- (3) A thin coat of lockdown encapsulant shall be applied to all plastic covered surfaces in the Work Area.
- (4) When the encapsulant is dry, second layer of polyethylene sheeting on the walls, ceiling and floors shall be removed. Do not remove seals from doors, windows, Isolation Barriers or disconnect the negative pressure equipment.

c. Third Cleaning:

- (1) A minimum of four hours after the second cleaning, all the surfaces in the Work Area shall be HEPA-vacuumed and wet cleaned for a third cleaning.
- (2) Upon the request of the asbestos abatement contractor, the Third-Party Air Monitor will do final visual inspection for reoccupancy. Evidence of asbestos contamination identified during the inspection will necessitate further cleaning as heretofore specified.
- (3) When the Work Area passes the Third-Party Air Monitor's visual re-occupancy inspection, air sampling shall not begin until at least one hour after the completion of the third cleaning. The Third-Party Air Monitor shall perform air monitoring using aggressive testing techniques. The Third-Party Air Monitor will approve re-occupancy if the specified fiber count in the Work Area is achieved according to the Third-Party Air Monitor.
- (4) When the Work Area passes the re-occupancy test, all controls and seals established shall be removed.
- (5) The cleaned layer of the surface barriers shall be removed from walls and floors.
- (6) The isolation barriers shall remain in place throughout cleanup. Decontamination enclosure systems shall remain in place and be utilized. A thin coat of lockdown encapsulant shall be applied to all surfaces in the work area which were not the subject of removal or abatement, including the cleaned layer of the surface barriers, but excepting sprinklers, standpipes, and other active elements of the fire suppression system.

d. Final Barrier Removal:

- (1) Upon receipt of acceptable clearance testing results, polyethylene sheeting and Isolation Barriers shall be removed and disposed accordingly as asbestos-containing material.
- (2) The area surrounding the abatement work place shall be cleaned of any visible debris utilizing HEPA vacuum and wet methods.
- e. The Third-Party Air Monitor will conduct a final visual observation. Approval must be granted prior to break down of decontamination facility and asbestos abatement contractor demobilization.
- C. Removal of ACM Utilizing NYC DEP § 1-106 Tent Containment Procedures shall be as follows:

1. Preparation Procedures:

- a. Ensure that the Third-Party Air Monitor has performed area monitoring and established a background count prior to the preparatory operations for each removal area, as applicable.
- b. Shut down, isolate, and lock out or tag heating, ventilating, and air conditioning (HVAC) systems which serve or which pass through the Work Area. Vents within the Work Area and seams in HVAC components shall be sealed with tape and two layers of polyethylene sheeting. Filters in HVAC systems shall be removed and treated as asbestos contaminated waste.
- c. Shut down, disconnect, and lock out or tag all electric power to the Work Area so that there is no possibility of its reactivation until after clearance testing of the Work Area.
- d. Provide and install decontamination enclosure systems in accordance with PART 3 - EXECUTION, Sections 3.01 and 3.02 of these Specifications Decontamination facilities may be remote from the Work Areas.
- e. Construct rigid framework to support Work Area barriers. Framework shall be constructed using 2-inch by 4-inch wooden or metal studs placed 16 inch on center when existing walls and/or ceiling do not exist.
- f. Seal floor drains, sumps, shower tubs, and other collection devices with two layers of fire retardant 6-mil plastic and minimum 3/8" fire rated plywood, as necessary, and provide a system to collect all water used by the Contractor. Collected water shall be passed through a

- water filtration system prior to being discharged into the sanitary sewer. Any opening greater than 32 square feet shall be framed with 2-inch by 4-inch studding placed 16 inches on center.
- g. Install and initiate operation of AFDs to provide a negative pressure and a minimum of four air changes per hour and negative pressure of -0.02" of water column within the Work Area relative to surrounding non-Work Areas. Do not shut down AFDs until the Work Area is released to the City following final clearance procedures. The use of HEPA-filtered vacuums to produce a negative air pressure inside the enclosure is prohibited.
- h. Maintain emergency and fire exits from the Work Areas or establish alternative exits satisfactory to the local fire officials. Emergency exits and routes shall be established and clearly marked with florescent paint or other effective designations to permit easy location from anywhere within the Work Area. Emergency exits shall be secured to prevent access from uncontaminated areas and yet permit emergency exiting. Exits shall be checked daily against exterior blockage or impediments to exiting.
- i. Temporary lighting within the Work Area and decontamination system shall be provided as required to achieve minimum illumination levels.
- j. Hand power tools used to drill, cut into, or otherwise disturb ACM shall be manufacture equipped with HEPA filtered local exhaust ventilation.
- k. Prior to being plasticized, the Work Areas shall be cleaned using HEPA-vacuum equipment and/or wet cleaning methods as appropriate. Methods that raise dust, such as dry sweeping or vacuuming with equipment not equipped with HEPA filters, shall not be used.
- 1. There shall be an airlock at the entrance to the tent, unless there is an attached worker or waste decontamination system.
- m. Plasticize the area after pre-cleaning, using the following procedures. Do not apply polyethylene sheeting to the wall and ceiling surfaces that will be demolished to access ACM.
 - (1) Cover floor with one layer of fire retardant 6-mil polyethylene sheeting, turning layer a minimum of 12 inches up wall, and seal layer to wall.

- (2) Cover walls with one layer of fire retardant 6-mil polyethylene sheeting, overlapping wall layer a minimum of 12 inches, and seal layer to floor layer.
- (3) Cover ceilings with one layer of fire retardant 6-mil polyethylene sheeting, overlapping wall layer a minimum of 12 inches, and seal layer to wall layer.
- (4) Repeat procedure for second layer. All joints in polyethylene sheeting shall be glued and taped in such a manner as to prohibit air passage. Joints on plastic layers shall be staggered to reduce the potential for water to penetrate.
- (5) In areas where demolition is required to access ACM, a layer of fire retardant 6-mil reinforced polyethylene sheeting shall be placed on the floor of the enclosure.
- (6) Perform demolition required to access ACM. Debris resulting from demolition activities shall be disposed of as ACM as described in this Specification.
- (7) Repeat preparation of areas accessed by demolition activities as described above.
- (8) Suspended ceiling tiles and T-grid components shall remain in place until the preparation of the Work Area below the ceiling tiles are completed and personnel and equipment decontamination enclosures have been constructed.
- (9) Protect non-ACM insulation within the Work Area(s) with two individual layers of fire retardant 6-mil polyethylene sheeting. Sheeting shall remain in-place until satisfactory clearance air monitoring results are achieved.

n. Pre-Removal Inspections

- (1) Prior to removal of any ACM, the Contractor shall notify the Third-Party Air Monitor and request a pre-removal inspection. Posting of warning signs, building of decontamination enclosure systems, and all other preparatory steps have been taken prior to notification of the Third-Party Air Monitor.
- (2) Contractor shall correct any deficiencies observed by Third-Party Air Monitor at no additional cost to City.
- (3) Following the Third-Party Air Monitor's approval of the Work Area preparations, removal of ACM may commence.

- 2. Removal of ACM Utilizing Tent Containment Procedure:
 - a. Tent procedures shall be limited to the removal of less than 260 linear feet and 160 square feet of ACM and shall not result in disturbance of ACM during tent erection.
 - b. Mist material with amended water and/or foam. Allow sufficient time for the amended water to penetrate the material to be removed.
 - c. Cut bands, wire or other items placed over insulation or ACM.
 - d. Remove the ACM using hand tools such as knives or scrapers.
 - e. Exercise caution when removing ACM.
 - f. Remove any residual asbestos-containing material from the substrate using wet cleaning methods.
 - g. Seal exposed ends of remaining insulation or ACM with a "wettable cloth" and/or encapsulant.
 - h. Place the removed material immediately into a properly labeled fire retardant 6-mil polyethylene bag. All material shall be properly containerized and decontaminated prior to removal from the Work Area.
 - i. Following the completion of removal of ACM, all visible residues shall be removed from the substrate.
- 3. Following Removal of ACM Utilizing Tent Containment or Tent Procedure:
 - a. Clean all visible accumulations of loose ACM. Metal shovels shall not be used within the Work Area.
 - b. Accumulations of dust shall be cleaned continuously until completion of clean up.
 - c. After removal of all visible accumulations of ACM, the area shall be:
 - (1) Wet cleaned using rags, mops or sponges.
 - (2) Permitted sufficient time to dry, prior to HEPA vacuuming all substrates.
 - (3) Lightly encapsulated to lockdown residual asbestos. A thin coat of an encapsulating agent shall be applied to any surfaces in the Work Area which were not the subject of removal or other remediation activities. In no event shall encapsulant be applied to any surface that was the subject of removal or other

remediation activities prior to obtaining satisfactory clearance air monitoring results. Contractor shall request and pass a visual inspection performed by the consultant before proceeding to the next step. Documentation of passing this inspection shall be recorded in a daily logbook.

- (4) The Third-Party Air Monitor will conduct a visual observation of the Work Area to verify the absence of asbestos-containing waste materials.
- (5) If the Work is accepted by the Third-Party Air Monitor based on the inspection, Contractor shall be notified. Conduct the following activities in accordance with the contract and all applicable laws, codes, rules and regulations.
 - (a) All waste shall be removed from the Work Area and holding areas.
 - (b) All tools and equipment are to be removed and decontaminated in the decontamination enclosure system.
- (6) If the Work is not approved, the Third-Party Air Monitor will inform Contractor who will then HEPA-vacuum and/or wetclean the Work Area. The Third-Party Air Monitor will then perform a subsequent visual observation. This process will continue until the Third-Party Air Monitor accepts the Work Area as clean.
- (7) The Work Area shall be vacated for a minimum of one hour to allow fibers to settle prior to clearance air monitoring, when required.

d. Final Barrier Removal

- (1) Upon receipt of acceptable clearance testing results polyethylene sheeting (inside layers) and Isolation Barriers shall be removed and disposed accordingly as ACM. The tent shall be collapsed inward, enclosing the contaminated clothing. This contaminated material shall be disposed of in another plastic bag. The HEPA vacuum shall be decontaminated and sealed.
- (2) The area surrounding the abatement work place shall be cleaned of any visible debris utilizing HEPA-vacuum and wet methods.

- e. The Third-Party Air Monitor will conduct final visual. Approval must be granted prior to break down of decontamination facility and contractor demobilization. Other Information: Extra time required to clean Work Areas in order to achieve clearance criteria shall not be considered grounds for an extension of time for contract completion.
- D. Removal of ACM Roofing and Flashing Materials utilizing NYC DEP § 1-107 Foam Procedure for Roof Removal shall be as follows:

1. Preparation procedures:

- a. These procedures apply only to the removal of asbestos-containing roofing material (ACRM) from exterior roof surfaces. The work area on the roof shall be cordoned off with clearly visible barriers such as caution tape, and only authorized persons shall have access.
- b. The foam or viscous liquid shall be non-toxic, shall not require special respiratory protection for handling, and shall not affect the handling and disposal of the waste.
- c. The foam or viscous liquid shall coat and maintain a stable blanket (minimum 1" thickness) for the duration of the removal process and shall leave an identifiable colored residue when it dissipates.
- d. The foam or viscous liquid shall wet the ACRM. The ACRM shall be kept wet through the bagging process.
- e. Persons entering the work area shall wear correctly-fitting, good traction rubber boots.
- f. Abatement shall not be carried out during adverse weather conditions (e.g., precipitation, high winds, ambient temperature below 32 degrees Fahrenheit, etc.).
- g. The worker decontamination unit may be attached to each work area at an entry/exit from each work area, or may be remote, in which case it shall be equipped with an airlock at the entrance. In addition to the shower head(s), the shower room shall be equipped with a flexible hose for waste decontamination for removal of less than 1,000 square feet of ACRM. For 1,000 square feet or more of ACRM removal, a separate waste decontamination facility shall be located at an entry/exit from each work area. Remote holding areas for the asbestos containing waste shall comply with Title 16, Chapter 8, Rules of the City of New York (16 RCNY 8 et. seq.).
- h. Movable objects shall be removed from the work area, or kept in place and wrapped in one sheet of fire retardant 6 mil plastic sheeting.

- i. Provisions shall be made to ensure a safe and adequate air supply to affected building(s). All vents, skylights, air intakes, windows and doors opening onto the roof, and all other openings shall be sealed with 2 layers of fire retardant 6 mil plastic or fitting with HEPA filters when appropriate. Temporary extensions may be installed to a height of 10 feet to ensure adequate air exchange instead of sealing vents, air intakes, etc., with 2 layers of plastic or HEPA filters. Drains may be equipped with 5 micron filtering system in lieu of being sealed.
- j. Fixed objects including perimeter walls, bulkheads, cooling towers, ducts and other rooftop appurtenances shall be covered in one sheet of fire retardant 6 mil plastic up to a height of at least six feet.
- k. The asbestos abatement contractor shall be responsible for protection of the interior spaces beneath the roof.
- l. All office equipment and furniture, including but not limited to desks, chairs, computers, printers, cabinets, etc., carpeted and wooden floors shall be covered with one layer of 6- mil plastic sheeting.
- m. The asbestos abatement contractor shall be responsible for any damage that may occur in the interior spaces, including but not limited to office equipment, furniture, floors, etc., beneath the roof during all phases of the roof abatement.
- n. The asbestos abatement contractor shall provide temporary roof protection consisting of 10-mil polyethylene sheeting following abatement over the open roof areas. Strict coordination with the General Asbestos abatement contractor, Construction Project Manager and/or Architect is required and necessary during this phase of abatement.
- o. Preliminary examination shall be conducted and precautions shall be taken to prevent damage to the interior of the building, including but not limited to office equipment, furniture, carpeted and wooden floors, etc., and to ensure no adverse effect on the structural stability of the roof due to the abatement activity.
- p. Abatement activities shall not be carried out during adverse weather conditions (e.g., precipitation, heavy winds, etc.).
- q. The floor area between the remote decontamination facility and the Work Area must be protected with 2 layers of 6-mil. polyethylene sheeting suitably anchored.

r. Provisions shall be made to ensure a safe and adequate air supply to affected building(s). All vents, skylights, air intakes, windows and doors opening onto the roof, and all other openings are to be sealed with two layers of 6-mil plastic or fitted with HEPA-filters where appropriate. In lieu of sealing vents, air intakes, etc., with two layers of plastic or HEPA-filters, temporary extensions may be installed to a height of 10 feet to ensure adequate air exchange. Drains may be equipped with 5 micron filtering systems in lieu of being sealed.

s. Pre-Removal Inspections:

- (1) Prior to removal of any ACM, the Asbestos abatement contractor shall notify the Third-Party Air Monitor and request a pre-removal inspection. Posting of warning signs, building of decontamination enclosure systems, and all other preparatory steps have been taken prior to notification of the Third-Party Air Monitor.
- (2) Asbestos abatement contractor shall correct any deficiencies observed by Third-Party Air Monitor at no additional cost to City.
- (3) Following the Third-Party Air Monitor's approval of the Work Area preparations, removal of ACM may commence.

2. Removal of ACM Roofing and Flashing Materials:

- a. The asbestos abatement contractor shall be responsible for the removal of all roofing components, including multiple layers of built-up membrane, tar, vapor barrier and/or flashing down to the substrate/deck.
- b. Prior to actual removal, the built-up roofing shall be blanketed and wetted with a minimum 1" coating of the acceptable foam or viscous liquid which shall be maintained for the duration of the removal until the material is bagged. The foam or viscous liquid shall be confined to the work area.
- c. Hand-held power tools used to drill, cut into, or otherwise disturb the ACRM shall be equipped with the HEPA-filtered local exhaust ventilation and operated to prevent potential fiber release.
- d. Abatement shall not be performed in adverse weather conditions (e.g., precipitation, heavy winds, etc.). Asbestos abatement contractor shall protect all exposed roof during adverse weather conditions.

- e. Portable HEPA-vacuum machines shall be available during abatement.
- f. After the ACM removal and bagging, the bagged waste shall be HEPA-vacuumed, and then wet-cleaned and transferred into the shower room for double bagging. The double-bagged waste shall be transferred outside the clean room for its final transfer for storage in an enclosed waste container.
- 3. Following Removal of ACM Roofing and/or Flashing:
 - a. Upon completion of the abatement in roof work area, clean-up procedures shall involve removal and bagging of:
 - b. The asbestos containing roofing material (ACRM)
 - c. Visible accumulations of asbestos containing waste
 - d. All excess foam or similar viscous liquid
 - e. All debris, and shall be followed by a thorough wet cleaning.
 - f. All tools shall be wet cleaned and HEPA-vacuumed, and then removed from the work area upon completion.
 - g. Following the removal of all debris, the work area shall be thoroughly wet cleaned. The work area shall be allowed to dry completely before the visual inspection is conducted. The inspection shall confirm the absence in the work area of:
 - (1) ACM, debris, bagged ACM waste,
 - (2) Excess foam or other viscous liquid.
 - h. If the work area fails visual inspection, it shall undergo another wet cleaning and/or HEPA vacuuming until it passes the visual inspection.
 - i. When the visual inspection and clearance testing is successful, all plastic may be removed.
 - j. Air monitoring shall be conducted in accordance with the relevant provisions of Air sampling shall be conducted in compliance with NYC DEP Title 15 Chapter 1, §1-41 Air Sampling Schedule.
- E. Removal of Floor Tile and Mastic utilizing NYCDEP Title 15, Chapter 1 §1-108 Foam/Viscous Liquid Use in Flooring Removal procedures shall be as follows:
 - 1. Preparation of the Work Area:

- a. These procedures only apply to the removal of vinyl asbestos floor tiles (VAT), ACM floor coverings and associated mastics and adhesives, where only the ACM being abated in the work area is flooring material.
- b. Request that the Third-Party Air Monitor perform area monitoring and establish a background count prior to the preparatory operations for each removal area.
- c. Provide and install decontamination enclosure systems in accordance with PART 3 EXECUTION, Sections 3.01 and 3.02 of these Specifications and NYCDEP Title 15, Chapter 1. Decontamination facilities may be remote from the Work Areas upon approval from NYCDEP.
- d. Shut down, isolate, and lock out or tag heating, ventilating, and air conditioning (HVAC) systems which serve or which pass through the Work Area. Vents within the Work Area and seams in HVAC components shall be sealed with tape and two layers of polyethylene sheeting. Filters in HVAC systems shall be removed and treated as asbestos contaminated waste.
- e. Shut down, disconnect, and lock out or tag all electric power to the Work Area so that there is no possibility of its reactivation until after clearance testing of the Work Area.
- f. Seal floor drains, sumps and other collection devices with two layers of fire retardant 6-mil plastic and fire rated plywood, as necessary, and provide a system to collect all water used by the Asbestos abatement contractor. Collected water shall be passed through a water filtration system prior to being discharged into the sanitary sewer.
- g. Separate by means of airtight barriers (isolation barriers) parts of the building that are not included in the Work Area(s) from parts of the building that will undergo asbestos abatement.
- h. Seal with isolation barriers: open doorways, cased openings, and corridors that will not be used for passage during work.
- i. Isolation barriers shall extend from the floor to the ceiling and form an airtight seal. They shall be built using 2-inch by 4-inch wood or metal framing placed 16 inch on center and shall be braced as necessary. Cover the work sides of the studding with two layers of 6-mil fire retardant, reinforced polyethylene sheeting. Install barriers to form a leaktight seal between the Work Area and adjacent areas. Install isolation barriers in a manner to endure "negative air pressure"

within the Work Area.

- j. Completely seal airtight and isolate the Work Area. All openings, including but not limited to doorways, tunnels, ducts, grilles, cracks, diffusers, openings through which pipe conduit passes, and any other penetrations of the Work Area, shall be covered with polyethylene sheeting taped or caulked airtight.
- k. Maintain emergency and fire exits from the Work Areas or establish alternative exits satisfactory to the local fire officials. Emergency exits and routes shall be established and clearly marked with fluorescent paint or other effective designations to permit easy location from anywhere within the Work Area. Emergency exits shall be secured to prevent access from uncontaminated areas and yet permit emergency exiting. Exits shall be checked daily against exterior blockage or impediments to exiting.
- l. Temporary lighting within the Work Area and decontamination system shall be provided as required to achieve minimum illumination levels.
- m. After isolating the area, install and initiate operation of air filtration devices (AFDs) to provide a negative pressure of at least -0.02 inches of water and four air changes per hour within the Work Area relative to surrounding non-Work Areas. In areas where negative air units cannot be exhausted to the exterior of the station, units shall be installed in series. When installing units in series, the exhaust from an AFD shall be exhausted into the intake of a second AFD of equal or greater capacity. The exhaust from the second unit shall be directed to the exterior of the Work Area in an area that is not accessible to the public. Both units shall be located inside the Work Area. Exhaust and connect AFD using spiral-reinforced tubing manufactured for this purpose. Do not shut down AFDs until the Work Area is released to the City following final clearance procedures.
- n. Hand power tools used to drill, cut into, or otherwise disturb ACM shall be manufacturer-equipped with HEPA filtered local exhaust ventilation.
- o. Scaffolds shall be provided for workers engaged in work that cannot safely be performed from the ground or other solid Work Area surface.
- p. Work Area Pre-cleaning Procedures: After establishing the decontamination enclosure systems, prepare and pre-clean the Work Area as specified below:

- (1) Movable and loose items not removed by the City shall be cleaned using HEPA vacuum equipment and/or wet cleaning methods as appropriate and shall be removed from the Work Area and stored at the City's direction.
- (2) Movable and loose items contaminated with asbestos shall be removed from the Work Areas and properly discarded as asbestos contaminated waste.
- (3) Fixed objects within the Work Area shall be pre-cleaned using HEPA-vacuum equipment and/or wet cleaning methods as appropriate. Joints of covers or casings shall be sealed with tape and fixed objects enclosed with a minimum of two layers of 6-mil fire retardant polyethylene sheeting sealed airtight with tape. Disassembly of these fixed objects is not required unless otherwise noted. Fixed objects shall include, but not be limited to, light fixtures, junction boxes, hangers and black carrying channels.
- (4) Prior to being plasticized, the Work Areas shall be cleaned using HEPA-vacuum equipment and/or wet cleaning methods as appropriate. Methods that raise dust, such as dry sweeping or vacuuming with equipment not equipped with HEPA-filters, shall not be used.
- q. Plasticize the area after pre-cleaning, using the following procedure:
 - (1) Floor surfaces shall be sealed with a minimum of two layers of fire retardant 6-mil plastic sheeting, except where the only ACM being abated in the project is vinyl asbestos floor tile or other flooring material, in which case the floor need not be sealed;
 - (2) Baseboards and wall surfaces shall be sealed with a minimum of two layers of fire retardant 6-mil plastic sheeting up to a minimum height of four feet above the floor. If hand power tools are used during abatement, wall surfaces shall be covered with a layer of fire retardant 6-mil polyethylene sheeting to minimum height of six feet.
- r. Pre-Removal Inspections

- (1) Prior to removal of any ACM, the asbestos abatement contractor shall notify the Third-Party Air Monitor and request a pre-removal inspection. Posting of warning signs, building of decontamination enclosure systems, and all other preparatory steps have been taken prior to notification of the Third-Party Air Monitor.
- (2) Asbestos abatement contractor shall correct any deficiencies observed by Third-Party Air Monitor at no additional cost to City.
- (3) Following the Third-Party Air Monitor's approval of the Work Area preparations, removal of ACM may commence.

2. Removal of ACM Floor Tile and Mastic:

- a. Prior to actual removal, the floor tiles and associated mastic shall be blanketed and wetted with a minimum 1-inch to 3-inch coating of the acceptable foam or viscous liquid that shall leave an identifiable colored residue when it dissipates and shall be maintained for the duration of the removal until the material is bagged.
- b. The foam or viscous liquid shall be non-toxic, shall not require special respiratory protection from handling, and shall not affect the handling and disposal of the waste.
- c. The foam or viscous liquid shall coat and wet the ACM. The ACM shall be kept wet through the bagging process.
- d. Persons entering the work area shall wear correctly-fitting, good-traction rubber boots.
- e. Remove floor tile and all underlying layers using a flat hoe or scraper. Remove adhesive backing using approved mastic removal solvent. Do not grind or sand floor.
- f. Completely remove floor tile and adhesive backing using appropriate tools and materials. As material is removed, wrap it in two layers of plastic and place it in labeled containers for transport.
- g. Completely remove bulk mastic using an approved mastic solvent. Product application shall be in accordance with the manufacturer's instructions and the Material Safety Data Sheet (MSDS) for the product. Do not allow solvent to stand or to be absorbed by sub-floor. Use diatomaceous earth to prevent the flow of solvent under walls or into other areas from which it would be difficult to recover. Absorb spent solvent and associated mastic immediately after use with

- diatomaceous earth and place in drums dedicated for the disposal of floor tile mastic waste.
- h. After completion of mastic removal, thoroughly wash the floor with detergent and rinse clean. Use sufficient quantities of diatomaceous earth to soak up water and detergent so that the waste is completely solid. Place waste in sealed drums dedicated for the disposal of floor tile mastic waste. No bulk mastic residue and traces of foam/viscous liquid shall remain on the floor surface following removal and cleaning. It is not necessary to remove stain from pores of concrete.
- i. Spent mastic removal agents must be properly stored, categorized and disposed. Refer to "ACM Waste Packing and Load Out Procedures".
- j. On completion of floor mastic removal, the floor shall be smooth, free from ridges and bumps, and suitable to receive replacement flooring.
- 3. Additional Removal Requirements: The Third-Party Air Monitor shall issue a stop work order if visible emissions are detected outside the Work Areas and/or should the airborne fiber concentrations meet or exceed 0.01 f/cc of air or the background count (use the greater of these two values as the reference). Work shall not resume until the condition(s) causing the increase are corrected, surfaces are decontaminated using HEPA vacuums or wet cleaning techniques and the Asbestos abatement contractor receives notice from the Third-Party Air Monitor.
- 4. Following Removal of ACM Floor Tile and Mastic:
 - All surfaces shall be wet cleaned.
 - b. HEPA-vacuum all surfaces.
 - c. Conduct the following activities in accordance with the contract and all applicable laws, codes, rules and regulations.
 - (1) All waste shall be removed from the Work Area and holding areas.
 - (2) All tools and equipment are to be removed and decontaminated in the decontamination enclosure system.
 - d. The Third-Party Air Monitor will conduct a visual observation of the Work Area to verify the absence of asbestos-containing waste materials.

- e. If the Work is not approved, the Third-Party Air Monitor will inform asbestos abatement contractor who will then wet-clean and HEPA-vacuum the Work Area. The Third-Party Air Monitor will then perform a subsequent visual observation. This process will continue until the Third-Party Air Monitor accepts the Work Area as clean.
- f. Remove polyethylene barriers from the walls of the Work Area. Isolation barriers shall remain in place.
- g. Perform a thorough HEPA-vacuuming of the Work Area.
- h. The Third-Party Air Monitor will conduct a visual observation of the Work Area to verify the absence of asbestos-containing waste materials.
- i. If the Work is not approved, the Third-Party Air Monitor will inform asbestos abatement contractor who will then HEPA-vacuum the Work Area. The Third-Party Air Monitor will then perform a subsequent visual observation. This process will continue until the Third-Party Air Monitor accepts the Work Area as clean.
- j. If results of air sampling performed during abatement activities indicate airborne fiber concentrations of less than 0.01 fibers per cubic centimeter, or the background level, whichever is greater, final clearance air sampling is not required. The abatement action may be considered complete.

k. Isolation Barrier Removal

- (1) Upon receipt of acceptable observation results, polyethylene sheeting and barrier tape shall be removed and disposed accordingly as ACM.
- (2) The area surrounding the abatement work place shall be cleaned of any visible debris utilizing HEPA vacuum and wet methods.
- 1. The Third-Party Air Monitor will conduct final visual inspection. Approval must be granted prior to break down of decontamination facility and asbestos abatement contractor demobilization. Other Information: Extra time required to clean Work Areas in order to achieve clearance criteria shall not be considered grounds for an extension of time for contract completion.

4.02 MAINTENANCE OF CONTAINED WORK AREA AND DECONTAMINATION ENCLOSURE SYSTEMS

- A. Ensure that barriers are installed in a manner appropriate to the expected weather conditions during the project and for its duration. Repair damaged barriers and remedy defects immediately upon their discovery. Visually inspect barriers at the beginning and end of each work period.
- B. Visually inspect non-Work Areas and the decontamination enclosure system for water leakage. Check the floor below, ceiling and walls, and view beneath/or around the decontamination enclosure system, for signs of leakage. Perform the visual inspection a minimum of two times for each 8-hour work shift.

PART 5 - ASBESTOS WASTE MANAGEMENT

5.01 ACM WASTE REQUIREMENTS

- A. The asbestos abatement contractor and all sub-asbestos abatement contractors are specifically alerted to the illegal practice of combining asbestos-containing waste (ACW) from one project with the ACW of other projects without using the services of a permitted waste transfer station as defined by 6 NYCRR Part 360 and 364. As part of the shop drawing submittals, the Asbestos abatement contractor must submit for approval the proposed method of transportation and disposal that will be utilized to manage the ACW of this Contract. If a permitted transfer station is to be used, the cost shall be included in the work. The asbestos abatement contractor must submit a waste manifest consistent with whatever approved method is utilized as part of the invoicing and payment procedures.
- B. The asbestos abatement contractor shall maintain compliance with the strictest set of regulations of Title 15, Chapter 1 of RCNY, NYC LL 70/85, NYS DOL ICR 56, USEPA, Asbestos Regulation 40 CFR Section 61.152, 29 CFR 1926.1101, 29 CFR 1910.1200 (F) of OSHA's Hazard Communication Standards, and other applicable standards.

NOTE: Any penalties incurred for failure to comply with any of the above regulations will be the sole responsibility for fines imposed due to negligence of the Asbestos abatement contractor.

- C. When presenting ACW for storage at the generation site, the Asbestos abatement contractor shall:
 - 1. Wet down ACW in a manner sufficient to prevent all visible emissions of dust into the air.
 - 2. Seal material in a leak tight container while wet.
 - 3. Keep ACW separate from any other waste.

- D. When presenting ACW for storage away from the site of generation, the Asbestos abatement contractor shall:
 - 1. Ensure that ACW has been properly packaged as per requirements above.
 - 2. Examine the containers of ACW to ensure that there are no breaks in the containers and that no visible dust is being released into the air.
 - 3. If examination reveals damage to a container of ACW the Asbestos abatement contractor or person accepting the waste shall immediately wet down the ACW and repackage it into a clean leak tight container. The subsequent repackaging shall be the financial responsibility of the Asbestos abatement contractor and occur at no extra cost to the City.
 - 4. Keep ACW separate from any other waste.
- E. When storing ACW The Asbestos abatement contractor shall:
 - 1. Ensure that the ACW has been sufficiently wetted down in tight containers.
 - 2. Re-wet and repackage any damaged containers.
 - 3. Maintain at storage site an adequate supply of spare leak tight containers.
 - 4. Maintain at storage site an adequate supply of amended water.
 - 5. Keep ACW separate from any other waste.
 - 6. Keep ACW in a secured, enclosed, and locked container.
 - 7. If the Asbestos abatement contractor has intention of sorting a quantity of ACW greater than or equal to 50 cubic yards, the Asbestos abatement contractor shall:
 - a. Submit a written request and receive written approval from the City.
- F. When presenting for transport, the Asbestos abatement contractor shall:
 - 1. Ensure that ACW has been sufficiently wetted down.
 - 2. Examine the integrity of the container's airtight seal.
 - 3. Re-wet and repackage any damaged containers.
 - 4. Keep ACW separate from all other waste.

- 5. Ensure that a person transporting asbestos waste holds a valid permit issued pursuant to law.
- 6. Frequency of Waste Removal:
 - a. Properly packaged and labeled asbestos waste shall be removed from the site on a daily basis. Under no circumstance shall asbestos waste be stored on site without written approval from the City. The Waste Hauler and landfill shall be as indicated on the notifications to regulatory agencies.
- G. Waste Load-out Through Equipment Decontamination Enclosure (Full Decontamination Facility): Place asbestos waste in disposal bags. Large items not able to fit into disposal bags shall be wrapped in one layer of 6-mil thick polyethylene sheeting. Clean outer covering of asbestos waste package by wet cleaning and/or HEPA-vacuuming in a designated part of the Work Area. Move wrapped asbestos waste to the equipment washroom, wet clean each bag or object and place it inside a second disposal bag, or a second layer of 6-mil polyethylene sheeting, as the item's physical characteristics demand. Air volume shall be minimized, and the bags or sheeting shall be sealed airtight with tape.
 - 1. The clean containerized items shall be moved to the equipment decontamination enclosure holding area pending load-out to storage or disposal facilities.
 - 2. Workers who have entered the equipment decontamination enclosure system from the uncontaminated non-Work Area shall perform load-out of containers from the decontamination enclosure holding area. Dress workers moving asbestos waste to storage or disposal facilities in clean overalls of a color different than from that of coveralls used in the Work Area. Ensure that workers do not enter from uncontaminated areas into the equipment washroom or the Work Area. Ensure that contaminated workers do not exit the Work Area through the equipment decontamination enclosure system.
 - 3. Thoroughly clean the equipment decontamination enclosure system immediately upon completion of the waste load-out activities, and at the completion of each work shift.
 - 4. Labeled ACM waste containers or bags shall not be used for non-ACM debris or trash. Any materials placed in labeled containers or bags, including those turned "inside-out", shall be handled and disposed of as ACM waste.
- H. All asbestos materials, wastes, shower water, polyethylene, disposable equipment and supplies shall be disposed of as asbestos contaminated waste, in accordance with the EPA regulation (40 CFR, Section 61.150) and those requirements of the New York Department of Environmental Conservation and New York City Department of Sanitation.

- I. All asbestos materials shall be prepared for transportation in accordance with this specification and all applicable Federal, State, County and City Regulations. asbestos abatement contractor shall submit the following documentation:
 - 1. Where applicable, an EPA Generator's identification number which has been obtained from the EPA for all asbestos waste generated from the project.
 - 2. Applicable State Waste Hauler license and registration numbers.
 - 3. Federal Hazardous Materials Waste Hauler number.
 - 4. Designated landfill EPA Permit numbers.
- J. Prior to loading asbestos waste the enclosed cargo areas (dumpster) shall be prepared as follows:
 - 1. Clean via HEPA-vacuum and wet wipe techniques the enclosed cargo areas of all visible debris prior to preparing with polyethylene.
 - 2. Line the cargo area with two layers of 6-mil polyethylene sheeting to prevent contamination from damaged or leaking containers. Floor sheeting shall be installed first and extend up the walls a minimum of 24-inches. Wall sheeting shall be overlapped and taped securely into place.
- K. Asbestos-containing waste shall be placed on level surfaces in the cargo area of the dumpster and shall be packed tightly to prevent any shifting or tipping of the waste during transportation.
- L. Asbestos-containing waste shall not be thrown into or dropped from the dumpster. All material shall be handled carefully to prevent rupture of the containers.
- M. All personnel engaged in handling and loading of asbestos contaminated waste outside of the Work Area shall wear protective clothing. The disposable clothing shall include head, body and foot protection and color of clothing shall be different from abatement personnel in the Work Area. Minimum respiratory protection shall be half face, dual cartridge, air purifying respirators with HEPA-filters.
- N. Asbestos abatement contractor shall immediately clean debris or residue observed on containers or surfaces outside of the Work Area. Cleaning shall be via HEPA equipped wet/dry vacuums only.
- O. All asbestos-containing waste shall be transported from the abatement site to the landfill by a registered Waste Hauler. When transporting ACW:
 - 1. Ensure that the ACW has been sufficiently wetted down in a leak tight container.

- 2. Re-wet and repackage any damaged containers.
- 3. Maintain at storage site an adequate supply of spare leak tight containers.
- 4. Maintain at storage site an adequate supply of amended water.
- 5. Keep ACW separate from any other waste.
- P. Keep ACW in a secured, enclosed, and locked container.
- Q. Waste transport documents shall conform to the requirements of the U.S. Department of Transportation, Hazardous Materials Transportation Regulation, 49 CFR Part 173 and EPA 40 CFR 61.150 (d)(1)(2). Shipping documents shall be clearly marked with the required designation "RQ Asbestos". Asbestos abatement contractor shall provide a copy of this document to the City.
- R. A uniform hazardous waste manifest shall be prepared by the asbestos abatement contractor and signed by the asbestos abatement contractor each time the asbestos abatement contractor ships a dumpster load of Asbestos-Containing Waste Material. The uniform hazardous waste manifest shall include the site of waste generation, the names and addresses of the Transporter, the asbestos abatement contractor, and the landfill operator with information on the type and number of asbestos-waste containers, time and date. Asbestos abatement contractor shall provide the Construction Project Manager, Third-Party Air Monitor or authorized designated representative with signed copies of the waste manifest before each departure.
- S. Asbestos abatement contractor or his registered hazardous Waste Hauler shall transport asbestos-containing waste material from the abatement site directly to the specified disposal site. Asbestos abatement contractor or their Waste Hauler shall not accept material from any other site when transporting asbestos-containing waste material from the abatement site. The authorized DDC representative or Construction Project Manager reserves the right to travel with asbestos abatement contractor's Waste Hauler to the waste disposal site. No intermediate storage of waste material (i.e., asbestos abatement contractor's warehouse) shall be permitted.
- T. Final or progress application for payments will not be processed unless all hazardous waste manifests generated to date have been received and reviewed by the Construction Project Manager.
- U. All asbestos materials, wastes, shower water, polyethylene disposable equipment and supplies shall be disposed of as asbestos contaminated waste, in accordance with the EPA regulation (40 CFR, Section 61.150) and those requirements of the New York State Department of Environmental Conservation and the New York Department of Sanitation.

- V. Asbestos abatement contractor shall transport all sealed drums to a landfill disposal site approved by the Department of Environmental Conservation and the EPA. Transportation shall be performed by a New York State registered Waste Hauler, where required. When presenting the ACW for disposal the Asbestos abatement contractor or sub Asbestos abatement contractor shall:
 - 1. Ensure that waste container is properly labeled according to the National Emission Standard for Hazardous Air Pollutants (NESHAP); Asbestos Revision, 40 CFR, Part 61, Subpart M. The labels shall include the name of the waste generator and the location where the waste was generated.
 - 2. Comply with all applicable orders issued pursuant to asbestos disposal.
 - 3. Ensure that ACW has been sufficiently wetted down.
 - 4. Re-wet and repackage any damaged containers.
 - 5. Keep ACW separate from all other wastes.
- W. Asbestos abatement contractor shall notify the waste disposal site, at least 24 hours prior to transportation of asbestos contaminated waste to be delivered. Asbestos abatement contractor shall determine if a larger notification period is required.
- X. At the site asbestos abatement contractors or Waste Hauler trucks shall approach the dump location as close as possible for unloading asbestos waste. Containers shall be carefully placed in the ground. Do not throw containers from truck.
- Y. Asbestos abatement contractor or Waste Hauler shall inspect containers as they are unloaded at the disposal site. Material in damaged containers shall be repacked in empty containers, as necessary.
- Z. Asbestos abatement contractor or Waste Hauler shall not remove asbestos-containing waste Material from drums unless required to do so by the disposal site City. Used drums shall be disposed of as asbestos-asbestos contaminated waste.
- AA. All personnel engaged in unloading of the containers at the waste site shall wear protective clothing. The disposable clothing shall include head, body and foot protection. Minimum respiratory protection shall be half face, dual cartridge, air purifying respirators with HEPA-filters. Workers shall remove their protective clothing at the disposal site, place it in labeled disposal bags and leave them with the deposited waste shipment.

- BB. For the compaction operation, the asbestos abatement contractor shall ensure that disposal sites personnel have been provided with personal protective equipment by the disposal operator. If the disposal site City has not provided this protective equipment, the asbestos abatement contractor shall supply protective clothing and respiratory protection for the duration of this operation (PAPR respirators are mandatory).
- CC. If containers are broken or damaged, the asbestos abatement contractor or Waste Hauler shall, using personnel who are properly trained and wearing proper protective equipment, shall repackage the waste in properly labeled containers. Asbestos abatement contractor shall then clean the entire truck and its contents using HEPA-vacuums and wet cleaning techniques until no visible residue is observed.
- DD. Following the removal of all containerized waste, the asbestos abatement contractor shall decontaminate the truck cargo area using HEPA-vacuums and/or wet cleaning techniques until no residue is observed. All 6-mil polyethylene sheeting shall be removed and discarded as asbestos-containing waste material along with contaminated cleaning material and protective clothing, in containers at the disposal site.
- EE. The transporter(s) of all asbestos waste shall not back-haul any items on his return from landfill/disposal site.
- FF. All asbestos waste shall be disposed of in an approved Asbestos Landfill site only.
 - 1. NO PERSON UNDER ANY CIRCUMSTANCES SHALL ABANDON ACW. The same shall be disposed of only by certified persons in approved landfills.
 - 2. A manifest form will be signed by the Landfill documenting receipt and acceptance of the asbestos-containing waste. This manifest will be furnished to the City of New York within thirty calendar days from the project completion date.
 - 3. It is the responsibility of the Asbestos abatement contractor to determine current waste handling, transportation and disposal regulations for the work site and for each waste disposal landfill. The Asbestos abatement contractor must comply fully with these regulations and all appropriate U.S. Department of Transportation, EPA and other Federal, State and Local entities' regulations and all other current legal requirements.
 - 4. The asbestos abatement contractor shall obtain an agreement from the transporter (s) that the practice of "Back-Hauling" will not be engaged in, with respect to any and all waste loads taken from this site during the work.

5. The asbestos abatement contractor will document actual disposal of the waste at the designated landfill by having completed a Disposal Certificate and will provide a copy of the same to the Department of Design and Construction.

PART 6 - ACCEPTANCE

6.01 ACCEPTANCE

Upon satisfactory completion of all decontamination procedures, a certificate will be issued by the Construction Project Manager with copies to all parties.

- A. A letter of Compliance stating that all the work on the project was performed in accordance with the Specifications and all applicable Federal, State and Local regulations.
- B. All warranties as stated in the Specifications.

END OF SECTION 028213

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Queens Supreme Court - Modernization of Elevators 88-11 Sutphin Blvd Queens, NY 11435

DDC Project ID # CO300ELV2 December 1, 2014

SECTION 03 10 00 - CONCRETE FORMWORK

PART 1 - GENERAL

1.01 DESCRIPTION OF WORK

A. Provide forms wherever necessary to confine concrete and shape it to required dimensions. Provide special formwork or form-liners for concrete with smooth or special finishes.

1.02 PRODUCTS INSTALLED BUT NOT FURNISHED UNDER THIS SECTION (NOT USED)

1.03 RELATED SECTIONS

A. Concrete Reinforcement

Section 03 20 00

B. Cast-in-Place Concrete

Section 03 30 00

1.04 REFERENCES

- A. American Concrete Institute (ACI) standards, latest editions.
 - ACI 301 Specifications for Structural Concrete for Buildings.
 - 2. ACI 347 Guide to Formwork for Concrete.

1.05 DESIGN REQUIREMENTS

- A. The design and engineering of the formwork, as well as its construction, is the responsibility of the Contractor.
- B. Design formwork in accordance with ACI 347.

1.06 QUALITY ASSURANCE

A. Qualifications

Company specializing in performing the Work of this Section shall have three years minimum experience.

B. Regulatory Requirements

1. Building Code

Work of this Section shall conform to all requirements of New York City Building Code, 2008. Where more severe requirements other than those contained in the New York City Building Code, 2008 are given in this Section and ACI 347, the requirements of this Section and ACI 347 shall govern.



1.07 DELIVERY, STORAGE, AND HANDLING

A. Protection

- 1. Protect formwork materials before, during and after installation.
- 2. Protect installed work and materials of other trades.

B. Replacement

- 1. Repair or replace damaged formwork as approved by DDC..
- 2. Repair overlaid ply form formwork as per manufacturer's instructions.

PART 2 - PRODUCTS

2.01 MANUFACTURERS

A. Overlaid Plyform Formwork or Approved Equal

Manufacturers

Simpson Timber Company

Shelton WA 98584.

Fourply Inc.

Grants Pass OR 97526

Pacific Wood Laminates, Inc.

Brookings OR 97415

2.02 MATERIALS

A. Rough Formwork or Approved Equal

Shall be Commercial Douglas Fir, DFPA: 5/8" thick minimum.

B. Overlaid Plyform Formwork

Shall be moderate reuse medium density overlaid plywood panel with a smooth matte finish factory treated with a chemically reactive release agent and edge sealer.

C. Smooth Form Finish Formliner or Approved Equal

Shall be #340 Smooth Face by Greenstreak.

D. Release Agent



E. Form Ties

- Form ties for exposed concrete shall be adjustable.
- 2. Form ties for exposed shall leave no metal closer than $1^{1}/2^{11}$ to the surface.
- 3. Form ties for concrete stated in 2 above shall be free of devices which leave holes or depressions larger than 7/8" back of exposed surface.
- Wire ties not permitted.

PART 3 - EXECUTION

3.01 PREPARATION OF FORMWORK SURFACES

- A. Clean all surfaces of forms and embedded items of any accumulated mortar or grout from previous concreting and other foreign material before concrete is placed in them. Repair or replace any formwork as required.
- Before placing either reinforcing steel or concrete, cover the surfaces of the rough or overlaid ply form formwork (when used) with an approved form release agent that will effectively prevent absorption of moisture, prevent bond with the concrete, and which will not stain the concrete surfaces. Follow manufactures' recommendations for alternatives. For the overlaid ply form formwork, release agent should be a chemically reactive agent comparable with the factory treatment. Do not allow excess form coating material to stand in puddles in the forms nor allow coating to come in contact with hardened concrete against which fresh concrete is to be placed.

3.02 CONSTRUCTION AND DETAILS

- A. Adequately support and substantially brace formwork to hold lines and shape.
- B. Formwork shall be tight jointed to prevent leakage of mortar from the concrete.
- C. Place chamfer strips in the corners of forms to produce beveled edges (chamfers) on permanently exposed surfaces. Do not provide beveled edge for where members are flush with partitions or walls, unless required by Drawings or specified elsewhere.
- D. Provide positive means of adjustment (wedges or jacks) for shores and struts to take up form movement during concrete placing operations. Fasten wedges used for final adjustment of forms prior to concrete placement in position after final check. Securely brace forms against lateral deflection.
- E. Provide "Smooth Form Finish" (or "Textured Finish", "Formliner Finish" if shown on Drawings) for surfaces exposed to view. Use dress, square-edged lumber with form liner or overlaid

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plyform forms with applicable release agent. Do not exceed manufacture's recommendations for number of re-uses for the form liner or overlaid plyform. Arrange the forms or form liner in an orderly and symmetrical fashion, keeping the number of seams to a practical minimum.

- F. Form holes for pipes, pipe sleeves, electric outlets, electric conduits, etc. as required.
- G. Carefully check all forms before placement of concrete.
- H. Submit requests for opening not shown on Drawings required by conditions or by Work of Divisions 15 and 16 to the Engineer, who will issue instructions accordingly.

3.03 REMOVAL OF FORMS

A. When repair of surface defects or finishing is required at an early age remove forms as soon as the concrete has hardened sufficiently to resist damage from removal operations.

3.04 TOLERANCES

- A. Construct formwork so that concrete surfaces will conform to the tolerance limits listed in Table 3.1 of ACI 347.
- B. Establish and maintain in an undisturbed condition and until final completion and acceptance of the project sufficient control points and bench marks to be used for reference purposes to check tolerances.

3.05 INSPECTION

- A. All inspections shall be by an independent testing agency retained by DDC.
- B. Make inspections prior to placement of steel and subsequently periodically after placement and during placement of concrete to detect incipient problems.
- C. Keep a record of all inspections, the name of the persons making them, and the name of the foreman in charge of formwork at the site. Submit to the Engineer and DDC copy of the inspection records prior to each concrete placement.

END OF SECTION 03 10 00

SECTION 03 20 00 - CONCRETE REINFORCEMENT

PART 1 - GENERAL

1.01 SUMMARY

A. Provide and install all reinforcement and associated items required for cast-in-place concrete, including but not limited to the reinforced concrete pads for mechanical equipments and sump pits in elevator shafts.

1.02 RELATED SECTIONS

A. Concrete Formwork Section 03 10 00

B. Cast-in-Place Concrete Section 03 30 00

1.03 REFERENCES

American Society of Testing and Materials (ASTM) standards, latest editions.

A82 Standard Specification for Steel Wire, Plain, for Concrete Reinforcement.

A496 Standard Specification for Steel Wire, Deformed, for Concrete Reinforcement.

A497 Standard Specification for Steel Welded Wire Fabric, Deformed, for Concrete Reinforcement.

A615 Standard Specifications for Deformed and Plain Billet-Steel Bars for Concrete Reinforcement.

A775 Standard Specification for Epoxycoated Reinforcing Steel Bars.

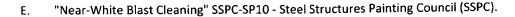
B. American Concrete Institute (ACI) standards, latest editions.

ACI 301 "Specification for Structural Concrete for Buildings."

ACI 315 "Details and Detailing of Concrete Reinforcement."

ACI 318 "Building Code Requirements for Reinforced Concrete (RS 10-3 of the NYC Building Code).

- C. "Placing Reinforcing Bars CRSI-WCRSI Recommended Practices", latest edition. Concrete Reinforcing Steel Institute.
- D. "Structural Welding Code Reinforcing Steel" D1.4 American Welding Society (AWS).



1.04 SUBMITTALS

A. Product Data

Submit manufacturers' information for the following:

- 1. Steel welded wire fabric
- 2. Supports

B. Shop Drawings

- 1. Immediately after award of Contract, prepare shop drawings showing all fabrication dimensions and locations for placing of the reinforcing steel and accessories.
- 2. Follow detailing recommendations of ACI 315.
- Shop drawings checked and approved or disapproved by the Engineer of Record shall
 not render the Engineer responsible for any errors in construction dimensions,
 quantities, etc. which shall have been made in preparation of the shop drawings.
- 4. Do not order or deliver reinforcement to job site prior to approval of drawings.

1.05 QUALITY ASSURANCE

A. Qualifications

Company specializing in performing the Work of this Section shall have three years minimum experience.

B. Regulatory Requirements

1. Building Code

Work of this section shall conform to all requirements of the current Building Code of the City of New York, 2008 and ACI 318-11.

- a. All reinforcing bars are identifiable as to point of origin, grade of steel and size.
- b. All bundles or rolls of cold drawn steel wire reinforcement are securely tagged to identify the manufacturer, the grade of steel and the size.

Where more severe requirements other than those contained in the current New York City Building Code, 2008 are given in this Section and ACI 318-11, the requirements of this Section and ACI 318-11 shall govern.

2. Industry Standards

Details of Concrete reinforcement not covered herein shall be in accordance with "Building Code Requirements for Reinforced Concrete" (ACI 318) and "Details and Detailing of Concrete Reinforcement" (ACI 315), latest editions and the Concrete Reinforcing Steel Institute Manual on "Placing Reinforcing Bars".

1.06 DELIVERY, STORAGE, AND HANDLING

- A. Store in location above ground to prevent rusting, etc.
- B. Protect reinforcement before, during, and after installation.
- C. Ensure proper identification after bundles are broken.

PART 2 - PRODUCTS

2.01 MATERIALS

- A. Non-coated Reinforcing Bars
 - All non-coated reinforcing bars shall be of deformed type of new billet steel conforming to current requirements of ASTM A615. No rail or re-rolled steel will be permitted.

B. Welded Steel Wire Fabric

1. Wire Fabric shall conform to the requirements of ASTM A185. The welded wire mesh should be supplied in sheet only.

C. Supports for Reinforcement

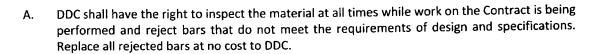
- 1. Non-coated Reinforcement
 - a. Supports for reinforcement supported by formwork or existing concrete slab shall consist of metal bolsters and chairs of adequate strength, size, and number. Provide CRSI Class C supports (plastic tipped) for formed concrete surfaces and Class A (bright basic) for metal deck.
 - b. Supports for slabs supported by ground shall consist of above supports with sand plates or horizontal runners.

2.02 FABRICATION

A. General

Fabricate reinforcing bars in accordance with fabricating allowances given in ACI 315.

2.03 SOURCE QUALITY CONTROL



PART 3 - EXECUTION

3.01 PLACEMENT

A. General

- 1. Place reinforcement in accordance with CRSI "Placing Reinforcement Bars."
- 2. Unless otherwise permitted, welding of crossing bars (tack welding) for assembly of reinforcement is prohibited.

B. Supports

- 1. Support and fasten together all reinforcement to prevent displacement by construction loads or placing of concrete.
- 2. Provide supports specified in Paragraph 2.01 C.
- 3. Lifting of bars and welded wire fabric into position during placement of concrete is not permitted.

C. Cover

Provide minimum protective cover given in Chapter 7 of ACI 318-11 if not indicated on Drawings.

D. Splices

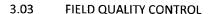
 All splices not shown on the Project Drawings shall be shown on the shop drawings and approved by the Engineer.

E. Embedment Lengths

All embedment lengths not shown on the Project Drawings shall be shown on the shop drawings and approved by the Engineer.

3.02 TOLERANCES

- A. Place reinforcing bars in accordance with the tolerances given in of ACI 117.
- B. Move bars as necessary to avoid interference with other reinforcement, conduits, or embedded items. If bars are moved more than one bar diameter, or enough to exceed the above tolerances, the resulting arrangements are subject to approval by the Engineer.



- A. An Engineer for Control Inspection retained by DDC is required for reinforcement inspection.

 The Engineer shall inspect the size and placement of reinforcement. A record will be made of all inspection of reinforcement at the bending bench and in place.
- B. Do not proceed with the completion of forms until all reinforcement has been approved and recorded by DDC's representative. DDC's independent testing agency is responsible for all inspection.
- C. Do not proceed with concreting until all reinforcing in place has been approved and recorded.
- D. Promptly correct all reinforcement displaced during pouring of concrete.
- E. Damaged reinforcement shall not be used.

3.04 CLEANING

A. Steel reinforcement shall be free of all rust, scale, oil, paint, grease, loose mill scale, and all other foreign matter, which will prevent bonding of concrete and steel just prior to pouring of concrete.

END OF SECTION 03 20 00



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SECTION 03 30 00 - CAST-IN-PLACE CONCRETE

PART 1 - GENERAL

1.01 DESCRIPTION OF WORK

A. Furnish material, equipment, labor, services required to provide for cast-in-place concrete. Work includes but is not limited to the new reinforced concrete pads for mechanical units and construction of new sum pits in elevator shafts as indicated on drawings. Allow ample time and facility for the Work of other Divisions to be installed.

1.02 RELATED SECTIONS AND WORK

A.	Concrete Formwork	Section 03 10 00

B. Concrete Reinforcement Section 03 20 00

1.03 REFERENCES

- A. American Society of Testing and Materials (ASTM) standards, latest editions.
 - C33 Standard Specifications for Concrete Aggregates.
 - C94 Standard Specification for Ready-Mixed Concrete.
 - C150 Standard Specification for Portland Cement.
 - C171 Standard Specification for Sheet Materials for Curing Concrete.
 - C172 Standard Method of Sampling Freshly Mixed Concrete.
 - C260 Standard Specifications for Air-Entraining Admixtures for Concrete.
 - C387 Standard Specifications for Package Dry Combined Materials for Concrete and High Strength Mortar..
 - C494 Standard Specification for Chemical Admixture for Concrete.
- B. American Concrete Institute (ACI) standards, latest editions.
 - ACI 211.1 Standard Practice for Selecting Proportions for Normal, Heavyweight, and Mass Concrete.
 - ACI 212.3R Chemical Admixtures for Concrete.

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ACI 214.3R Simplified Version of the Recommended Practice for Evaluation of Strength Test

Results for Concrete.

ACI 301 Specifications for Structural Concrete for Buildings.

ACI 305R Hot Weather Concreting.

ACI 306R Cold Weather Concreting.

ACI 308 Standard Practice for Curing Concrete.

ACI 311.4R Guide for Concrete Inspection.

ACI 318-11 Building Code Requirements for Reinforced Concrete.

1.04 DEFINITIONS

A. Exposed to view

Situated so that it can be seen from eye level from a public location. A public location is that which is accessible to persons not responsible for operation or maintenance of the building.

B. Normal weight concrete

Concrete for which density is not a controlling attribute, made with aggregates of the types covered by ASTM C33 and usually having unit weights in the range of 135 to 160 lb/ft³.

1.05 DESIGN REQUIRMENTS

A. Performance Characteristics:

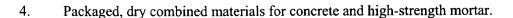
For all reinforced concrete elements, concrete shall be the normal weight concrete with a minimum compressive strength of 4000 psi at 28 days, air entrained, and a maximum water to cement ration of 0.45.

1.06 SUBMITTALS

A. Product Data

Submit manufacturers' information for the following:

- 1. Admixtures
- 2. Curing compounds
- 3. Bonding Agent



B. Quality Control Submittals

- 1. Design Data: Submit design mixes for concrete, including list of admixtures to be used, to the Engineer.
- 2. Form TR-3: Technical Report Concrete Design Mix: The Contractor shall be responsible for, and bear all costs associated with filing and securing of approvals, if any, for Form TR-3 Technical Report Concrete Design Mix, including but not limited to, engaging the services of a New York City licensed Concrete Testing Lab for the review and approval of concrete design mix, testing, signatures and professional seals, etc., compliant with NYC Department of Buildings requirements, for each concrete design mix.
- 3. Test Reports: Strength Test Report (28 day) for preliminary trial mix (with all admixtures).

4. Certificates

- a. Admixture manufacturer's certificate stating the maximum water soluble chloride contents in the concrete, percent by weight of cement, the use of the admixture will yield.
- b. Concrete producer's certificate must be presented at site before concrete is placed.

1.07 QUALITY ASSURANCE

A. Qualifications

- 1. Installer: Company specializing in performing the Work of this Section shall have three years minimum experience.
- 2. Producer: Company specializing in the production of concrete shall have a minimum of five years experience.

B. Regulatory Requirements

1. Building Code: Work of this Section shall conform to all requirements of the current Building Code of the city of New York and all applicable regulations of governmental authorities having jurisdiction including safety, health, noise, and anti-pollution regulations. Where more severe requirements than those contained in the Building Code are given in this Section, the requirements of this Section shall govern.

 Industry Standards: The ACI Standards listed under references apply to Work of this Section. Where more severe requirements then those contained in the Standards are given in this Section or the Building Code, requirements of this Section or the Building Code shall govern.

C. Certifications

- Cast-in-Place Concrete shall conform to the material acceptance, certification, and inspection requirements of ACI 318-11.
- 2. Acquire cement and aggregate from same source for all work.

D. Coordination

Coordinate the work of all Divisions so that items to be installed are done so correctly and in proper sequence.

1.08 DELIVERY, STORAGE, AND HANDLING

- A. Protect material from the elements and from other damage on the site.
- B. Replace and pay for material and work damaged to the satisfaction of the Engineer and authorized agency, DDC.

1.09 ENVIRONMENTAL REQUIREMENTS

A. Adequately protect concrete when the mean daily temperature falls below 40°F or rises above 90°F as provided in Paragraph 3.05.

PART 2 - PRODUCTS

2.01 MANUFACTURERS

A. Admixtures

- 1. Euclid Chemical Company
- 2. Master Builders
- 3. Sika Chemical Corporation
- 4. Anti Hydro Company
- 5. Chem Masters
- 6. Stonehard Inc.



8. Or Approved Equal

W.R. Grace & Co.

B. Bonding Agent

7.

- 1. Larsen Products Corp., Rockville, Maryland.
- 2. Chem Masters, Chagrin Falls, Ohio.
- 3. Or Approved Equal

2.02 MATERIALS

A. Cement

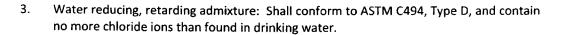
Shall conform to ASTM C150 and shall be of the non air-entrained types:

- Unless otherwise specified or approved by the Engineer of Record, cement shall be Type
 I.
- 2. Cement shall not contain ingredients, which would result in more than two percent air being entrained in the concrete.

B. Admixtures

1. General

- a. The use of admixtures shall comply with the requirements of ACI 318-11.
- b. The final soluble chloride content in concrete, percent by weight of cement, due to the addition of admixtures and other ingredients shall not exceed 0.10 at 28 days.
- 2. Air-entraining admixture: Shall conform to ASTM C260.
 - a. Water-reducing admixture: Shall conform to ASTM C494, Type A or D, and contain no more chloride ions than found in drinking water.
 - b. High range, water-reducing admixture (super- plasticizer): Shall conform to ASTM C494, Type F or G, and contain no more chloride ions than found in drinking water.
 - c. Water reducing, accelerating admixture: Shall conform to ASTM, Type C or E, and contain no more chloride ions than found in drinking water.



C. Water

Shall be clean New York City water free of injurious foreign matter conforming to the requirements for water specified in ASTM C94.

D. Aggregates

Fine and coarse aggregates shall be regarded as separate ingredients. Each size of coarse aggregate, as well as the combination of sizes when two or more are used, shall conform to the appropriate grading requirements of the applicable ASTM specifications. Maximum size of coarse aggregate shall conform to paragraph 3.3 of ACI 318.

 Aggregates for normal weight concrete shall conform to ASTM C33 and be of Size No.57 and/or No.67.

E. Curing Compounds

- Curing paper shall conform to ASTM C171.
- 2. Liquid curing compound shall conform to ASTM C309.

F. Bonding Agent

- 1. Bonding agent shall meet the following performance characteristics.
 - a. Tensile bond strength (ASTM C190)....385 psi.
 - b. Flexural bond strength (ASTM C78)....603 psi.
 - c. Shear bond strength (ASTM C39)......470 psi.
 - d. Will withstand extreme temperature changes without loss of bond and will pass 2-hr fire test in accordance with ASTM E119.
- Shall be Weld-Crete by Larsen Products Corp., or approved equal.

G. Paper Covering for Floor Protection

Paper covering for floor protection shall consist of two sheets of paper cemented together with a full seal of asphalt and reinforced with cords or sisal fibers completely embedded in the

asphalt with not less than 12 reinforcements per inch in each direction, all in accordance with ASTM C171.

2.03 MIXES

A. General

Concrete for all parts of the Work shall be of the specified quality capable of being placed without excessive segregation and, when hardened, of developing all characteristics required by the Specifications and Drawings.

B. Strength

The strength of the concrete for each portion of the structure is designated on the Drawings and/or Specifications. Strength requirements are based on 28-day compressive strength, unless high early strength is specified, in which case required strengths are based on 7-day compressive strength.

C. Method of Proportioning

- Proportion, batch, and mix concrete in accordance with ACI 318-11. The Engineer is responsible for acceptance of the method used and for approval of all design mixes.
- 2. Pumping of concrete is permitted if a pump mix is submitted and approved by the Engineer. Provide a minimum of 1/2 bag extra of cement over the amount required to attain the correct concrete strength for pump mixes.

D. Normal Weight Concrete

- Unless otherwise specified, proportion and produce normal weight concrete to have a slump of 4" or less, prior to addition of any water-reducers if used. A tolerance of up to 1" above the indicated maximum shall be allowed for individual batches provided the average for all batches or the most recent 10 batches tested, whichever is fewer, does not exceed the maximum limit. The slump shall be determined by ASTM C143.
- 2. Normal weight concrete shall be air-entrained with air content for the grading size of coarse aggregate as follows:
 - a. No.57.....6 %
 - b. No.67.....6%

Tolerance on air content as delivered shall be +1.5%.

2.04 SOURCE QUALITY CONTROL

A. Tests

- 1. Reports of all pouring of concrete and the laboratory cylinder test reports corresponding to the periods of pour shall be submitted to the Engineer at a period not to exceed ten days from date of test results.
 - a. Compression test samples will be taken directly from the mixer in accordance with ASTM C172; tested in accordance with ASTM C39.
 - Four (4) test cylinders will be molded for each 50 cubic yards or fraction thereof for each type and strength of concrete placed in any one day's concreting
 - 2. One (1) cylinder will be tested at 7 days and three (3) cylinders tested at 28 days.
 - b. In addition, concrete test cylinder will be made from concrete taken out of the bucket, hopper or forms as directed by the Engineer when concrete is placed from an intermediate conveyance.
 - 1. These test cylinders shall be separate and distinct from those made from the mixer and shall be made from the same batch, cured and tested in that same manner as described for the samples taken from the mixer.

PART 3 - EXECUTION

3.01 EXAMINATION

- A. Prior to placement of concrete, verify that the concrete cover over the reinforcement is that specified on Drawings.
- B. Verify that anchor bolts, reinforcement, and all other embedded items are provided and held securely, positioned accurately, and will not be a detriment to concrete placement.
- C. Examine all adjoining work on which this Work is in anyway dependent for proper installation and workmanship. Report to the Engineer any conditions which prevents the performance of this Work.

3.02 PROTECTION

- A. Protect structural members from freezing after installation.
- B. Protect adjacent finish materials and previously poured concrete against spatter during concrete placement.

3.03 PREPARATION

A. Remove ice, excess water, trash, and rubbish from forms.

- B. Remove hardened concrete from inner surfaces of conveying equipment and all formwork, reinforcement, and dowels.
- C. Prepare previously placed concrete to be in contact with new concrete in the manner described under "Construction Joints", below.
- D. Prepare existing concrete to be in contact with new concrete by roughening and cleaning the surface and applying a bonding agent.
- E. In case a conflict arises between concrete as poured and other Work, which requires cutting into concrete slabs, submit requests to the Engineer, who will issue instructions accordingly. Cutting of concrete is otherwise prohibited.
- F. Sprinkle "semi porous" grades with water to prevent suction and provide concrete seal for porous subgrade.
- 3.04 JOINTS AND EMBEDDED ITEMS (NOT USED)
- 3.05 MIXING AND PLACING CONCRETE
 - A. General

Notify Engineer at least 72 hours in advance of each concrete placement. Do not place concrete without approval of the Engineer. Notify the Testing Agency regarding any concrete testing activities on site.

B. Mixing

- Batch, mix, and transport ready-mixed concrete in accordance with the appropriate sections of ASTM C94. Truck mixers and agitators shall meet the requirements of the Truck Mixers Manufacturer's Bureau or shall comply with Section 11 of ASTM C94. Batch all other concretes in accordance with sections 4.3, 5.3 and 6.3 of ACI 301.
- Batch ready-mixed concrete only in plants which meet the latest standards of the National Ready-Mix Concrete Association (NRMCA). Only plants meeting the requirements for certification of the NRMCA for automatic batching and automatic recording will be permitted.
- 3. Bob mixed concrete shall be mixed in accordance with paragraph 5.8.3 of ACI 318-11.
- 4. Tempering and control of mixing water
 - Mix concrete only in quantities for immediate use. Concrete which has started to set shall not be re-tempered, but shall be discarded.

- b. When feasible, all mixing water shall be batched at the plant. If due to hot weather or long hauling distance, the Engineer may permit withholding of some of the mixing water. Adding water at the site will require an additional 30 revolutions at mixing speed to incorporate the water in the mix.
- c. If all the water allowed by the design mix has not been added at the start of mixing, it may be permissible to add the remaining allowable water at the point of delivery provided there is an accurate method of measuring the amount of water. When concrete arrives at the project with slump below that suitable for placing as indicated in the Specifications, water may be added only if neither the maximum permissible water-cement ratio nor the maximum slump is exceeded and only at the direction of the Engineer. Water shall not be added if any of the batch has been unloaded.
- d. The water shall be incorporated by additional mixing equal to at least half of the total mixing required. An addition of water above that permitted by the limitation on water- cement ratio shall be accompanied by a quantity of cement sufficient to maintain the proper water-cement ratio. Such addition shall be authorized by the Engineer.

5. Weather Conditions

- a. Cold weather
 - The temperature of concrete delivered at the site shall conform to the temperature limitations given in Section 5 of ACI 301-99 Specifications for Structural Concrete for Buildings.
 - 2) If water or aggregate is heated above 100°F, combine the water with the aggregate in the mixer before cement is added. Cement shall not be mixed with water or with mixtures of water and aggregate having a temperature greater than 100°F.
 - 3) Detailed requirements are given in ACI 306.

b. Hot Weather

 Cool the ingredients before mixing, or substitute flake ice or wellcrushed ice of a size that will melt completely during mixing for all or part of the mixing water if, due to high temperature, low slump, flash set, or cold joints are encountered.

2) Detailed requirements are given in ACI 305.

6. Admixtures - General

- a. Add all admixtures prior to mixing unless otherwise specified or directed.
- b. Air-entraining admixtures and other chemical admixtures shall be charged into the mixer as solutions and shall be measured by means of an approved mechanical dispensing device. The liquid shall be considered a part of the mixing water. Admixtures that cannot be added in solution may be weighed or may be measured by volume if so recommended by the manufacturer. The accuracy of measurement of any admixture shall be within +1.5 percent.
- c. If two or more admixtures are used in the concrete, add them separately to avoid possible interaction that might interfere with the efficiency of either admixture or adversely affect the concrete. Do not charge admixtures into the mixer in such a manner that they will come in direct contact with the cement.
- d. Use of accelerating admixtures in cold weather must be approved by the Engineer. Use of such admixture will not relax cold weather placement requirements.
- e. Use of retarding admixtures in hot weather must be approved by the Engineer. Use of such admixtures will not alter hot weather placement requirements.

C. Placing

1. General: Place concrete in accordance with ACI 304R and ACI 318.

2. Conveying

- a. Handle concrete from the mixer to place of final deposit as rapidly as practicable by methods that will prevent separation or loss of ingredients and in a manner that will assure that the required quality of concrete is obtained.
- b. Conveying equipment shall be approved and shall be of a size and design such that detectable setting of concrete shall not occur before adjacent concrete is placed.
- c. Conveying equipment shall be cleaned at the end of each operation or workday. Conveying equipment and operations shall conform to the following additional requirements:
 - 1) Truck mixers, agitators, and non-agitating units and their manner of operation shall conform to the applicable requirements of ASTM C94.
 - Pumping or pneumatic conveying equipment shall be of suitable kind with adequate pumping capacity. Pneumatic placement shall be controlled so that segregation is not apparent in the discharged concrete. The loss of slump in pumping or pneumatic conveying equipment shall not exceed 2".



Pumping is permitted only if a pump mix has been approved by the Engineer.

3. Depositing: Detailed recommendations are given in ACI 304R.

a. General

- Deposit concrete continuously, or in layers of such thickness that no concrete will be deposited on concrete which has hardened sufficiently to cause the formation of seams or planes of weakness within the section. If a section cannot be placed continuously, locate construction joints at points as provided for in the Drawings, shop drawings, or as approved.
- Carry out placement at such a rate that the concrete which is being integrated with fresh concrete is still plastic. Do not deposit concrete which has partially hardened or has been contaminated by foreign material.
- 3) Remove temporary spreaders in forms when the concrete placing has reached an elevation rendering their service unnecessary. They may remain embedded in the concrete only if made of metal or concrete and if prior approval has been obtained.
- b. Segregation: Deposit concrete as nearly as practicable in its final position to avoid segregation due to re-handling or flowing. Do not subject concrete to any procedure which will cause segregation.

c. Consolidation

- 1) Consolidation of concrete and the use and type of concrete shall be in accordance with ACI 309R.
- 2) Where a surface mortar is to be the basis of the finish, the coarse aggregate shall be worked back from the forms with a suitable tool so as to bring a full surface of mortar against the form, without the formation of excessive surface voids.
- 3) Consolidate all concrete by vibration so that the concrete is thoroughly worked around the reinforcement, around embedded items and into corners of forms, eliminating all air or stone pocket or weakness. Internal vibrators shall be the largest size and most powerful that can be used in the Work, as described in Table 5.1.5 of ACI 309R, with a minimum frequency of 7000 revolutions per minute and shall be operated by competent workmen. Over-vibrating and use of vibrators to transport concrete within forms is not permitted. Insert and withdraw vibrators at

many points, from 18" to 30" apart. At each insertion, the duration shall be sufficient to consolidate the concrete but not sufficient to cause segregation, generally from 5 to 15 sec duration. Keep a spare vibrator on the job site during all concrete placing operations.

- 4. Cold Weather Concrete Protection: Detailed requirements are given in ACI 306R and ACI 306.1. When the mean daily temperature of the atmosphere is less than 40°F during concreting, or within 24 hours thereafter, follow the procedures outlined in ACI 306R and 306.1 to protect the concrete. Temperature of the plastic concrete shall be no lower than 55°F. Heat all forms, reinforcing steel, and surfaces to receive concrete above the freezing point and keep them completely free of frost, snow, and ice.
- 5. Hot Weather Protection: When the mean daily temperature of the atmosphere is over 90°F during concreting, follow the procedures outlined in ACI 305R and ACI 305.1 to protect the concrete.
 - a. All concrete, at the time it is actually deposited in the forms, shall have a temperature not lower than 50°F but never above 90°F.
 - Cover reinforcement with water-soaked burlap to cool steel so its temperature will not exceed the ambient air temperature immediately before concrete placement.
 - c. Dry surfaces, which are to receive concrete, should be wet down before commencing placement of concrete and the temperature of such surfaces should not exceed the temperature of the concrete being placed.

3.06 FINISHING OF FORMED SURFACES AND REPAIR OF SURFACE DEFECTS

A. General

- 1. Remove forms as soon as practicable. Refer to Section 03 10 00.
- 2. Repair surface defects, including tie holes and cracks, immediately after form removal. Patches shall be of quality to match the specified finish.
- 3. Remove oil, grease, compounds, and other contaminants from surfaces and areas to be repaired.
- 4. Repair all cracks of whatever nature and other defects as directed by The Engineer and DDC.
- Provide finishes specified below immediately after form removal.
- 6. Provide curing and protection.

B. Repair of Surface Defects

- 1. Remove all honeycombed and other defective concrete down to sound concrete. If chipping is necessary, the edges shall be perpendicular to the surface or slightly undercut. Undercut all cracks a minimum of 1" x 1". No featheredges will be permitted. Dampen the area to be patched and an area at least 6" wide surrounding it to prevent absorption of water from the patching mortar. A bonding grout shall be prepared using a mix of approximately 1 part cement to 1 part fine sand passing a No. 30 mesh sieve, mixed to the consistency of thick cream, and then well brushed into the surface.
- 2. The patching mortar shall be made of the same materials and of approximately the same proportions as used for the concrete, except that the coarse aggregate shall be omitted and the mortar shall consist of not more than 1 part cement to 2¹/₂ parts sand by damp loose volume. Substitute white portland cement for a part of the gray portland cement on exposed concrete in order to produce a color matching the color of the surrounding concrete, as determined by a trial patch. The quantity of mixing water shall be no more than necessary for handling and placing.
- 3. After surface water has evaporated from the area to be patched, brush the bond coat well into the surface. When the bond coat begins to lose the water sheen, apply the premixed patching mortar. The mortar shall be thoroughly consolidated into place and struck off so as to leave the patch slightly higher than the surrounding surface. To permit initial shrinkage, leave it undisturbed for at least 1 hr before final finishing. Keep the patched area damp for 7 days. Do not use metal tools for finishing a patch in a formed wall which will be exposed.

C. Tie Holes and Other Repairs

- Remove ties, nails, and other form accessories below the concrete surface when the surface is exposed to view, the elements, or for surfaces to receive membrane waterproofing, cement coat waterproofing or concrete containing integral w.p. admixture. For surfaces not exposed to view or the above-mentioned conditions, remove metal to the surface. Refer to Section 03100.
- 2. Undercut surfaces of holes. After cleaning and thoroughly dampening the holes, fill them solid with the patching mortar. The mortar shall match the color of the existing concrete for concrete exposed to view as specified in paragraph B.2 above.

D. Formed Finishes

- 1. Rough Form Finish
 - a. Provide for concrete not exposed to view unless otherwise indicated.
 - b. Formwork material given in Section 03100.

- c. Repair surface as indicated above.
- d. Chip or rub off fins exceeding 1/4" in height.

2. Smooth Form Finish

- a. Provide for concrete exposed to view, concrete receiving membrane waterproofing, or as otherwise indicated.
- b. Formwork material given in Section 03100.
- c. Repair surfaces are indicated above.
- d. Chip or rub off fins completely and grind smooth.
- e. Provide smooth rubbed finish unless otherwise indicated below.

E. Acceptance of Concrete Finish

If the finish produced is not acceptable to the Engineer and DDC, the Contractor shall be responsible for all costs incurred to produce an acceptable finish by whatever means determined by the Engineer.

3.07 PATCHING AND REPAIRING EXISTING CONCRETE

- A. Provide bonding agent whenever new concrete is to be poured against existing concrete, whenever the time between concrete pours is longer than that allowed for proper bond, and wherever bonding agent is indicated on the Drawings to be applied.
- B. Remove loose concrete from surface to be bonded with new concrete and clean. Remove rust from reinforcement and structural steel by power chipping and power driven brushes.
- C. Apply bonding agent in accordance with manufacturer's specifications.

3.08 CURING AND PROTECTION

A. General

Begin curing concrete immediately after placement and finishing. Protect all freshly
deposited concrete from premature drying and excessively hot or cold temperatures
and maintain it with minimal moisture loss at a relatively constant temperature for the

period of time necessary for the hydration of the cement and proper hardening of the concrete. Detailed procedures are given in ACI 308.

- 2. Cure floor surfaces in accordance with ACI 308.
- 3. Do not apply curing compounds to surfaces receiving cement coat waterproofing, adhesives, membranes or additional concrete unless approved by adhesive or material manufacturer. Provide only wet curing.

B. Procedure

- 1. Concrete surfaces not in contact with forms:
 - a. Ponding or continuous non-manual sprinkling.
 - b. Absorptive mat or fabric, sand, or other covering kept continuously wet.
 - c. Curing compounds conforming to ASTM C309.
- 2. Concrete surfaces in contact with forms:
 - a. Minimize moisture loss from forms exposed to heating by the sun by keeping forms wet until they are removed.
 - b. After form removal, cure with one of the methods listed in 1 above.
- 3. Continue curing until a total of 7 days has elapsed during which the temperature of the air in contact with concrete has remained above 50°F. Prevent rapid drying during and at the end of the curing period.

C. Cold Weather Curing

Concrete must be protected from water loss. This shall be accomplished by the application as soon as possible without harm to the concrete surfaces of either (a) exhaust steam, or vapor-resistant paper or polyethylene film, or (b) curing compounds.

In all other respects, curing shall conform to applicable provisions of this Section. Concrete temperature shall be maintained between 50°F and 70°F.

D. Hot Weather Curing

1. During the period June 1 to October 1 or when hot weather conditions require it, maintain continuous water curing for a minimum period of twenty-four hours. Provide for windbreaks, shading, and other necessary provisions.

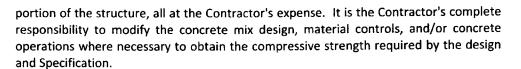
- After 24 hours, curing shall be by one of the methods specified under B above. In all
 other respects, curing shall conform to applicable provisions of this Specification. Upon
 termination of the specified moist curing, every effort should be made to reduce the
 rate of drying by avoiding air circulation.
- E. Protection from mechanical injury: Protect concrete from mechanical disturbances during curing period as described under "Protection and Cleaning".

3.09 FIELD QUALITY CONTROL

- A. All tests shall be performed by an independent testing agency retained by DDC.
- B. Tests to be performed during construction are as follows:
- 1. Compliance of materials to Specifications tested from production samples.
- 2. Determination of the slump of the concrete for each sample taken and whenever consistency of the concrete appears to vary using ASTM C143. The Engineer will reject any concrete that does meet the slump requirements.
- 3. Strength tests on the specimens shall be done in accordance with ASTM C39. Each group of specimens is considered one strength test. Three cylinders shall be tested at 28 days for acceptance and one at 7 days for information. If one specimen in a test manifests evidence of improper sampling, molding, or testing, it shall be discarded and the average strength of the remaining cylinders shall be considered the test result. Should all specimens in a test show any of the above defects, the entire test shall be discarded.
- Determination of air content and unit weight of normal weight concrete sample for each strength test in accordance with ASTM C173 or C231 for air content and ASTM C138 for density (unit weight).
- 5. Determination of temperature of concrete sample for each strength test.
- 6. Determination of water soluble chloride content in the concrete, percent by weight of cement, of each sample.

C. Evaluation and Acceptance of Concrete

- Strength tests on structural concrete shall be evaluated according to Section 5.6 of ACI 318-11.
- 2. When the average strength of the test cylinders, as defined in Section 5.6 of ACI 318-11 falls consistently below the specified strength (f'c), the Engineer or DDC's Representative shall have the right to order the Contractor to change the proportions or the water content of the concrete to secure the required strength for the remaining



- 3. When the average strength of test cylinders for any portion of the structure is less than that required by the design or Specification, or where there is other evidence that the quality of the concrete is below Specification requirements, the adequacy of the concrete will be checked according to the requirements of Section 5.6 of ACI 318-11 and Chapter 20 of ACI 318-11, either by structural analysis or by core or load tests or by any combination of these procedures. The Engineer will determine which procedures to use:
 - a. Structural Analysis Computations, which will be performed by the Engineer.
 - b. Core Tests Performed in accordance with ASTM C42.
 - c. Load Tests as per Chapter 20 of ACI 318-11..
 - d. Non-destructive tests.
- 4. Low Strength Tests of Concrete Results
 - a. General contractor shall pay for additional costs of labor and materials required at the job for all damages resulting from load tests and the taking of cores. Remove and replace concrete work that is not of adequate strength and cannot be made to work by remedial methods acceptable to the Engineer and DDC, at his own cost. The Contractor shall be held responsible for all delays and damages to the work of other Divisions that occur as a result of non-conformance.
 - b. Pay for all expenses borne by DDC, resulting from low strength test procedures specified above, if any.

3.10 PROTECTION AND CLEANING

A. General

During the curing period, and thereafter as conditions may require, protect the concrete from damage due from mechanical disturbances, particularly excessive load stresses, heavy shock, and excess vibration. Protect all finished concrete surfaces from damage caused by construction equipment, materials and/or methods and running water.

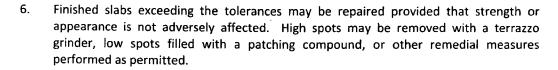
3.11 ACCEPTANCE OF CONCRETE WORK

A. General

- Completed concrete work that meets all applicable requirements will be accepted without qualification.
- 2. Completed concrete work which fails to meet one or more requirements but which has been repaired to bring it into compliance will be accepted without qualification.
- 3. Completed concrete work which fails to meet one or more requirements and which cannot be brought into compliance may be accepted or rejected as provided in these Specifications or in the Contract Documents. In this event, modifications may be required to assure that remaining work complies with the requirements.
- 4. Concrete work judged inadequate by structural analysis, core test, results of load test or deemed unacceptable due to appearance shall be repaired, reinforced with additional construction if so directed by the Engineer, or be replaced if so directed by the Engineer at the Contractor's expense.
- Pay all costs incurred by DCAS in providing additional testing and/or analysis required by this Section.
- 6. The Contractor will pay all costs of additional testing and analysis made at DCAS' request.

B. Dimensional Tolerances

- Formed surfaces resulting in concrete outlines smaller than permitted by the tolerances
 of Section 03 10 00 shall be considered potentially deficient in strength and subject to
 the provisions of paragraph D below.
- 2. Section 03 10 00 shall be considered potentially deficient in strength and subject to the provisions of paragraph D below.
- 3. Formed surfaces resulting in concrete outlines larger than permitted by the tolerances of Section 03 10 00 may be rejected and the excess material subject to removal. If removal of the excess material is permitted, it shall be accomplished in such a manner as to maintain the strength of the section and to meet all other applicable requirements of function and appearance.
- 4. Concrete members cast in the wrong location may be rejected if the strength, appearance, or function of the structure is adversely affected or if misplaced items interfere with other construction.
- 5. Inaccurately formed concrete surfaces exceeding the limits on Section 03 10 00 and which are exposed to view may be rejected and shall be repaired or removed and replaced if required at Contractor's expense.



C. Appearance

- 1. Concrete exposed to view with defects which adversely affect the appearance of the specified finish may be repaired only by approved methods.
- 2. Concrete not exposed to view is not subject to rejection for defective appearance.

D. Strength of Structure

- The strength of the structure in place will be considered potentially deficient if it fails to comply with any requirements which control the strength of the structure, including but not necessarily limited to the following conditions:
 - a. Low concrete strength as described under "Field Quality Control", above.
 - b. Reinforcing steel size, quantity, strength, position, or arrangement at variance with the requirements of Section 03 20 00 or the Contract Documents.
 - c. Concrete which differs from the required dimensions or location in such a manner as to reduce the strength.
 - d. Curing less than that specified.
 - e. Inadequate protection of concrete from extremes of temperature during early stages of hardening and strength development.
 - f. Mechanical injury as defined under "Protection and Cleaning", construction fires, accidents, or premature removal of formwork likely to result in deficient strength.
- 2. Structural analysis and/or additional testing may be required when the strength of the structure is considered potentially deficient.
- 3. Core tests may be required when the strength of the concrete in place is considered potentially deficient.
- 4. If core tests are inconclusive or impractical to obtain or if structural analysis does not confirm the safety of the structure, load tests may be required at the Contractor's expense, and their results evaluated in accordance with Chapter 20 of ACI 318.

END OF SECTION 03 30 00



PART 1 - GENERAL

1.1 SUMMARY

- A. Section includes maintenance of stone assemblies consisting of stone restoration and cleaning as follows:
 - 1. Repairing stone masonry, including replacing whole units.
 - 2. Repointing joints.
 - 3. Preliminary cleaning, including removing plant growth.
 - 4. Cleaning exposed stone surfaces.

1.2 UNIT PRICES- not applicable

1.3 DEFINITIONS

A. Low-Pressure Spray: 100 to 400 psi.

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1.4 ACTION SUBMITTALS

- A. Product Data: For each type of product indicated.
- B. Shop Drawings: For the following:
 - 1. Replacement stone units and their jointing, showing relation of existing to new units.
 - 2. Provisions for expansion joints or other sealant joints.
- C. Samples: For each exposed product and for each color and texture specified.

1.5 QUALITY ASSURANCE

- A. Restoration Specialist Qualifications: Engage an experienced stone restoration and cleaning firm to perform work of this Section. Firm shall have completed work similar in material, design, and extent to that indicated for this Project with a record of successful in-service performance. Experience installing standard unit masonry or new stone masonry is not sufficient experience for stone restoration work.
 - 1. At Contractor's option, work may be divided between two specialist firms: one for cleaning work and one for repair work.

- 2. Field Supervision: Restoration specialist firms shall maintain experienced full-time supervisors on Project site during times that stone restoration and cleaning work is in progress.
- 3. Restoration Worker Qualifications: Persons who are experienced in restoration work of types they will be performing. When stone units are being patched, assign at least one worker among those performing patching work who is trained and certified by manufacturer of patching compound to apply its products.
- B. Mockups: Prepare mockups of restoration and cleaning to demonstrate aesthetic effects and set quality standards for materials and execution and for fabrication and installation.
 - 1. Stone Repair: Prepare sample areas for each type of stone indicated to have repair work performed. Erect sample areas in existing walls unless otherwise indicated, to demonstrate quality of materials, workmanship, and blending with existing work. Include the following as a minimum:
 - a. Replacement: Four stone units replaced.
 - b. Patching: Three small holes at least 1 inch in diameter.
 - 2. Cleaning: Clean an area approximately 25 sq. ft. for each type of stone and surface condition.
- C. Preinstallation Conference: Conduct conference at Project site

PART 2 - PRODUCTS

2.1 STONE MATERIALS

- A. Stone: Provide natural building stone of variety, physical properties, color, texture, grain, veining, finish, size, and shape to match existing stone.
 - 1. For existing stone that exhibits a range of colors, texture, grain, veining, finishes, sizes, or shapes, provide stone that proportionally matches that range rather than stone that matches an individual color, texture, grain, veining, finish, size, or shape within that range.

2.2 MORTAR MATERIALS

- A. Portland Cement: ASTM C 150, Type I or Type II, white where required for color matching of exposed mortar.
 - Provide cement containing not more than 0.60 percent total alkali when tested according to ASTM C 114.
- B. Hydrated Lime: ASTM C 207, Type S.
- C. Mortar Sand: ASTM C 144 unless otherwise indicated.

- 1. Color: Provide natural sand or ground marble, granite, or other sound stone of color necessary to produce required mortar color.
- 2. Match size, texture, and gradation of existing mortar sand as closely as possible. Blend several sands if necessary to achieve suitable match.
- D. Mortar Pigments: Natural and synthetic iron oxides, compounded for mortar mixes. Use only pigments with a record of satisfactory performance in masonry mortars.
- E. Water: Potable.

2.3 MANUFACTURED REPAIR MATERIALS

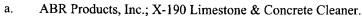
- A. Stone Patching Compound: Factory-mixed cementitious product that is custom manufactured for patching stone.
 - 1. Products: Subject to compliance with requirements, available products that may be incorporated into the Work include, but are not limited to, the following:
 - a. Cathedral Stone Products, Inc.; Jahn Restoration Mortars.
 - b. Conproco Corporation;
 - c. Edison Coatings, Inc.; Custom System 45.
 - d. Or approved equal
 - 2. Use formulation that is vapor- and water permeable (equal to or more than the stone), exhibits low shrinkage, has lower modulus of elasticity than the stone units being repaired, and develops high bond strength to all types of stone.
 - 3. Formulate patching compound in colors, textures, and grain to match stone being patched.
- B. Stone-to-Stone Adhesive: 2-part polyester or epoxy-resin stone adhesive with a 15- to 45-minute cure at 70 deg F (21 deg C)] or [1-part cementitious stone adhesive], recommended by adhesive manufacturer for type of stone repair indicated, and matching stone color.
 - 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. Two-Part Polyester or Epoxy-Resin Stone Adhesive:
 - 1) Akemi North America; MS76 Stone and Marble Adhesive.
 - 2) Bonstone Materials Corporation; Fast Set 41.
 - 3) Edison Coatings, Inc.; Flexi-Weld 520T.
 - b. One-Part Cementitious Stone Adhesive:
 - 1) Cathedral Stone Products, Inc.; Jahn Restoration Adhesive.
 - 2) Or approved equal

2.4 PAINT REMOVERS

- A. Covered or Skin-Forming Alkaline Paint Remover: Manufacturer's standard covered or skin-forming alkaline formulation for removing paint coatings from masonry.
 - 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. ABR Products, Inc.; Grip 'N Strip 800 Fast Acting.
 - b. Diedrich Technologies Inc.; 606 Multi-Layer Paint Remover or 606X Extra Thick Multi-Layer Paint Remover with pull-off removal system.
 - c. Dumond Chemicals, Inc.; Peel Away 1 System.
 - d. PROSOCO; Enviro Klean Safety Peel 1 with Enviro Klean Overcoat.

2.5 CLEANING MATERIALS

- A. Water: Potable.
- B. Nonacidic Gel Cleaner: Manufacturer's standard gel formulation, with pH between 6 and 9, that contains detergents with chelating agents and is specifically formulated for cleaning masonry surfaces.
 - 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. Price Research, Ltd.; Price Marble Cleaner-Gel.
 - b. PROSOCO; Sure Klean 942 Limestone and Marble Cleaner.
 - c. Or approved equal
- C. Nonacidic Liquid Cleaner: Manufacturer's standard mildly alkaline liquid cleaner formulated for removing mold, mildew, and other organic soiling from ordinary building materials, including polished stone, brick, aluminum, plastics, and wood.
 - 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. Diedrich Technologies Inc.; Diedrich 910PM Polished Marble Cleaner.
 - b. Dominion Restoration Products, Inc.; Bio-Cleanse.
 - c. Dumond Chemicals, Inc.; Safe n' Easy Architectural Cleaner/Restorer.
 - d. Price Research, Ltd.; Price Non-Acid Masonry Cleaner.
 - e. PROSOCO; Enviro Klean 2010 All Surface Cleaner.
 - f. Or approved equal.
- D. One-Part Limestone Cleaner: Manufacturer's standard one-part acidic formulation for cleaning limestone.
 - 1. Products: Subject to compliance with requirements, available products that may be incorporated into the Work include, but are not limited to, the following:



- b. Hydroclean, Hydrochemical Techniques, Inc.; Hydroclean Limestone and Marble Cleaner and Brightener (HT-907).
- c. Price Research, Ltd.; Price Limestone Restorer.
- d. PROSOCO; Sure Klean Limestone Restorer.
- e. Or approved equal.

2.6 ACCESSORY MATERIALS

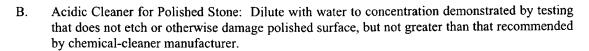
- A. Stone Anchors and Pins: Type and size indicated or, if not indicated, to match existing anchors in size and type. Fabricate anchors and pins from Type 304 stainless steel.
- B. Setting Buttons: Resilient plastic buttons, nonstaining to stone, sized to suit joint thicknesses and bed depths of stone units without intruding into required depths of pointing materials.

2.7 MORTAR MIXES

- A. Measurement and Mixing: Measure cementitious materials and sand in a dry condition by volume or equivalent weight. Do not measure by shovel; use known measure. Mix materials in a clean, mechanical batch mixer.
 - 1. Mixing Pointing Mortar: Thoroughly mix cementitious materials and sand together before adding any water. Then mix again adding only enough water to produce a damp, unworkable mix that will retain its form when pressed into a ball. Maintain mortar in this dampened condition for 15 to 30 minutes. Add remaining water in small portions until mortar reaches desired consistency. Use mortar within one hour of final mixing; do not retemper or use partially hardened material.
- B. Colored Mortar: Produce mortar of color required by using specified ingredients. Do not alter specified proportions without Architect's approval.
 - 1. Mortar Pigments: Where mortar pigments are indicated, do not exceed a pigment-tocement ratio of 1:10 by weight.
- C. Do not use admixtures in mortar unless otherwise indicated.
- D. Mortar Proportions: Mix mortar materials in the following proportions:
 - 1. Pointing Mortar for Stone: 1 part white portland cement, 1 part lime, and 6 parts sand.
 - 2. Rebuilding (Setting) Mortar: Same as pointing mortar except mortar pigments are not required.

2.8 CHEMICAL CLEANING SOLUTIONS

A. Dilute chemical cleaners with water to produce solutions not exceeding concentration recommended by chemical-cleaner manufacturer.



PART 3 - EXECUTION

3.1 PROTECTION

- A. Protect persons, motor vehicles, surrounding surfaces of building being restored, building site, plants, and surrounding buildings from harm resulting from stone restoration work.
- B. Comply with chemical-cleaner manufacturer's written instructions for protecting building and other surfaces against damage from exposure to its products. Prevent chemical cleaning solutions from coming into contact with people, motor vehicles, landscaping, buildings, and other surfaces that could be harmed by such contact.
 - Cover adjacent surfaces with materials that are proven to resist chemical cleaners used unless chemical cleaners being used will not damage adjacent surfaces. Use materials that contain only waterproof, UV-resistant adhesives. Apply masking agents to comply with manufacturer's written instructions. When no longer needed, promptly remove masking to prevent adhesive staining.
 - 2. Keep wall wet below area being cleaned to prevent streaking from runoff.

3.2 STONE REMOVAL AND REPLACEMENT

- A. At locations indicated, remove stone that has deteriorated or is damaged beyond repair Carefully demolish or remove entire units from joint to joint, without damaging surrounding stone, in a manner that permits replacement with full-size units.
- B. Support and protect remaining stonework that surrounds removal area. Maintain flashing, reinforcement, lintels, and adjoining construction in an undamaged condition.
- C. Notify Architect of unforeseen detrimental conditions including voids, cracks, bulges, and loose units in existing stone or unit masonry backup, rotted wood, rusted metal, and other deteriorated items.
- D. Remove in an undamaged condition as many whole stone units as possible.
 - 1. Remove mortar, loose particles, and soil from stone by cleaning with hand chisels, brushes, and water.
 - 2. Remove sealants by cutting close to stone with utility knife and cleaning with solvents.
- E. Clean stone surrounding removal areas by removing mortar, dust, and loose particles in preparation for replacement.

- F. Replace removed damaged stone with other removed stone in good quality, where possible, or with new stone matching existing stone, including size. Do not use broken units unless they can be cut to usable size.
- G. Do not allow face bedding of stone. Before setting, inspect to verify that each stone has been cut so that, when it is set in final position, natural bedding planes are essentially horizontal. Reject and replace stones with vertical bedding planes except as required for arches, lintels, and copings.
- H. Install replacement stone into bonding and coursing pattern of existing stone. If cutting is required, use a motor-driven saw designed to cut stone with clean, sharp, unchipped edges. Finish edges to blend with appearance of edges of existing stone.
 - 1. Maintain joint width for replacement stone to match existing joints.
 - 2. Use setting buttons or shims to set stone accurately spaced with uniform joints.
- Set replacement stone with completely filled bed, head, and collar joints. Butter vertical joints
 for full width before setting and set units in full bed of mortar unless otherwise indicated.
 Replace existing anchors with new anchors of size and type indicated.
 - 1. Tool exposed mortar joints in repaired areas to match joints of surrounding existing stonework.
 - 2. When mortar is sufficiently hard to support units, remove shims and other devices interfering with pointing of joints.

3.3 STONE-FRAGMENT REPAIR

- A. Carefully remove cracked or fallen stone fragment indicated to be repaired. Reuse only stone fragment that is in sound condition.
- B. Remove soil, loose particles, mortar, and other debris or foreign material, from fragment surfaces to be bonded and from parent stone where fragment had broken off, by cleaning with stiff-fiber brush.

3.4 STONE PATCHING

- A. Remove deteriorated material and remove adjacent material that has begun to deteriorate. Carefully remove additional material so patch will not have feathered edges but will have square or slightly undercut edges on area to be patched and will be at least 1/4 inch (6 mm) thick, but not less than recommended by patching compound manufacturer.
- B. Mask adjacent mortar joint or rake out for repointing if patch will extend to edge of stone unit.
- C. Mix patching compound in individual batches to match each stone unit being patched.
- D. Brush-coat stone surfaces with slurry coat of patching compound according to manufacturer's written instructions.

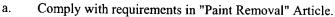
- E. Place patching compound in layers as recommended by patching compound manufacturer, but not less than 1/4 inch (6 mm) or more than 2 inches (50 mm) thick. Roughen surface of each layer to provide a key for next layer.
 - 1. Trowel, scrape, or carve surface of patch to match texture and surrounding surface plane or contour of the stone. Shape and finish surface before or after curing, as determined by testing, to best match existing stone.
- F. Keep each layer damp for 72 hours or until patching compound has set.
- G. Remove and replace patches with hairline cracks or that show separation from stone at edges, and those that do not match adjoining stone in color or texture.

3.5 CLEANING STONE, GENERAL

- A. Proceed with cleaning in an orderly manner; work from top to bottom of each scaffold width and from one end of each elevation to the other. Ensure that dirty residues and rinse water will not wash over cleaned, dry surfaces.
- B. Use only those cleaning methods indicated for each stone material and location.
 - Do not use wire brushes or brushes that are not resistant to chemical cleaner being used.
 Do not use plastic-bristle brushes if natural-fiber brushes will resist chemical cleaner being used.
- C. Perform each cleaning method indicated in a manner that results in uniform coverage of all surfaces, including corners, moldings, and interstices, and that produces an even effect without streaking or damaging stone surfaces.
- D. Water-Spray Application Method: Unless otherwise indicated, hold spray nozzle at least 6 inches (150 mm) from surface of stone and apply water in horizontal back and forth sweeping motion, overlapping previous strokes to produce uniform coverage.

3.6 PRELIMINARY CLEANING

- A. Preliminary Cleaning: Before beginning general cleaning, remove extraneous substances that are resistant to cleaning methods being used. Extraneous substances include paint, calking, asphalt, and tar.
 - 1. Carefully remove heavy accumulations of material from surface of stone with sharp chisel. Do not scratch or chip stone surface.
 - 2. Remove paint and calking with alkaline paint remover.
 - a. Comply with requirements in "Paint Removal" Article.
 - b. Repeat application up to two times if needed.
 - 3. Remove asphalt and tar with solvent-type paint remover.



- b. Apply paint remover only to asphalt and tar by brush without prewetting.
- c. Allow paint remover to remain on surface for 10 to 30 minutes.
- d. Repeat application if needed.

3.7 CLEANING STONEWORK

A. Detergent Cleaning:

- 1. Wet stone with cold or hot water (per manufacture's recommendations) applied by low-pressure spray.
- Scrub stone with detergent solution using medium-soft brushes until soil is thoroughly
 dislodged and can be removed by rinsing. Use small brushes to remove soil from mortar
 joints and crevices. Dip brush in solution often to ensure that adequate fresh detergent is
 used and that stone surface remains wet.
- 3. Rinse with cold or hot water (per manufacture's recommendations) applied by low pressure spray to remove detergent solution and soil.
- 4. Repeat cleaning procedure above where required to produce cleaning effect established by mockup.

B. Nonacidic Gel Chemical Cleaning:

- 1. Wet stone with cold or hot (per manufacture's recommendations) water applied by low-pressure spray.
- 2. Apply nonacidic gel cleaner in 1/8-inch (3-mm) thickness by brush, working into joints and crevices. Apply quickly and do not brush out excessively so area will be uniformly covered with fresh cleaner and dwell time will be uniform throughout area being cleaned.
- 3. Let cleaner remain on surface for period indicated below:
 - a. As recommended by chemical-cleaner manufacturer.
 - b. As established by mockup.
- 4. Remove bulk of nonacidic gel cleaner by squeegeeing into containers for disposal.
- 5. Rinse with cold or hot water (per manufacture's recommendations) applied by low-pressure spray to remove chemicals and soil.
- 6. Repeat cleaning procedure above where required to produce cleaning effect established by mockup. Do not repeat more than once.

C. Nonacidic Liquid Chemical Cleaning:

- 1. Wet stone with hot water applied by low-pressure spray.
- 2. Apply cleaner to stone in two applications by brush. Let cleaner remain on surface for period indicated below:
 - As established by mockup.
- 3. Rinse with cold or hot water applied (per manufacture's recommendations) by low pressure spray to remove chemicals and soil.

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4. Repeat cleaning procedure above where required to produce cleaning effect established by mockup. Do not repeat more than once.

3.8 FINAL CLEANING

- A. After mortar has fully hardened, thoroughly clean exposed stone surfaces of excess mortar and foreign matter; use wood scrapers, stiff-nylon or -fiber brushes, and clean water, spray applied at low pressure.
 - 1. Do not use metal scrapers or brushes.
 - 2. Do not use acidic or alkaline cleaners.

END OF SECTION 040140

SECTION 05 12 00 - STRUCTURAL STEEL

PART 1 - GENERAL

1.1 DESCRIPTION OF WORK

A. Furnish and erect all structural steel for new for all new roof-mounted mechanical equipments, including but not limited to as shown on Drawings. Provide shop painting and galvanizing as specified.

1.2 REFERENCES

- A. American Society of Testing and Materials (ASTM) standards, latest editions.
 - A992 Standard Specification for Steel for Structural Shapes for us in Building Framing.
 - A6 Standard Specification for General Requirements for Rolled Steel Plates, Shapes, Sheet Piling, and Bars for Structural Use.
 - A36 Standard Specification for Structural Steel. (Angles and Plates)
 - A123 Standard Specification for Zinc (Hot-Dip Galvanized) Coatings on Iron and Steel Products.
 - A153 Standard Specification for Zinc Coating (Hot-Dip) on Iron and Steel Hardware.
 - A325 Standard Specification for High-Strength Bolts for Structural Steel Joints.
 - A501 Standard Specification for Hot-Formed Welded Seamless Carbon Steel Structural Tubing.
 - A780 Standard Practice for Repair of Damaged Hot-Dip Galvanized Coating.
- B. "Specification for the Design, Fabrication and Erection of Structural Steel for Buildings" 8th edition, including supplements. American Institute of Steel Constructors (AISC).
- C. "Standard Welding Symbols A2.0" American Welding Society (AWS).
- D. "Structural Welding Code D1.1" AWS.
- E. "Solvent Cleaning SP1" Steel Structures Painting Council (SSPC).
- F. "Hand Tool Cleaning SP2" SSPC.
- G. "Power Tool Cleaning SP3" SSPC.

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- H. "Commercial Blast Cleaning SP6" SSPC.
- 1.3 SUBMITTALS
 - A. Product Data

Submit manufacturers' specifications for the following products:

- 1. Primer paint, galvanizing repair paint
- 2. Proprietary bolts, fasteners
- B. Shop Drawings
 - 1. Failure to submit legible shop drawings will be cause for disapproval without review.
 - 2. Immediately after award of Contract and before preparing steel shop drawings, submit for review and approval, a set of job standards showing all necessary joint details with full particulars of connection pieces, shop and field welds, and holes for erection bolts and permanent bolts. Do not order steel in advance of approval of the job standards and the erection plans with joint marks.
 - 3. Prepare remainder of steel shop drawings after approval of erection plan. Submit drawings for review and approval. All drawings shall be prepared under supervision of and bear the seal of a Licensed Professional Engineer (New York State). First submissions of all drawings shall have one set sealed and signed by the Engineer. After final approval of all shop drawings, submit a final set sealed and signed by the Professional Engineer.
 - 4. Steel shop drawings shall include framing plans, bolted and welded work, and details such as camber and other pertinent data not shown on job standards. Connection details for individual beams are not required to be submitted provided that all such connections are covered by the job standard details. Coordinate with Drawings of other Work.
 - 5. Indicate welds by standard AWS symbols and show size, length, and type of each weld in accordance with AWS A2.0.
 - 6. Shop drawings will be checked for size of material and strength of connection by the Engineer, which shall not render the Engineer responsible for any errors in construction dimensions, etc. which shall have been made in preparation of shop drawings. The Contractor shall assume full responsibility for the correctness of dimensions and fit.
 - 7. Calculations shall be submitted.
- C. Quality Control Submittals
 - 1. Certificates and Affidavits



- b. Furnish bolt test reports, covering physical and chemical tests, for each lot of high strength bolts submitted.
- Furnish certificate certifying welders employed on the Work have met AWS
 qualifications within the previous twelve months.
- Furnish complete listing of ASTM's of materials listed in Part 2 of this Section and certification that materials supplied meet those listed.

1.4 QUALITY ASSURANCE

A. Qualifications

- 1. Fabricator: Company specializing in the fabrication of steel products to be used in this Contract shall have a minimum of five years experience.
- 2. Erector: Company specializing in performing the Work of this Section shall have a minimum of three years experience and have done at least three projects with similar quantity of material.
- 3. Detailer: Connections shall be detailed under direct supervision of a Professional Engineer experienced in design of this Work and licensed by the State of NY.

B. Regulatory Requirements

- Building Code: Work of this Section shall conform to all requirements of the NYC Fire
 and Building Code and all applicable regulations of governmental authorities having
 jurisdiction, including safety, health, noise, and anti-pollution regulations. Where more
 severe requirements than those contained in the NYC Fire and Building Code are given in
 this Section, the requirements of this Section shall govern.
- Rules for Arc and Gas Welding and Oxygen Cutting and Steel Covering the Specifications for Design, Fabrication, and Inspection of Arc and Gas Welded Steel Structures and Qualification of Welders and Supervisors shall conform to all requirements of the NYS Uniform Fire Prevention and Building Code.
- Industry Standards: Standards specified in paragraph 1.02 apply to Work of this Section.
 Where more severe requirements then those contained in the Standards are given in
 this Section or the Building Code, requirements of this Section or the Building Code shall
 govern.
 - a. "Specifications for Structural Joints using ASTM A325 or A490 Bolts" approved by the Research Council on Riveted and Bolted Structural Joints of the Engineering Foundation (RCRBSJ) - AISC.





C. Certifications

- 1. Structural steel shall conform to the material acceptance, certification, and inspection requirements of the NYC Building Code.
- Qualify welding processes and welding operators in accordance with AWS "Standard Qualification Procedure".

1.5 DELIVERY, STORAGE, AND HANDLING

- A. Deliver materials to the site at such intervals as to insure uninterrupted progress of Work.
- B. Store materials to permit easy access for inspection and identification.
 - Shop-primed steel. (Painted or galvanized): Primed steel stored in the field or shop shall be kept off ground (using pallets, platforms, or other supports) and so positioned as to minimize water-holding pockets, dust, and other contamination of the primer. Repair damage to primed surfaces due to improper storage in a manner approved by DCAS.
 - Unpainted Steel: Steel stored in field or shop shall be kept of ground (using pallets, platforms or other supports), kept clean and in general protected against damage and corrosion.
- C. Do not store materials on erected structure in a manner that might cause distortion or damage to the members or supporting structures. Repair or replace damaged materials or structures as directed by the DCAS.

1.6 FIELD MEASUREMENTS

A. Take field measurements as required by Drawings. Verify that field measurement are same as those shown on Drawings and shop drawings. Report all deviations to the Engineer in writing.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Paint

- 1. Tnemec Co.
- 2. Sherwin Williams
- 3. Con-Lux



B. Proprietary Anchor Bolts, Fasteners

- 1. Hilti, Inc.
- 2. ITW Ramset/Redhead, Inc.
- 3. Or approved equal

2.2 MATERIAL

A. Structural Steel Shapes, Plates, and Bars

Structural steel shall conform to the provisions of ASTM A992 and ASTM A572 Grade 50 and tube steel to the provisions of ASTM A500, Grade B, unless otherwise noted. Angles and plates shall have conform to the provisions of ASTM A36.

B. Bolts

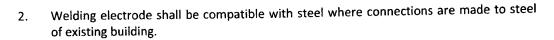
- Anchor Bolts: Shall conform to the provisions of ASTM F1554. Size and detailing indicated on Drawings.
- Unfinished Bolts: Shall conform to the provision of ASTM F1554.
- High-Strength Bolts: Shall conform to the requirements of ASTM A325 unless otherwise indicated on Drawings.
- 4. Proprietary Epoxy Bolts, Fasteners, etc.: Provide types as indicated on Drawings.
- Bolts including hardware exposed to weather shall be galvanized in accordance with ASTM A153.

D. Hardware

- Nuts for anchor bolts and unfinished bolts shall conform to the requirements of ASTM A563.
- Nuts for high-strength bolts shall conform to the provisions of ASTM A194 or ASTM A563 as specified in ASTM A325.
- Washers shall conform to the provisions of ASTM F436.

E. Filler Metal for Welding

 Welding electrode shall conform to E70XX classification of AWS A5.1, except as described below.



F. Structural Steel Primer Paint

Provide type of primer indicated on steel under the following application conditions.

 General application: Modified alkyd rust-inhibitive type containing no lead equal to Tnemec Co. No. 10-99 or Con-lux Ferrox 25 Red Primer. Red oxide paint is not acceptable.

2.3 SHOP ASSEMBLY - FABRICATION

A. General

- 1. Do not fabricate until shop drawings have been approved.
- Fabricate and assemble steel in shop to greatest extent possible. Fabricate items and assemblies in accordance with AISC Specifications and the shop drawings.
- 3. Properly mark members for field assembly. Fabricate items in order to match delivery sequence which will expedite erection.
- 4. Mill column ends at base plates, cap plates, and splices to a common plane by means of an approved milling machine.

B. Shop Connections

- Weld or high-strength bolt shop connections as indicated on Drawings.
- High-strength bolt connections are bearing type connections. Install high-strength bolts in accordance with "Specification for Structural Joints using ASTM A325" (RCRBSJ).
- 3. Welding: Comply with "Structural Welding Code" for procedures, appearance, and quality of welds and methods used in correcting welded work.

4. Holes for other Work

- Provide holes and openings required for securing other Work to steel framing and for passage of other Work through framing members. Coordinate with Drawings of other Work.
- b. Provide threaded nuts welded to framing, and other specialty items as indicated to receive other Work.
- Cut, drill, or punch holes perpendicular to metal surfaces. Do not flame cut holes or enlarge holes by burning. Drill holes in bearing plates.



2.4 SHOP PAINTING (Miscellaneous Steelwork)

A. General

Apply one shop coat of primer paint on structural steel except as follows:

- 1. Contact surfaces of structural steel that are to be bolted or welded together.
- 2. Surfaces of structural steel within 2" of field welds. Field apply primer coat and paint finish after welding.
- 3. Contact milled bearing surfaces.
- 4. Exterior steel members and clips to be galvanized.

B. Cleaning and Surface Preparation

- 1. Clean all steel first in accordance with SSPC-SP1.
- Hand tool clean steel work not to be painted (except steel work to be galvanized) in accordance with SSPC-SP2. Steel work to be galvanized shall be power tool cleaned in accordance with SSPC-SP3.
- 3. Clean steel work to be painted within the same day as it will be applied and in accordance with the following methods, determined by location and exposure:
 - a. Interior steel not exposed to view: SSPC-SP2.
 - b. Interior steel exposed to view: SSPC-SP3.

C. Shop Coat

- Apply structural steel primer paint (general application) at a rate to provide dry film thickness of 2.0 to 3.5 mils. Apply primer paint (cavity wall and exterior application) at a rate to provide dry film thickness of 4.0 to 6.0 mils. Provide full coverage of joints, corners, edges, and exposed surfaces.
- Apply to dry surfaces only, when surface temperatures are above dew-point, by brush, spray, or roller, thoroughly and evenly, in strict accord with manufacturer's instructions for every detail of handling.
- 3. Apply second coat of the approved primer, in a darker shade, to surfaces inaccessible to painting after assembly or erection.
- 4. Protect machined surfaces with an approved rust-inhibitive coating which is readily removable prior to erection.

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2.6 SOURCE QUALITY CONTROL

A. Testing

1. General

- a. Where materials are identified and certified for quality and strength by a recognized authoritative inspection service, grading organization or testing laboratory acceptable to make such tests, such material shall conform to the specifications and stresses as set forth in Table I-802 of the NYS Uniform Fire Prevention and Building Code. Structural steel welding and bolted connections are subject to inspection and shall be performed as necessary prior to assembly, during assembly, during welding and after welding as per RS 24-1 (AISC) Specifications for Structural Steel Buildings, Allowable Stress Design and Plastic Design, June 1, 1989 and American Welding Society, AWS D1.1.
- b. Cooperate with the Testing Laboratory in making all required tests.
- 2. Tests: To be performed by the Testing Laboratory engaged by DCAS.
 - a. Shop bolted connections: Tested in accordance with AISC specifications.
 - b. Shop welding: The laboratory will perform the following functions:
 - 1) Certify welders.
 - 2) Visually inspect all welds, record type and locations of defects, and perform tests if necessary. Check all corrected work.
 - Perform following non-destructive tests if necessary or as required by Engineer for Controlled Inspection. Tests used shall be at Engineer for Controlled Inspection or Testing Laboratory option:
 - a) Liquid Penetrant Inspection: ASTM E165.
 - b) Magnetic Particle Inspection: ASTM E109. Perform on roof pass and on finished weld.
 - c) Radiographic Inspection: ASTM E94 or E149. Minimum quality level 2-2T.
 - d) Ultrasonic Inspection: ASTM E164.
 - c. Coupon Test: The laboratory will perform coupon tests of the steel of the existing building to determine compatible electrode for welding new steel to existing.
- 3. Welding of Critical Joints

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- a. All welded joints that are critical to the integrity of the structure, and require nondestructive testing to assure the adequacy of the critical weld, are indicated on the Drawings.
- b. To insure general weld quality of less critical groove and butt welds, a quality control program may be required to check the welds by non-destructive testing. The Drawings specify whether non-destructive testing is required and, if necessary, the method of inspection.
- c. Requirements of critical welds and non-destructive testing shall be in conformance with AWS D1.1.

B. Inspection

1. Testing Laboratory

- a. DCAS will engage an approved Testing Laboratory or Inspection Agency to assist in the inspection of steel fabrication and conduct tests at the mill, shop, or foundry. The laboratory will assist in checking erection tolerances and provide shop and field testing required for all structural steel work, including metal deck and studs.
- b. The Testing Laboratory will be responsible to and under the supervision of the Engineer designated for "Controlled Inspection".

2. Inspector

- a. DCAS will assign, a Licensed Professional Engineer to supervise the Work listed above under "Testing Laboratory.
- b. The Contractor, upon award of the Contract, will receive a signed statement stating that the Inspector shall assume the responsibility for inspection of the structural steel and the required inspection reports.
- 3. Notification: Notify DCAS and/or the engineer before beginning fabrication of the structural steel and supply laboratory with copies of agreements, approved drawings, approved prints of all shop details, etc., and all necessary information relating thereto. Do not ship material to job site until after inspection and approval by the Testing Laboratory.
- 4. Discretionary Inspections: No mill, shop, foundry, or field inspection, such as is above provided for, shall be held to prohibit or preclude inspection of such materials during delivery and erection at the building by such other persons as DASNY shall direct.
- 5. Reports: Shop and field reports, including shipments, will be submitted by the Testing Laboratory to DCAS as the work proceeds at the shop or job site. A final report will be submitted by the Testing Laboratory when work is completed at the shop, and again when work is completed in the field. The Engineer for Controlled Inspection reserves right to reject material not in compliance with specified requirements at any time.

- Corrections: Correct deficiencies in work which inspections and tests have indicated to
 not be in compliance with requirements. Pay for additional tests, at own expense,
 necessary to reconfirm any non-compliance of original work and as necessary to show
 compliance of corrected work.
- 7. Contractor's Responsibility: Inspection and acceptance or failure to inspect shall in no way relieve the Contractor or the mill and shops from their responsibility to furnish satisfactory material strictly in accordance with Drawings and Specifications.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Verify that field conditions are acceptable and that erection may proceed. Notify DCAS in writing of conditions which adversely affect the Work. Do not proceed with erection until conditions have been corrected. Beginning of installation means the erector accepts existing conditions.

3.2 ERECTION

A. General

- Erection shall conform to the requirements of the NYC Fire and Building Code and AISC, Edition 8th (American Institute of Steel Construction).
- 2. All work shall be erected plumb, square, and true to lines and levels in strict accordance with the structural requirements of the building.
- 3. Provide all machinery, apparatus, and staging required for the erection of steel work in a thoroughly safe and efficient manner. Install, maintain and remove, without injury to other Work, such temporary bracing, scaffolding, etc. as may be necessary or required. Care shall be taken that no part of the structure is overloaded during construction.
- 4. Arrange for deliveries of material to facilitate the rapid and continuous progress of operation, but the site or streets adjacent to same shall not be used for the storage of material unless absolutely necessary and then only under special permission of DCAS and other authorities having jurisdiction.
- 5. Do not alter or cut structural members without approval of the Engineer.

B. Temporary Shoring and Bracing

Provide temporary shoring and bracing members with connections of sufficient strength to bear erection loads and guy wires to maintain structure plumb and in true alignment until completion of erection. Remove temporary work when permanent members and bracing are in place and final connections are made.

C. Field Assembly

- 1. Erect structural frames accurately to lines and elevations indicated. Align and adjust members forming a part of a complete frame or structure before permanently fastening.
- 2. Clean bearing surfaces and other surfaces which will be in permanent contact before assembly.
- 3. Perform necessary adjustments to compensate for discrepancies in elevations and alignment.
- 4. Level and plumb individual members of structure within specified AISC tolerances.
- 5. Splice members only where indicated and accepted on shop drawings.

D. Connections

- 1. Field connections shall be bolted except where indicated on Drawings.
 - a. Provide high-strength bolts for bolted connections except where unfinished bolts are indicated on the Drawings.

High-strength bolt connections are bearing type connections. Install high-strength bolts in accordance "Specification for Structural Joints using ASTM A325."

- Provide unfinished bolts where indicated on Drawings. Lock nuts by upsetting bolt end or by similar method when unfinished bolts are not encased in concrete.
 Tighten all bolts and nuts fully.
- c. For ASTM A307 or A325 bolts, hardened washer shall be installed under the turned element. For ASTM A490 bolts, hardened washer shall be installed under the head and nut.

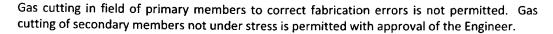
2. Holes

- a. The size of bolt holes shall be in accordance with AISC "Specification for the Design, Fabrication and Erection of Structural Steel for Buildings."
- b. Ream holes that must be enlarged to admit bolts. Burning or use of drift pins is not permitted.

E. Erection Holes

Fill erection bolt-holes on exposed to view members with plug welds and grind smooth.

F. Gas Cutting



G. Field Touch-Up

- Painted Members: After erection, clean all damaged areas in shop coat, exposed surfaces of bolts, bolt heads, nuts and washers, abrasions, and all field welds and unpainted areas adjacent to field welds to the same standards as the shop coat and paint with primer paint to same thickness as the shop coat. Finish painting is specified in Section 09900.
- Galvanized Members: After erection, clean and paint all damaged areas to the galvanizing, welds, and areas adjacent to welds with the galvanizing repair paint. Primer and finish painting specified in Section 09900.

3.3 TOLERANCES

A. Erection tolerances shall be in accordance with "Code of Standard Practice for Steel Buildings and Bridges".

3.4 FIELD QUALITY CONTROL

- A. Cooperate with the Engineer for Controlled Inspection and the Testing Laboratory performing Controlled Inspection testing.
- B. The Engineer for Controlled Inspection and the Testing Laboratory will check erection of structural framework for permissible tolerances and test field bolting and welding as listed in Part 2 of this Section.

3.5 CLEANING

A. Structural steel or portions of such to receive epoxy painting shall be clean of dust, grease, oils, loose material, and any other matter which would impair the adhesion of the paint material to the steel.

END OF SECTION 05 12 00



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SECTION 05 50 00 - METAL FABRICATION

PART 1 - GENERAL

1.1 SUMMARY

- A. Section includes the following metal fabrications:
 - 1. Pipe Hanger Supports
 - 2. Grating
 - 3. Handrails
 - 4. Vertical Ladders
 - Dunnage

1.2 SUBMITTALS

- A. Product data: Manufacturer's specifications and technical data.
- B. Shop drawings:
 - 1. Detailing fabrication and erection of each metal fabrication indicated.
 - 2. Show all locations, markings, quantities, materials sizes and shapes.
 - Indicate all methods of connecting, anchoring, fastening, and attaching work of other trades
 - 4. Do not fabricate before approval of Shop Drawings.
- C. Welding Certifications

1.3 QUALITY ASSURANCE

- A. Fabricator Qualifications: Firm experienced in producing metal fabrications similar to those indicated for this Project with a record of successful in-service performance, and with sufficient production capacity to produce required units without delaying the Work.
- B. Welding Standards: comply with applicable provisions of AWS D1.1 "Structural Welding Code Steel 2010."
 - Certify that each welder has satisfactorily passed AWS qualifications test for welding processes involved and, if pertinent, has undergone re-certification.

1.4 PROJECT CONDITIONS

A. Field Measurements: Check actual locations of walls and other construction to which metal fabrications must fit by accurate field measurements before fabrication. Show recorded measurements on final shop drawings. Coordinate fabrication schedule with construction progress to avoid delaying the Work.

PART 2 – PRODUCTS

2.1 FERROUS METALS

- A. Metal Surfaces, General: For metal fabrications exposed to view in the complete Work, provide materials selected for their surface flatness, smoothness and freedom from surface blemishes. Do not use materials with exposed pitting, seam marks, roller marks, rolled trade names or roughness.
- B. Steel Plates and Bars: ASTM A 36/A 36M.
- C. Rolled Shapes: ASTM A992 Grade 50
- D. Steel Tubing: Product type (manufacturing method) is as follows:
 - 1. Cold-Form Steel Tubing: ASTM A 500.
 - 2. Hot-Formed Steel Tubing: ASTM A 501.
- E. Steel Pipe: ASTM A 53, standard weight (schedule 40), unless otherwise indicated, or another weight required by structural loads; black finish, unless otherwise indicated.
- F. Welding Rods: E70XX for welding between new members.

2.2 PAINT

- A. Shop Primer for Ferrous Metal: Fast-curing. Lead and chromate-free, universal modifiedalkyd primer complying with performance requirements of FS TT-P-664, selected for good resistance to normal atmospheric corrosion, compatibility with finish paint systems indicated, and capability to provide a sound foundation for field-applied topcoats despite prolonged exposure.
- B. Bituminous Paint: Cold-applied asphalt mastic complying with SSPC-Paint 12, except containing no asbestos fibers.

2.3 ACCESSORIES

- A. Fasteners: Determined by fabricator for specific application, unless specific fasteners are indicated.
 - 1. Bolts and Nuts: ASTM A 325, Nuts for high strength bolts shall conform to the provisions of ASTM A194 or ASTM A563 as specified in ASTM A325.
 - 2. Anchor Bolts: Shall conform to the provision of ASTM F1554.
 - Unfinished Bolts: Shall conform to the provision of ASTM F1554.
 - Nuts for Anchor Bolts and Unfinished Bolts: Shall conform to the requirements of ASTM A563.
 - 5. Washers: Shall conform to the provisions of ASTM436.
 - 6. Proprietary Epoxy Bolts, Fasteners, etc: Provide types as indicated on drawings.
 - Bolts including hardware exposed to weather shall be galvanized in accordance with ASTM A153.

- B. Non-shrink, Nonmetallic Grout: Factory-packaged, non-staining, non-corrosive, nongaseous grout complying with ASTM C 1107. Provide grout specifically recommended by manufacturer for interior and exterior applications.
 - 1. Acceptable Manufacturers and Products:
 - a. B-6 Construction Grout; W.R. Bonsal Co.
 - b. Euco N-S Grout; Euclid Chemical Co.
 - c. Five Star Grout; Five Star Products.
 - d. Crystex; L & M Construction Chemicals, Inc.
 - e. Masterflow 928 and 713; Master Builders Technologies, Inc.
 - f. Sealtight 588 Grout; W.R. Meadows, Inc.
 - g. Sonogrout 14; Sonneborn Building Products--ChemRex, Inc.
 - h. Or approved equal.

C. Filler Metal for Welding

- Welding electrode shall conform to E70XX classification of AWS A5.1, except as noted below.
- Welding electrodes shall be compatible with steel where connections are made to existing steel. Contractor may perform "test patch" to verify compatibility of welding new steel to existing steel.

2.4 FABRICATION, GENERAL

- A. Form metal fabrications from materials of size, thickness, and shapes indicated but not less than that needed to comply with performance requirements indicated. Work to dimensions indicated or accepted on shop drawings, using proven details of fabrication and support. Use type of materials indicated or specified for various components of each metal fabrication.
- B. Form exposed work true to line and level with accurate angles and surfaces and straight sharp edges.
- C. Shear and punch metals cleanly and accurately. Remove burrs.
- D. Provide for anchorage of type indicated; coordinate with supporting structure. Fabricate and space anchoring devices to secure metal fabrications rigidly in place and to support indicated loads.

2.5 MISCELLANEOUS FRAMING AND SUPPORTS

- A. General: Provide Steel framing and supports for applications indicated that are not part of structural steel framework as required to complete the Work.
- B. Fabricate units to sizes, shapes, and profiles indicated and required to receive other adjacent construction retained by framing and supports. Fabricate from structural steel

shapes, plates, and steel bars of welded construction using mitered joints for field connection. Cut, drill, and tap units to receive hardware, hangers, and similar items.

2.6 MISCELLANEOUS STEEL TRIM

- A. Unless otherwise indicated, fabricate units from structural steel shapes, plates and bars of profiles shown, either with continuously welded or bolted joints. Smooth exposed edges. Mitre corners and use concealed field splices wherever possible.
- B. Provide cutouts, fittings and anchorages as required to coordinate assembly and installation with other work.
- C. Galvanize miscellaneous steel trim that are exposed to weather and as indicated on drawings

2.7 FINISHES, GENERAL

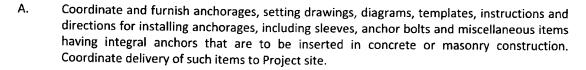
- A. Comply with NAAMM "Metal Finishes Manual" for recommendations relative to applying and designing finishes.
- B. Finish metal fabrications after assembly.
- C. All steelwork that are exposed to weather shall be hot-dipped galvanized.

2.8 STEEL AND IRON FINISHES

- A. Galvanizing: For those items indicated for galvanizing, apply zinc coating by the hot dip process complying with the following requirements:
 - 1. ASTM A 153 for galvanizing iron and steel hardware.
 - 2. ASTM A 123 for galvanizing both fabricated and unfabricated iron and steel products made of uncoated rolled, pressed and forged shapes, plates and bars.
- B. Preparation for Shop Priming: Prepare uncoated ferrous metal surfaces to comply with minimum requirements indicated below for SSPC surface preparation specifications and environmental exposure conditions of installed metal fabrications:
 - Interiors (SSPC Zone 1A): SSPC-SP 3 "Power Tool Cleaning."
- C. Apply shop primer to uncoated surfaces of metal fabrications, except those with galvanized finishes or to be embedded in concrete or masonry, unless otherwise indicated. Comply with requirements of SSPC-PA 1 "Paint Application Specification No. 1" for shop painting.
 - Stripe paint corners, crevices, bolts, welds and sharp edges.

PART 3 - EXECUTION

3.1 PREPARATION



3.2 INSTALLATION, GENERAL

- A. Fastening to In Place Construction: Provide anchorage devices and fasteners where necessary for securing miscellaneous metal fabrications to in place construction.
- B. Cutting, Fitting and Placement: Perform cutting, drilling and fitting required for installing miscellaneous metal fabrications. Set metal fabrication accurately in location, alignment and elevation; with edges and surfaces level, plumb, true and free of rack; and measured from established lines and levels.
- C. Provide temporary bracing or anchors in formwork for items that are to be built into concrete masonry or similar construction.
- D. Fit exposed connections accurately together to form hairlines joints. Weld connections that are not to be left as exposed joints but cannot be shop welded because of shipping size limitations. Do not weld, cut or abrade surfaces of exterior units that have been hot dip galvanized after fabrication and are intended for bolted field connections.
- E. Field Welding: Comply with the following requirements:
 - 1. Use materials and methods that minimize distortion and develop strength and corrosion resistance of base metals.
 - 2. Obtain fusion without undercut or overlap.
 - 3. Remove welding flux immediately.
 - At exposed connections, finish exposed welds and surfaces smooth and blended so that no roughness shows after finishing, and contour of welded surface matched those adjacent.

3.3 ADJUSTING AND CLEANING

- A. Touchup Painting: Cleaning and touchup painting of field welds, bolted connections, and abraded areas of the shop paint on miscellaneous metal is specified in Division 9 Section "Painting."
- B. For galvanized surfaces, clean welds, bolted connections and abraded areas, and apply galvanizing repair paint to comply with ASTM A 780.

END OF SECTION 05 50 00



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PART 1 - GENERAL

1.1 SUMMARY

- A. Section Includes:
 - 1. Woven-rod-mesh assemblies Security Barrier
 - 2. Perforated-plate security vents.
- B. Related Requirements:
 - 1. Section 086200 Unit Skylights

1.2 ACTION SUBMITTALS

- A. Product Data: For each type of product.
- B. Shop Drawings: Include plans, elevations, sections, and attachment details.
- C. Samples: For factory-applied color finishes.
- D. Samples for Verification:
 - 1. Include 12-by-12-inch (305-by-305-mm) cut-away corner section of woven-rod-mesh assembly.

1.3 INFORMATIONAL SUBMITTALS

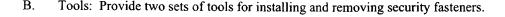
- A. Welding certificates.
- B. Field quality-control reports.
 - 1. Field quality-control certification signed by Contractor..

1.4 CLOSEOUT SUBMITTALS

A. Maintenance data.

1.5 MAINTENANCE MATERIAL SUBMITTALS

A. Security Fasteners: Furnish not less than one box for every 50 boxes or fraction thereof, of each type and size of security fastener installed.



1.6 QUALITY ASSURANCE

- A. Welding Qualifications: Qualify procedures and personnel according to the following:
 - 1. AWS D1.1/D1.1M, "Structural Welding Code Steel."
 - 2. AWS D1.3, "Structural Welding Code Sheet Steel."
 - 3. AWS D1.6, "Structural Welding Code Stainless Steel."

PART 2 - PRODUCTS

2.1 WOVEN-ROD-MESH ASSEMBLIES

- 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>DDS Group</u>; Detention Products Division.
 - 2. G-S Company (The).
 - 3. Kane Manufacturing Corp.
 - 4. Kenco Wire & Iron Products Inc.
 - 5. Maximum Security Products Corp.
 - 6. Peterson Detention Inc.
 - 7. PSI LLC.
 - 8. <u>Sierra Detention Systems</u>.
 - 9. Southern Folger Detention Equipment
 - 10. Sweeper Metal Fabricators Corp.
 - 11. Trussbilt.
 - 12. Twin City Wire/MFI.
 - 13. Willo Products Company, Inc.
 - 14. Or approved equal
- B. Main Framing: Formed from 1-1/2-by-2-1/2-inch (38-by-63.5-mm) built-up tubular steel consisting of an open channel with fixed concealment plates.
 - 1. Open Channel: Formed from 0.134-inch (3.42-mm) nominal-thickness steel sheet or channel with individual slots along inner edges to support woven-rod panels.
 - 2. Concealment Plates: Steel sheet to match open channel.
- C. Supplementary Framing: Formed from 2-inch-square by 3/16-inch- (51-mm-square by 4.8-mm-) thick steel tubing.
- D. Braces: Formed from same material as main framing.
- E. Woven-Rod Panels: Formed from double crimped, 1/4-inch- (6-mm-) diameter steel rod, woven horizontally and vertically into a rigid grille with rods at 2 inches (51 mm) o.c.
 - 1. Steel Rod: Homogeneous tool-resisting steel.

- F. Floor Anchor Clips: 2-by-3/16-inch (51-by-51-by-4.8-mm) mild-steel angles for straight framing; 1-1/2-by-1-1/2-by-3/16-inch (38-by-38-by-4.8-mm) mild-steel angles for corners.
- G. Floor Anchors: 2-inch-square by 3/16-inch- (51-mm-square by 4.8-mm-) thick, mild-steel tubing sleeve welded to 6-inch-square by 3/16-inch- (152-mm-square by 4.8-mm-) thick, mild-steel plate.

H. Finishes:

1. Exterior Locations: Galvanized-steel factory finish.

2.2 FABRICATION, GENERAL

- A. Shop Assembly: Preassemble items in shop to greatest extent possible to minimize field splicing and assembly.
- B. Coordinate dimensions and attachment methods of detention enclosures with those of adjoining construction to produce integrated assemblies with closely fitting joints and with edges and surfaces aligned unless otherwise indicated.
- C. Shear and punch metals cleanly and accurately. Remove burrs.
- D. Form and grind edges and corners to be free of sharp edges or rough areas.
- E. Form metal in maximum lengths to minimize joints. Form sheet-metal corners to smallest radius possible without causing grain separation or otherwise impairing the Work.
- F. Weld corners and seams continuously to comply with referenced AWS standard.
- G. Provide for anchorage of type indicated; coordinate with supporting structure. Fabricate and space anchoring devices to secure detention enclosures rigidly in place and to support indicated loads.
- H. Cut, reinforce, drill, and tap detention enclosures as indicated to receive hardware, security fasteners, and similar items.
- I. Form exposed work true to line and level with accurate angles, surfaces, and straight sharp edges.
- J. Form exposed connections with hairline joints flush and smooth using concealed fasteners where possible.

2.3 SECURITY FASTENERS

A. Operable only by tools produced by fastener manufacturer or other licensed fabricator for use on specific type of fastener.

- 1. <u>Manufacturers</u>: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:
 - a. Acument Global Technologies North America.
 - b. Bryce Fastener.
 - c. Safety Socket LLC.
 - d. Tamperproof Screw Co., Inc.
 - e. <u>Tamper-Pruf Screws</u>.
 - f. Or approved equal.

2.4 ACCESSORIES

- A. Concealed Bolts: ASTM A 307, Grade A unless otherwise indicated.
- B. Cast-in-Place Anchors in Concrete: Fabricated from corrosion-resistant materials capable of sustaining, without failure, a load equal to **four** times the load imposed, as determined by testing according to ASTM E 488, conducted by a qualified testing agency; of type indicated below.
 - 1. Threaded or wedge type; galvanized ferrous castings, either ASTM A 47/A 47M malleable iron or ASTM A 27/A 27M cast steel. Provide bolts, washers, and shims as needed; hot-dip galvanized according to ASTM A 153/A 153M or ASTM F 2329.
- C. Embedded Plate Anchors: Fabricated from mild-steel shapes and plates, minimum 3/16 inch (4.8 mm) thick; with minimum 1/2-inch- (12.7-mm-) diameter, headed studs welded to back of plate.
- D. Welding Rods and Bare Electrodes: Select according to AWS specifications for metal alloy welded.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine substrates, areas, and conditions, with Installer present, for compliance with requirements for installation tolerances and other conditions affecting performance of detention enclosures.
- B. Examine roughing-in for embedded and built-in anchors to verify actual locations of detention enclosure connections before installation.
- C. Inspect built-in and cast-in anchor installations, before installing detention enclosures, to verify that anchor installations comply with requirements. Prepare inspection reports.



- A. Install detention enclosures plumb, rigid, properly aligned, and securely fastened in place, complying with manufacturer's written recommendations.
- B. Fastening to In-Place Construction: Provide anchorage devices and fasteners where necessary for securing detention enclosures to in-place construction. Include threaded fasteners for inserts, security fasteners, and other connectors.
 - 1. Proprietary Built-in Masonry Anchors: Install integral with unit masonry. Comply with requirements in Section 042000 "Unit Masonry."
- C. Cutting, Fitting, and Placement: Obtain manufacturer's written approval for cutting, drilling, and fitting required for installing detention enclosures. Set detention enclosures accurately in location, alignment, and elevation; with edges and surfaces level, plumb, true, and free of rack; and measured from established lines and levels.
- D. Provide temporary bracing or anchors in formwork for items that are to be built into adjacent construction.
- E. Fit exposed connections accurately together to form hairline joints. Weld connections that are not to be left as exposed joints but cannot be shop welded because of shipping size limitations. Do not weld, cut, or abrade surfaces of exterior units that have been hot-dip galvanized after fabrication and are for bolted or screwed field connections.
- F. Field Welding: Use materials and methods that minimize distortion and develop strength and corrosion resistance of base metals.

3.3 INSTALLATION OF WOVEN-ROD-MESH ASSEMBLIES

- A. Floor Anchorage: Fasten anchor clips to floor with 3/8-inch- (9.5-mm-) diameter bolts with double-expansion shields.
- B. Weld adjacent main framing members to each other with 1/4-inch-deep by 3/4-inch- (6-mm- by 19-mm-) long welds at 12 inches (305 mm) o.c. on both sides of framing.
- C. Provide supplementary framing at three-way connections and multiple-panel-height partitions] Weld main framing to supplementary framing with 1/8-inch (3-mm) fillet welds 1 inch (25 mm) long at 12 inches (305 mm) o.c. on both sides of framing.
- D. Provide additional field bracing as shown or as necessary for rigid, secure installation.
- E. Adjust doors to operate easily without binding.

3.4 FIELD QUALITY CONTROL

A. Prepare inspection reports and indicate compliance with and deviations from the Contract Documents.

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B. Prepare field quality-control certification that states installed products comply with requirements in the Contract Documents.

END OF SECTION 055963

SECTION 071616 - CRYSTALLINE WATERPROOFING

PART 1 - GENERAL

1.1 SUMMARY

A. Section includes crystalline waterproofing for negative-side application to **concrete**.

1.2 ACTION SUBMITTALS

A. Product Data: For each type of product indicated.

1.3 INFORMATIONAL SUBMITTALS

- A. Product certificates.
- B. Product test reports.
- C. Field quality-control reports.

1.4 QUALITY ASSURANCE

A. Applicator Qualifications: A firm experienced in applying crystalline waterproofing similar in material, design, and extent to that indicated for this Project, whose work has resulted in applications with a record of successful in-service performance.

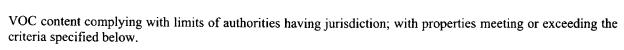
1.5 PROJECT CONDITIONS

- A. Proceed with waterproofing work only after pipe sleeves, vents, curbs, inserts, drains, and other projections through the substrate to be waterproofed have been completed. Proceed only after substrate defects, including honeycombs, voids, and cracks, have been repaired to provide a sound substrate free of forming materials, including reveal inserts.
- B. Ambient Conditions: Proceed with waterproofing work only if temperature is maintained at 40 deg F (4.4 deg C) or above during work and cure period, and space is well ventilated and kept free of water.

PART 2 - PRODUCTS

2.1 WATERPROOFING MATERIALS

A. Crystalline Waterproofing: Prepackaged, gray-colored proprietary blend of portland cement, specially treated sand, and active chemicals that, when mixed with water and applied, penetrates into concrete and concrete unit masonry and reacts chemically with the byproducts of cement hydration in the presence of water to develop crystalline growth within substrate capillaries to produce an impervious, dense, waterproof substrate; that has



- 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. American PERMAQUIK Inc.; Super 200.
 - b. Anti-Hydro International, Inc.; A-H Hydrocap.
 - c. AQUAFIN, Inc.; AQUAFIN-1C.
 - d. BASF Building Systems; Tegraproof.
 - e. <u>Conproco Corporation</u>; Conpro Super Seal.
 - f. Euclid Tamms; [HEY'DI K-11] [HEY'DI POWER X SYSTEM].
 - g. Gemite Products Inc.; Cem-Kote CW Plus.
 - h. <u>ICS Penetron International Ltd.</u>; Penetron.
 - i. <u>International Chem-Crete</u>, Inc.; Chem-Cretex Cem 600.
 - j. <u>IPA Systems, Inc.</u>; Drycon.
 - k. Kryton Group of Companies (The); Krystol T1 & T2 Waterproofing System.
 - l. <u>Vandex USA LLC</u>; Vandex Super/Super White.
 - m. <u>Xypex Chemical Corporation</u>; Xypex.
- 2. Water Permeability: Maximum zero when tested according to CE CRD-C 48.
- 3. Compressive Strength: Minimum 4000 psi (27.6 MPa0) at 28 days when tested according to ASTM C 109/C 109M.

2.2 ACCESSORY MATERIALS

- A. Patching Compound: Factory-premixed cementitious repair mortar, crack filler, or sealant recommended by waterproofing manufacturer for filling and patching tie holes, honeycombs, reveals, and other imperfections; compatible with substrate and other materials indicated; and VOC content complying with limits of authorities having jurisdiction.
- B. Plugging Compound: Factory-premixed cementitious compound with hydrophobic properties and recommended by waterproofing manufacturer; resistant to water and moisture but vapor permeable for all standard applications (vertical, overhead, and horizontal surfaces not exposed to vehicular traffic); compatible with substrate and other materials indicated; and VOC content complying with limits of authorities having jurisdiction.
- C. Portland Cement: ASTM C 150, Type I.
- D. Sand: ASTM C 144.
- E. Polymer Admixture for Protective Topping: Polymer bonding agent and admixture designed to improve adhesion to prepared substrates and not to create a vapor barrier.
- F. Water: Potable.

2.3 MIXES

A. Crystalline Waterproofing: Add prepackaged dry ingredients to water according to manufacturer's written instructions. Mix together with mechanical mixer or by hand to required consistency.



PART 3 - EXECUTION

3.1 PREPARATION

- A. Protect other work from damage caused by cleaning, preparation, and application of waterproofing. Provide temporary enclosure to confine spraying operation and to ensure adequate ambient temperatures and ventilation conditions for application.
- B. Do not allow waterproofing, patching, and plugging materials to enter reveals or annular spaces intended for resilient sealants or gaskets, such as joint spaces between pipes and pipe sleeves.
- C. Stop active water leaks with plugging compound according to waterproofing manufacturer's written instructions.
- D. Repair damaged or unsatisfactory substrate with patching compound according to manufacturer's written instructions.
- E. Surface Preparation: Comply with waterproofing manufacturer's written instructions to remove efflorescence, chalk, dust, dirt, mortar spatter, grease, oils, paint, curing compounds, and form-release agents to ensure that waterproofing bonds to surfaces.

3.2 APPLICATION

- A. General: Comply with waterproofing manufacturer's written instructions for application and curing.
 - 1. Saturate surface with water for several hours prior to application and maintain damp condition until applying waterproofing. Remove standing water.
 - 2. Apply waterproofing to surfaces indicated on Drawings.
 - 3. Number of Coats: Number required for specified water permeability.
 - 4. Application Method: Brush or Spray. Apply to ensure that each coat fills voids and is in full contact with substrate or previous coat.
 - 5. Dampen surface between coats.
- B. Final Coat Finish: Smooth.
- C. Curing: Moist-cure waterproofing for three days immediately after final coat has set, followed by air drying, unless otherwise recommended in writing by manufacturer.
- D. Waterproofing Treatment Extensions: Extend waterproofing treatment as follows:
 - 1. Onto every substrate in areas indicated for treatment, including pits and similar offsets and features.
- E. Protective Topping: Apply 1-inch- (25.4-mm-] thick, protective topping over floor surfaces.

3.3 FIELD QUALITY CONTROL

A. Inspection: Engage manufacturer's representative to inspect completed application and provide a written report that application complies with manufacturer's written instructions.

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END OF SECTION 071616

SECTION 075552 - MODIFIED BITUMINOUS PROTECTED MEMBRANE ROOFING

PART 1 - GENERAL

1.1 SUMMARY

A. Section includes styrene-butadiene-styrene (SBS)-modified bituminous protected membrane roofing.

1.2 DEFINITIONS

A. Roofing Terminology: See ASTM D 1079 and glossary of NRCA's "The NRCA Roofing and Waterproofing Manual" for definition of terms related to roofing work in this Section.

1.3 PREINSTALLATION MEETINGS

A. Preinstallation Roofing Conference: Conduct conference at Project site.

1.4 ACTION SUBMITTALS

- A. Product Data: For each type of product.
- B. Shop Drawings: For roofing system. Include plans, elevations, sections, details, penetration flashing and attachments to other work.
- C. Samples for Verification: For the following products:
 - 1. Cap sheet, of color required.
 - 2. Flashing sheet, of color required.
 - 3. Penetration flashing, of color required.

1.5 INFORMATIONAL SUBMITTALS

- A. Research/Evaluation Reports: For components of roofing system, from ICC-ES.
- B. Sample Warranties: For manufacturer's special warranties.

1.6 CLOSEOUT SUBMITTALS

A. Maintenance Data: For roofing system to include in maintenance manuals.

1.7 QUALITY ASSURANCE

A. Installer Qualifications: The contractor or subcontractor performing the work of this section must, within the last five (5) consecutive years prior to the bid opening, have successfully completed in a timely fashion at least three (3) projects similar in scope and type to the required work. In addition, for roofing work, the contractor or subcontractor must be licensed or approved by the manufacturer of the roofing system.

A. WARRANTY

- B. Special Warranty: Manufacturer agrees to repair or replace components of roofing system that fail in materials or workmanship within specified warranty period.
 - 1. Warranty Period: 15 years from date of Substantial Completion.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

- A. SBS-Modified Bituminous Roofing:
 - 1. 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:
 - 2. <u>Basis-of-Design Product</u>: Subject to compliance with requirements, provide comparable product by one of the following or approved equal:
 - a. Firestone SBS Roofing Systems
 - b. Flex Membranes International.
 - c. GAF Materials Corporation.
 - d. Johns Manville.
- B. Source Limitations: Obtain components including roof insulation fasteners manufacturer approved by roofing manufacturer.

2.2 PERFORMANCE REQUIREMENTS

- A. Accelerated Weathering: Roofing system shall withstand 2000 hours of exposure when tested according to ASTM G 152, ASTM G 154, or ASTM G 155.
- B. Impact Resistance: Roofing system shall resist impact damage when tested according to ASTM D 3746 or ASTM D 4272.
- C. Energy Star Listing: Roofing system shall be listed on the DOE's ENERGY STAR "Roof Products Qualified Product List" for low-slope roof products.

- D. Exterior Fire-Test Exposure: ASTM E 108 or UL 790, Class A; for application and roof slopes indicated; testing by a qualified testing agency. Identify products with appropriate markings of applicable testing agency.
- E. Fire-Resistance Ratings: Comply with fire-resistance-rated assembly designs indicated. Identify products with appropriate markings of applicable testing agency.

2.3 ROOFING SHEET MATERIALS

- A. Base Sheet: ASTM D 4601, Type II, nonperforated, asphalt-impregnated and -coated, glass-fiber sheet, dusted with fine mineral surfacing on both sides.
- B. Glass-Fiber Base-Ply Sheet: ASTM D 2178, Type VI, asphalt-impregnated, glass-fiber felt.
- C. SBS-Modified Asphalt Roofing Sheet: ASTM D 6163, Grade S, Type I or II, SBS-modified asphalt sheet (reinforced with glass fibers); smooth surfaced; suitable for application method specified.
- D. SBS-Modified Asphalt Granule-Surface Roofing Cap Sheet: ASTM D 6163, Grade G, Type I or II, SBS-modified asphalt sheet (reinforced with glass fibers); granule surfaced; suitable for application method specified.

2.4 BASE FLASHING SHEET MATERIALS

- A. Backer Sheet: ASTM D 4601, Type II, asphalt-impregnated and -coated, glass-fiber sheet, dusted with fine mineral surfacing on both sides.
- B. SBS-Modified Asphalt Backer Sheet: ASTM D 6163, Grade S, Type I or II, SBS-modified asphalt sheet (reinforced with glass fibers); smooth surfaced; suitable for application method specified.
- C. SBS-Modified Asphalt Granule-Surfaced Flashing Sheet: ASTM D 6163, Grade G, Type I or II, SBS-modified asphalt sheet (reinforced with glass fibers); granule surfaced; suitable for application method specified, and as follows:
 - 1. Granule Color: Gray.

2.5 AUXILIARY ROOFING MATERIALS

- A. General: Auxiliary materials recommended by roofing manufacturer for intended use and compatible with roofing.
 - 1. Liquid-type auxiliary materials shall comply with VOC limits of authorities having jurisdiction.
 - 2. Adhesives and sealants that are not on the exterior side of weather barrier shall comply with the following limits for VOC content:
 - a. Plastic Foam Adhesives: 50 g/L.

- b. Multipurpose Construction Adhesives: 70 g/L.
- c. Fiberglass Adhesives: 80 g/L.
- d. Contact Adhesives: 80 g/L.
- e. Other Adhesives: 250 g/L.
- f. Nonmembrane Roof Sealants: 300 g/L.
- g. Sealant Primers for Nonporous Substrates: 250 g/L.
- h. Sealant Primers for Porous Substrates: 775 g/L.
- B. Asphalt Primer: ASTM D 41/D 41M.
- C. Roofing Asphalt: ASTM D 312, as recommended by roofing manufacturer for application.
- D. Cold-Applied Adhesive: Roofing manufacturer's standard asphalt-based, one- or two-part, asbestos-free, cold-applied adhesive specially formulated for compatibility and use with roofing and base flashings.
- E. Fasteners: Factory-coated steel fasteners and metal or plastic plates complying with corrosion-resistance provisions in FM Global 4470, designed for fastening roofing components to substrate; tested by manufacturer for required pullout strength, and acceptable to roofing system manufacturer.
- F. Insulation Cant Strips: ASTM C 208, Type II, Grade 1, cellulosic-fiber insulation board.
- G. Separator Sheet: Polyethylene sheet, 4 mils (0.1 mm) thick, minimum.

2.6 ROOF INSULATION

- A. Extruded-Polystyrene Board Insulation: ASTM C 578, Type VII, 2.2 lb/cu. ft. (35 kg/cu. m) with two or four edges rabbeted and to match existing thickness.
 - 1. <u>Products</u>: Subject to compliance with requirements, available products that may be incorporated into the Work include, but are not limited to, the following:
 - a. T. Clear Corp; Heavyguard.

2.7 INSULATION ACCESSORIES

- A. Protection Mat: Woven or nonwoven polypropylene, polyolefin, or polyester fabric, water permeable and resistant to UV degradation, type and weight as recommended by roofing system manufacturer for application.
- B. Metal Securement System: Perimeter securement flashing and strapping fabricated from stainless steel, a minimum of 0.031 inch (0.8 mm) thick. Provide fasteners as recommended by mortar-faced insulation manufacturer.

PART 3 - PRODUCTS

3.1 ROOFING INSTALLATION

- A. Install roofing system according to roofing system manufacturer's written instructions and applicable recommendations in ARMA/NRCA's "Quality Control Guidelines for the Application of Polymer Modified Bitumen Roofing" and as follows:
 - 1. Membrane: MBS (SBS).
 - 2. Deck Type: C (concrete or nonnailable).
 - 3. Adhering Method: L (cold-applied adhesive).
 - 4. Base Sheet: One.
 - 5. Number of Glass-Fiber Base-Ply Sheets: One.
 - 6. Number of Modified Asphalt Sheets: Two.
 - 7. Surfacing Type: P (protected).
- B. Where roof slope exceeds 1/2 inch per 12 inches (1:24) install roofing sheets parallel with slope.
- C. Coordinate installation of roofing system so insulation and other components of the roofing system not permanently exposed are not subjected to precipitation or left uncovered at the end of the workday or when rain is forecast.
- D. Substrate-Joint Penetrations: Prevent roofing asphalt from penetrating substrate joints, entering building, or damaging roofing system components or adjacent building construction.
- E. Install lapped base-sheet course, extending sheet over and terminating beyond cants. Attach base sheet as follows:
 - 1. Adhere to substrate in a uniform coating of cold-applied adhesive.
- F. Install glass-fiber base-ply sheets according to roofing system manufacturer's written instructions starting at low point of roofing system. Align glass-fiber base-ply sheets without stretching. Extend glass-fiber base-ply sheets over and terminate beyond cants. Embed each glass-fiber base-ply sheet in a continuous void-free mopping of hot roofing asphalt, to form a uniform membrane without glass-fiber base-ply sheets touching.
- G. Install modified bituminous roofing sheet and cap sheet according to roofing manufacturer's written instructions, starting at low point of roofing system. Extend roofing sheets over and terminate beyond cants.
 - Unroll roofing sheets and allow them to relax for minimum time period required by manufacturer.
- H. Laps: Accurately align roofing sheets, without stretching, and maintain uniform side and end laps. Stagger end laps. Completely bond and seal laps, leaving no voids.
 - 1. Repair tears and voids in laps and lapped seams not completely sealed.

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I. Install roofing sheets so side and end laps shed water.

3.2 FLASHING AND STRIPPING INSTALLATION

- A. Install base flashing over cant strips and other sloping and vertical surfaces, at roof edges, and at penetrations through roof, and secure to substrates according to roofing system manufacturer's written instructions.
 - 1. Flashing-Sheet Application: Adhere flashing sheet to substrate in cold-applied adhesive.
 - 2. Provide to part urethane liquid rubber flashing and coating for all penetrations and difficult roof top details.
- B. Mechanically fasten top of base flashing securely at terminations and perimeter of roofing.
- C. Install roofing cap-sheet stripping where metal flanges and edgings are set on roofing according to roofing system manufacturer's written instructions.
- D. Roof Drains: Set 30-by-30-inch (760-by-760-mm) metal flashing in bed of asphaltic adhesive on roofing. Cover metal flashing with roofing cap-sheet stripping, and extend a minimum of 6 inches (150 mm) beyond edge of metal flashing onto field of roofing. Clamp roofing, metal flashing, and stripping into roof-drain clamping ring.

3.3 INSULATION INSTALLATION

- A. Loosely lay separator sheet over cooled roofing membrane, with minimum 2-inch (50-mm) side laps and 4-inch (150-mm) end laps.
- B. Loosely lay board insulation units over roofing, with long joints of insulation in continuous straight lines and with end joints staggered between rows. Abut edges and ends between units.
- C. Install one or more layers of insulation to achieve required thickness over roofing. Cut and fit to within 3/4 inch (19 mm) of projections and penetrations.
 - 1. Where overall insulation thickness is 2 inches (50 mm) or more, install required thickness in two or more layers, with joints of each succeeding layer staggered over joints of previous layer a minimum of 6 inches (150 mm) in each direction.

END OF SECTION 075552



PART 1 - GENERAL

1.1 SUMMARY

- A. Section Includes:
 - 1. Roof-edge flashings.
 - 2. Roof-edge drainage systems.
 - 3. Reglets and counterflashings.

1.2 PERFORMANCE REQUIREMENTS

A. FM Approvals' Listing: Manufacture and install roof-edge flashings that are listed in FM Approvals' "RoofNav" and approved for windstorm classification, Class 1-105. Identify materials with FM Approvals' markings.

1.3 ACTION SUBMITTALS

- A. Product Data: For each type of product indicated.
- B. Shop Drawings: For roof specialties. Include plans, elevations, , keyed details, and attachments to other work. Distinguish between plant- and field-assembled work.
- C. Samples: For each exposed product and for each color and texture specified.

1.4 INFORMATIONAL SUBMITTALS

- A. Product test reports.
- B. Warranty: Sample of special warranty.

1.5 CLOSEOUT SUBMITTALS

A. Maintenance data.

1.6 QUALITY ASSURANCE

A. Preinstallation Conference: Conduct conference at Project site.



1.7 WARRANTY

A. Special Warranty on Painted Finishes: Manufacturer's standard form in which manufacturer agrees to repair finish or replace roof specialties that show evidence of deterioration of factory-applied finishes within 20 years from date of Substantial Completion.

PART 2 - PRODUCTS

2.1 EXPOSED METALS

- A. Copper Sheet: ASTM B 370, cold-rolled copper sheet, H00 or H01 temper.
 - 1. Non-Patinated Exposed Finish: Mill.
 - 2. Pre-Patinated Copper-Sheet Finish: Pre-patinated according to ASTM B 882.
- B. Stainless-Steel Sheet: ASTM A 240/A 240M or ASTM A 666, Type 304.

2.2 CONCEALED METALS

- A.
- B. Stainless-Steel Sheet: ASTM A 240/A 240M or ASTM A 666, Type 304.

2.3 UNDERLAYMENT MATERIALS

- A. Felt: ASTM D 226, Type II (No. 30), asphalt-saturated organic felt, nonperforated.
 - Self-Adhering, High-Temperature Sheet: Minimum 30 to 40 mils (0.76 to 1.0 mm) thick, consisting of slip-resisting polyethylene-film top surface laminated to layer of butyl or SBS-modified asphalt adhesive, with release-paper backing; cold applied. Provide primer when recommended by underlayment manufacturer.
 - 2. Thermal Stability: ASTM D 1970; stable after testing at 240 deg F (116 deg C).
 - 3. Low-Temperature Flexibility: ASTM D 1970; passes after testing at minus 20 deg F (29 deg C).
 - 4. Polyethylene Sheet: 6-mil- (0.15-mm-) thick polyethylene sheet complying with ASTM D 4397.
 - 5. Slip sheet in paragraph below is often used over other types of underlayment materials and may be required over a felt underlayment; verify need with roof-specialty manufacturer.
 - 6. Slip Sheet: Building paper, 3-lb/100 sq. ft. (0.16-kg/sq. m) minimum, rosin sized.

2.4 MISCELLANEOUS MATERIALS

A. General: Provide materials and types of fasteners, protective coatings, sealants, and other miscellaneous items required by manufacturer for a complete installation.

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- B. Fasteners: Manufacturer's recommended fasteners, suitable for application and designed to meet performance requirements. Furnish the following unless otherwise indicated:
 - 1. Exposed Penetrating Fasteners: Gasketed screws with hex washer heads matching color of sheet metal.
 - 2. Fasteners for Copper Sheet: Copper, hardware bronze, or passivated Series 300 stainless steel.
 - 3. Fasteners for Aluminum: Aluminum or Series 300 stainless steel.
 - 4. Fasteners for Stainless-Steel Sheet: Series 300 stainless steel.
 - 5. Fasteners for Zinc-Coated (Galvanized) Steel Sheet: Series 300 stainless steel or hot-dip zinc-coated steel according to ASTM A 153/A 153M or ASTM F 2329.
- C. Elastomeric Sealant: ASTM C 920, elastomeric polymer sealant of type, grade, class, and use classifications required by roofing-specialty manufacturer for each application.
- D. Butyl Sealant: ASTM C 1311, single-component, solvent-release butyl rubber sealant; polyisobutylene plasticized; heavy bodied for hooked-type expansion joints with limited movement.
- E. Bituminous Coating: Cold-applied asphalt emulsion complying with ASTM D 1187.
- F. Asphalt Roofing Cement: ASTM D 4586, asbestos free, of consistency required for application.
- G. Solder for Copper: ASTM B 32, lead-free solder.

2.5 REGLETS AND COUNTERFLASHINGS

- 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:
- B. Basis-of-Design Product: Subject to compliance with requirements, provide comparable product by one of the following or approved equal:
 - 1. <u>Castle Metal Products</u>.
 - 2. Cheney Flashing Company.
 - 3. Fry Reglet Corporation.
 - 4. Heckmann Building Products Inc.
 - 5. Hickman Company, W. P.
 - 6. Keystone Flashing Company, Inc.
 - 7. Metal-Era, Inc.
 - 8. Metal-Fab Manufacturing, LLC.
 - 9. MM Systems Corporation.
 - 10. National Sheet Metal Systems, Inc.
- C. Reglets: Manufactured units formed to provide secure interlocking of separate reglet and counterflashing pieces, from the following exposed metal:
 - 1. Copper: 16 oz./sq. ft. (0.55 mm thick).

ROOF SPECIALTIES

- D. Counterflashings: Manufactured units of heights to overlap top edges of base flashings by 4 inches (100 mm) and in lengths not exceeding [12 feet (3.6 m)] designed to snap into reglets or through-wall-flashing receiver and compress against base flashings with joints lapped, from the following exposed metal:
 - 1. Copper: 16 oz./sq. ft. (0.55 mm thick).

E. Accessories:

- 1. Flexible-Flashing Retainer: Provide resilient plastic or rubber accessory to secure flexible flashing in reglet where clearance does not permit use of standard metal counterflashing or where reglet is provided separate from metal counterflashing.
- 2. Counterflashing Wind-Restraint Clips: Provide clips to be installed before counterflashing to prevent wind uplift of counterflashing lower edge.

3.

F. Copper Finish: Non-patinated, mill

PART 3 - EXECUTION

3.1 INSTALLATION, GENERAL

- A. General: Install roof specialties according to manufacturer's written instructions. Anchor roof specialties securely in place, with provisions for thermal and structural movement. Use fasteners, solder, protective coatings, separators, sealants, and other miscellaneous items as required to complete roof-specialty systems.
 - 1. Install roof specialties level, plumb, true to line and elevation; with limited oil-canning and without warping, jogs in alignment, buckling, or tool marks.
 - 2. Provide uniform, neat seams with minimum exposure of solder and sealant.
 - 3. Install roof specialties to fit substrates and to result in watertight performance. Verify shapes and dimensions of surfaces to be covered before manufacture.
 - 4. Torch cutting of roof specialties is not permitted.
 - 5. Install underlayment with adhesive for temporary anchorage. Apply in shingle fashion to shed water, with lapped joints of not less than 2 inches (50 mm). Roll laps of self-adhering sheet underlayment with roller; cover within 14 days.
- B. Metal Protection: Protect metals against galvanic action by separating dissimilar metals from contact with each other or with corrosive substrates by painting contact surfaces with bituminous coating or by other permanent separation as recommended by manufacturer.
 - Coat concealed side of uncoated aluminum and stainless-steel roof specialties with bituminous coating where in contact with wood, ferrous metal, or cementitious construction.
 - Underlayment: Where installing metal flashing directly on cementitious or wood substrates, install a course of self-adhering, high-temperature sheet underlayment or polyethylene sheet.

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- C. Expansion Provisions: Allow for thermal expansion of exposed roof specialties.
 - 1. Space movement joints at a maximum of [12 feet (3.6 m)] with no joints within [18 inches (450 mm)] > of corners or intersections unless otherwise shown on Drawings.
 - 2. When ambient temperature at time of installation is between 40 and 70 deg F (4 and 21 deg C), set joint members for 50 percent movement each way. Adjust setting proportionately for installation at higher ambient temperatures.
- D. Fastener Sizes: Use fasteners of sizes that will penetrate [wood blocking or sheathing not less than 1-1/4 inches (32 mm) for nails and not less than 3/4 inch (19 mm) for wood screws] [substrate not less than recommended by fastener manufacturer to achieve maximum pull-out resistance
- E. Seal joints with sealant as required by roofing-specialty manufacturer.
- F. Seal joints as required for watertight construction. Place sealant to be completely concealed in joint. Do not install sealants at temperatures below 40 deg F (4 deg C).
- G. Soldered Joints: Clean surfaces to be soldered, removing oils and foreign matter. Pre-tin edges of sheets to be soldered to a width of 1-1/2 inches (38 mm) except reduce pre-tinning where pre-tinned surface would show in completed Work. Tin edges of uncoated copper sheets using solder for copper. Do not use torches for soldering. Heat surfaces to receive solder and flow solder into joint. Fill joint completely. Completely remove flux and spatter from exposed surfaces.

3.2 REGLET AND COUNTERFLASHING INSTALLATION

- A. Surface-Mounted Reglets: Install reglets to receive flashings where flashing without embedded reglets is indicated on Drawings. Install at height so that inserted counterflashings overlap 4 inches (100 mm) over top edge of base flashings.
- B. Counterflashings: Insert counterflashings into reglets or other indicated receivers; ensure that counterflashings overlap 4 inches (100 mm) over top edge of base flashings. Lap counterflashing joints a minimum of 4 inches (100 mm) and bed with sealant. Fit counterflashings tightly to base flashings.

3.3 CLEANING AND PROTECTION

- A. Clean exposed metal surfaces of substances that interfere with uniform oxidation and weathering.
- B. Clean and neutralize flux materials. Clean off excess solder and sealants.
- C. Remove temporary protective coverings and strippable films as roof specialties are installed.

END OF SECTION 077100

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SECTION 077200 - ROOF ACCESSORIES

PART 1 - GENERAL

1.1 SUMMARY

- A. Section Includes:
 - 1. Roof curbs.
 - 2. Equipment supports.

1.2 ACTION SUBMITTALS

- A. Product Data: For each type of roof accessory indicated.
- B. Shop Drawings: For roof accessories.
- C. Samples: For each exposed product and for each color and texture specified.

1.3 INFORMATIONAL SUBMITTALS

- A. Coordination Drawings: Roof plans, drawn to scale, and coordinating penetrations and roof-mounted items.
- B. Warranty: Sample of special warranty.

1.4 CLOSEOUT SUBMITTALS

A. Operation and maintenance data.

1.5 WARRANTY

A. Special Warranty on Painted Finishes: Manufacturer's standard form in which manufacturer agrees to repair finishes or replace roof accessories that show evidence of deterioration of factory-applied finishes within 20 years from date of Substantial Completion.

PART 2 - PRODUCTS

2.1 METAL MATERIALS

A. Zinc-Coated (Galvanized) Steel Sheet: ASTM A 653/A 653M, G90 (Z275) coating designation.

- 1. Exposed Coil-Coated Finish: Two-coat fluoropolymer finish; AAMA 621; system consisting of primer and fluoropolymer color topcoat containing not less than 70 percent PVDF resin by weight.
- 2. Baked-Enamel or Powder-Coat Finish: Manufacturer's standard two-coat, baked-on finish consisting of prime coat and thermosetting topcoat, with a minimum dry film thickness of 1 mil (0.025 mm) for topcoat.
- B. Stainless-Steel Sheet and Shapes: ASTM A 240/A 240M or ASTM A 666, Type 304.
- C. Steel Shapes: ASTM A 36/A 36M, hot-dip galvanized according to ASTM A 123/A 123M unless otherwise indicated.

2.2 MISCELLANEOUS MATERIALS

- A. General: Provide materials and types of fasteners, protective coatings, sealants, and other miscellaneous items required by manufacturer for a complete installation.
- B. Acrylic Glazing: ASTM D 4802, thermoformable, monolithic sheet, manufacturer's standard, Type UVA (formulated with UV absorber), Finish 1 (smooth or polished).
- C. Polycarbonate Glazing: Thermoformable, monolithic polycarbonate sheets manufactured by extrusion process, burglar-resistance rated according to UL 972 with an average impact strength of 12 to 16 ft-lbf/in. (640 to 854 J/m) of width when tested according to ASTM D 256, Method A (Izod).
- D. Wood Nailers: Softwood lumber, pressure treated with waterborne preservatives for aboveground use, acceptable to authorities having jurisdiction, containing no arsenic or chromium, and complying with AWPA C2; not less than 1-1/2 inches (38 mm) thick.
- E. Security Grilles: 3/4-inch (19-mm) Diameter, ASTM A 1011/A 1011M steel bars spaced 6 inches (150 mm o.c. in one direction and 12 inches (300 mm) o.c. in the other; factory finished with manufacturer's or fabricator's standard, universal shop primer compatible with substrate and field-applied finish paint system indicated.
- F. Fasteners: Roof accessory manufacturer's recommended fasteners suitable for application and metals being fastened. Match finish of exposed fasteners with finish of material being fastened. Provide nonremovable fastener heads to exterior exposed fasteners.
- G. Sealants: As recommended by roof accessory manufacturer for installation indicated.

2.3 ROOF CURBS

A. Roof Curbs: Internally reinforced roof-curb units with integral spring-type vibration isolators and capable of supporting superimposed live and dead loads, including equipment loads and other construction indicated on Drawings; with welded or mechanically fastened and sealed corner joints, integral metal cant and integrally formed deck-mounting flange at perimeter bottom.

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- 1. Basis-of-Design Product: Subject to compliance with requirements, provide comparable product by one of the following OR APPROVED EQUAL:
- 2. AES Industries, Inc.
- 3. Curbs Plus, Inc.
- 4. Custom Solution Roof and Metal Products.
- 5. Greenheck Fan Corporation.
- 6. LM Curbs.
- 7. Metallic Products Corp.
- 8. Milcor Inc.; Commercial Products Group of Hart & Cooley, Inc.
- 9. Pate Company (The).
- 10. Roof Products, Inc.
- 11. Safe Air of Illinois.
- 12. Thybar Corporation.
- 13. Vent Products Co., Inc.
- B. Material: Stainless-steel sheet, 0.078 inch (1.98 mm) thick.
 - 1. Finish: Manufacturer's standard.

C. Construction:

- 1. Insulation: Factory insulated with 1-1/2-inch- (38-mm-) thick glass-fiber board insulation.
- 2. Liner: Same material as curb, of manufacturer's standard thickness and finish.
- 3. Factory-installed wood nailer at top of curb, continuous around curb perimeter.
- 4.
- 5. Fabricate curbs to minimum height of 12 inches (300 mm) unless otherwise indicated.
- 6. Top Surface: Level around perimeter with roof slope accommodated by sloping the deck-mounting flange.
- 7. Sloping Roofs: Where roof slope exceeds 1:48, fabricate curb with perimeter curb height tapered to accommodate roof slope so that top surface of perimeter curb is level. Equip unit with water diverter or cricket on side that obstructs water flow.
- 8. Security Grille: Provide where indicated.

2.4 EQUIPMENT SUPPORTS

- A. Equipment Supports: Internally reinforced metal equipment supports capable of supporting superimposed live and dead loads, including equipment loads and other construction indicated on Drawings; with welded or mechanically fastened and sealed corner joints, integral metal cant and integrally formed deck-mounting flange at perimeter bottom.
 - 1. Basis-of-Design Product: Subject to compliance with requirements, provide comparable product by one of the following OR APPROVED EQUAL:
- B. AES Industries, Inc.
- C. Curbs Plus, Inc.

- D. Custom Solution Roof and Metal Products.
- E. Greenheck Fan Corporation.
- F. LM Curbs.
- G. Milcor Inc.; Commercial Products Group of Hart & Cooley, Inc.
- H. Pate Company (The).
- I. Roof Products, Inc.
- J. Thybar Corporation.
- K. Vent Products Co., Inc.
- L. Material: Stainless-steel sheet, 0.078 inch (1.98 mm) thick.
 - 1. Finish: Manufacturer's standard.

M. Construction:

- 1. Insulation: Factory insulated with 1-1/2-inch- (38-mm-) thick glass-fiber board insulation.
- 2. Liner: Same material as equipment support, of manufacturer's standard thickness and finish.
- 3. Factory-installed continuous wood nailers 3-1/2 inches (90 mm) or 5-1/2 inches (140 mm) wide at tops of equipment supports.
- 4. Metal Counterflashing: Manufacturer's standard, removable, fabricated of same metal and finish as equipment support.
- 5. On ribbed or fluted metal roofs, form deck-mounting flange at perimeter bottom to conform to roof profile.
- 6. Fabricate equipment supports to minimum height of 12 inches (300 mm) unless otherwise indicated.
- 7. Sloping Roofs: Where roof slope exceeds 1:48, fabricate each support with height to accommodate roof slope so that tops of supports are level with each other. Equip supports with water diverters or crickets on sides that obstruct water flow.
- 8. Security Grille: Provide where indicated.

PART 3 - EXECUTION

3.1 INSTALLATION

- A. General: Verify dimensions of roof openings for roof accessories. Install roof accessories according to manufacturer's written instructions.
 - 1. Install roof accessories level, plumb, true to line and elevation, and without warping, jogs in alignment, excessive oil canning, buckling, or tool marks.

ROOF ACCESSORIES 077200 - 4

- 2. Anchor roof accessories securely in place so they are capable of resisting indicated loads.
- 3. Use fasteners, separators, sealants, and other miscellaneous items as required to complete installation of roof accessories and fit them to substrates.
- 4. Install roof accessories to resist exposure to weather without failing, rattling, leaking, or loosening of fasteners and seals.
- B. Metal Protection: Protect metals against galvanic action by separating dissimilar metals from contact with each other or with corrosive substrates by painting contact surfaces with bituminous coating or by other permanent separation as recommended by manufacturer.
 - 1. Coat concealed side of stainless-steel roof accessories with bituminous coating where in contact with wood, ferrous metal, or cementitious construction.
 - 2. Underlayment: Where installing roof accessories directly on cementitious or wood substrates, install a course of felt underlayment and cover with a slip sheet, or install a course of polyethylene sheet.
- C. Security Grilles: Weld bar intersections and, using tamper-resistant bolts, attach the ends of bars to structural frame or primary curb walls.
- D. Seal joints with sealant as required by roof accessory manufacturer.

3.2 REPAIR AND CLEANING

- A. Galvanized Surfaces: Clean field welds, bolted connections, and abraded areas and repair galvanizing according to ASTM A 780.
- B. Touch up factory-primed surfaces with compatible primer ready for field painting according to Section 099113 "Exterior Painting" and Section 099123 "Interior Painting."
- C. Replace roof accessories that have been damaged or that cannot be successfully repaired by finish touchup or similar minor repair procedures.

END OF SECTION 077200

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SECTION 078413 - PENETRATION FIRESTOPPING

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

- 1. Penetrations in fire-resistance-rated walls.
- 2. Penetrations in horizontal assemblies.
- Penetrations in smoke barriers.

1.2 ACTION SUBMITTALS

- A. Product Data: For each type of product indicated.
- B. Product Schedule: For each penetration firestopping system. Include location and design designation of qualified testing and inspecting agency.
 - 1. Where Project conditions require modification to a qualified testing and inspecting agency's illustration for a particular penetration firestopping condition, submit illustration, with modifications marked, approved by penetration firestopping manufacturer's fire-protection engineer as an engineering judgment or equivalent fire-resistance-rated assembly.

1.3 INFORMATIONAL SUBMITTALS

- A. Installer Certificates: From Installer indicating penetration firestopping has been installed in compliance with requirements and manufacturer's written recommendations.
- B. Product test reports.

1.4 QUALITY ASSURANCE

- A. Installer Qualifications: A firm that has been approved by FM Global according to FM Global 4991, "Approval of Firestop Contractors," or been evaluated by UL and found to comply with its "Qualified Firestop Contractor Program Requirements."
- B. Fire-Test-Response Characteristics: Penetration firestopping shall comply with the following requirements:
 - 1. Penetration firestopping tests are performed by UL or FM Global.

- Penetration firestopping is identical to those tested per testing standard referenced in "Penetration Firestopping" Article. Provide rated systems bearing marking of qualified testing and inspection agency.
- C. Preinstallation Conference: Conduct conference at Project site.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

- A. <u>Manufacturers</u>: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:
- B. A/D Fire Protection Systems Inc.
- C. Grace Construction Products.
- D. Hilti, Inc.
- E. Johns Manville.
- F. Nelson Firestop Products.
- G. NUCO Inc.
- H. Passive Fire Protection Partners.
- I. RectorSeal Corporation.
- J. Specified Technologies Inc.
- K. 3M Fire Protection Products.
- L. Tremco, Inc.; Tremco Fire Protection Systems Group.
- M. USG Corporation.

2.2 PENETRATION FIRESTOPPING

- A. Provide penetration firestopping that is produced and installed to resist spread of fire according to requirements indicated, resist passage of smoke and other gases, and maintain original fire-resistance rating of construction penetrated. Penetration firestopping systems shall be compatible with one another, with the substrates forming openings, and with penetrating items if any.
- B. Penetrations in Fire-Resistance-Rated Walls: Ratings determined per ASTM E 814 or UL 1479, based on testing at a positive pressure differential of 0.01-inch wg (2.49 Pa).

- 1. F-Rating: Not less than the fire-resistance rating of constructions penetrated.
- C. Penetrations in Horizontal Assemblies: Ratings determined per ASTM E 814 or UL 1479, based on testing at a positive pressure differential of 0.01-inch wg (2.49 Pa).
 - 1. F-Rating: At least 1 hour, but not less than the fire-resistance rating of constructions penetrated.
 - 2. T-Rating: At least 1 hour, but not less than the fire-resistance rating of constructions penetrated except for floor penetrations within the cavity of a wall.
- D. Penetrations in Smoke Barriers: Provide penetration firestopping with ratings determined per UL 1479.
 - 1. L-Rating: Not exceeding 5.0 cfm/sq. ft. (0.025 cu. m/s per sq. m) of penetration opening at 0.30-inch wg (74.7 Pa) at both ambient and elevated temperatures.
- E. Exposed Penetration Firestopping: Provide products with flame-spread and smoke-developed indexes of less than 25 and 450, respectively, as determined per ASTM E 84.
- F. Low-Emitting Materials: Penetration firestopping sealants and sealant primers shall comply with the testing and product requirements of the California Department of Health Services' "Standard Practice for the Testing of Volatile Organic Emissions from Various Sources Using Small-Scale Environmental Chambers."
- G. Accessories: Provide components for each penetration firestopping system that are needed to install fill materials and to maintain ratings required. Use only those components specified by penetration firestopping manufacturer and approved by qualified testing and inspecting agency for firestopping indicated.

PART 3 - EXECUTION

3.1 INSTALLATION

- A. Examine substrates and conditions, with Installer present, for compliance with requirements for opening configurations, penetrating items, substrates, and other conditions affecting performance of the Work.
- B. Install penetration firestopping to comply with manufacturer's written installation instructions and published drawings for products and applications indicated.
- C. Install forming materials and other accessories of types required to support fill materials during their application and in the position needed to produce cross-sectional shapes and depths required to achieve fire ratings indicated.
 - After installing fill materials and allowing them to fully cure, remove combustible forming materials and other accessories not indicated as permanent components of firestopping.

- D. Install fill materials for firestopping by proven techniques to produce the following results:
 - 1. Fill voids and cavities formed by openings, forming materials, accessories, and penetrating items as required to achieve fire-resistance ratings indicated.
 - 2. Apply materials so they contact and adhere to substrates formed by openings and penetrating items.
 - 3. For fill materials that will remain exposed after completing the Work, finish to produce smooth, uniform surfaces that are flush with adjoining finishes.

3.2 IDENTIFICATION

- A. Identify penetration firestopping with preprinted metal or plastic labels. Attach labels permanently to surfaces adjacent to and within 6 inches (150 mm) of firestopping edge so labels will be visible to anyone seeking to remove penetrating items or firestopping. Use mechanical fasteners or self-adhering-type labels with adhesives capable of permanently bonding labels to surfaces on which labels are placed. Include the following information on labels:
 - 1. The words "Warning Penetration Firestopping Do Not Disturb. Notify Building Management of Any Damage."
 - 2. Contractor's name, address, and phone number.
 - 3. Designation of applicable testing and inspecting agency.
 - 4. Date of installation.
 - 5. Manufacturer's name.
 - 6. Installer's name.

3.3 FIELD QUALITY CONTROL

- A. Owner will engage a qualified testing agency to perform tests and inspections.
- B. Where deficiencies are found or penetration firestopping is damaged or removed because of testing, repair or replace penetration firestopping to comply with requirements.
- C. Proceed with enclosing penetration firestopping with other construction only after inspection reports are issued and installations comply with requirements.

3.4 PENETRATION FIRESTOPPING SCHEDULE

A. Where UL-classified systems are indicated, they refer to system numbers in UL's "Fire Resistance Directory" under product Category XHEZ.

END OF SECTION 078413

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SECTION 079200 - JOINT SEALANTS

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

- 1. Silicone joint sealants.
- 2. Urethane joint sealants.
- 3. Latex joint sealants.

1.2 PRECONSTRUCTION TESTING

- A. Preconstruction Compatibility and Adhesion Testing: Submit to joint-sealant manufacturers 3 samples of materials that will contact or affect joint sealants. Use ASTM C 1087 to determine whether priming and other specific joint preparation techniques are required to obtain rapid, optimum adhesion of joint sealants to joint substrates.
- B. Preconstruction Field-Adhesion Testing: Before installing sealants, field test their adhesion to Project joint substrates. Test joint sealants according to Method Λ, Field-Applied Sealant Joint Hand Pull Tab, in Appendix X1 in ASTM C 1193 or Method A, Tail Procedure, in ASTM C 1521.

1.3 ACTION SUBMITTALS

- A. Product Data: For each joint-sealant product indicated.
- B. Samples: For each kind and color of joint sealant required.
- C. 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.

1.4 INFORMATIONAL SUBMITTALS

- A. Product test reports.
- B. Preconstruction compatibility and adhesion test reports.
- C. Preconstruction field-adhesion test reports.

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- D. Field-adhesion test reports.
- E. Warranties.

1.5 QUALITY ASSURANCE

A. Testing Agency Qualifications: Qualified according to ASTM C 1021 to conduct the testing indicated.

1.6 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: 10 years from date of Substantial Completion.

PART 2 - PRODUCTS

2.1 MATERIALS, GENERAL

- A. Low-Emitting Interior Sealants: Sealants and sealant primers used inside the weatherproofing system shall comply with the testing and product requirements of the California Department of Health Services' "Standard Practice for the Testing of Volatile Organic Emissions from Various Sources Using Small-Scale Environmental Chambers."
- B. Liquid-Applied Joint Sealants: Comply with ASTM C 920 and other requirements indicated for each liquid-applied joint sealant specified, including those referencing ASTM C 920 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.
- C. Stain-Test-Response Characteristics: Where sealants are specified to be nonstaining to porous substrates, provide products that have undergone testing according to ASTM C 1248 and have not stained porous joint substrates indicated for Project.

D. 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.

2.2 SILICONE JOINT SEALANTS

- A. Mildew-Resistant Silicone Joint Sealant: ASTM C 920.
 - 1. <u>Basis-of-Design Product</u>: Subject to compliance with requirements, provide comparable product by one of the following or approved equal:
 - a. BASF Building Systems.
 - b. <u>Dow Corning Corporation</u>.
 - c. <u>GE Advanced Materials Silicones</u>.
 - d. May National Associates, Inc.
 - e. <u>Pecora Corporation</u>.
 - f. Polymeric Systems, Inc.
 - g. Schnee-Morehead, Inc.
 - h. Sika Corporation; Construction Products Division.
 - i. <u>Tremco Incorporated</u>.
 - 2. Type: Single component (S).
 - 3. Grade: nonsag (NS).
 - 4. Class: 100/50
 - 5. Uses Related to Exposure: Nontraffic (NT).

2.3 URETHANE JOINT SEALANTS

- A. Urethane Joint Sealant: ASTM C 920.
 - 1. Basis-of-Design Product: Subject to compliance with requirements, provide comparable product by one of the following or approved equal:
 - a. <u>BASF Building Systems</u>.
 - b. Bostik, Inc.
 - c. Lymtal, International, Inc.
 - d. May National Associates, Inc.
 - e. <u>Pacific Polymers International, Inc.</u>
 - f. Pecora Corporation.
 - g. Polymeric Systems, Inc.
 - h. Schnee-Morehead, Inc.
 - i. Sika Corporation; Construction Products Division.
 - i. Tremco lncorporated.
 - 2. Type: Single component (S).
 - Grade nonsag (NS).
 - 4. Class: 100/50.
 - 5. Uses Related to Exposure: Nontraffic (NT).

2.4 LATEX JOINT SEALANTS

- A. Latex Joint Sealant: Acrylic latex or siliconized acrylic latex, ASTM C 834, Type OP, Grade NF.
 - 1. <u>Basis-of-Design Product</u>: Subject to compliance with requirements, provide comparable product by one of the following or approved equal:
 - a. BASF Building Systems.
 - b. Bostik, Inc.
 - c. May National Associates, Inc.
 - d. <u>Pecora Corporation</u>.
 - e. <u>Schnee-Morehead</u>, Inc.
 - f. <u>Tremco Incorporated</u>.

2.5 JOINT SEALANT BACKING

- A. Cylindrical Sealant Backings: ASTM C 1330, Type C (closed-cell material with a surface skin), Type O (open-cell material), 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.
- B. Bond-Breaker Tape: Polyethylene tape or other plastic tape recommended by sealant manufacturer.

2.6 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.
- C. Masking Tape: Nonstaining, nonabsorbent material compatible with joint sealants and surfaces adjacent to joints.

PART 3 - EXECUTION

3.1 PREPARATION

- A. Surface Cleaning of Joints: Clean out joints immediately before installing joint sealants to comply with joint-sealant manufacturer's written instructions.
 - 1. Remove laitance and form-release agents from concrete.

- 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.
- 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.

3.2 INSTALLATION

- A. Sealant Installation Standard: Comply with recommendations in ASTM C 1193 for use of joint sealants as applicable to materials, applications, and conditions indicated.
- B. 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.
- C. Install bond-breaker tape behind sealants where sealant backings are not used between sealants and backs of joints.
- D. 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.
- E. 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 C 1193, unless otherwise indicated.

- F. Acoustical Sealant Installation: Comply with ASTM C 919 and with manufacturer's written recommendations.
- G. 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.

3.3 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 4 tests for the first 100 feet (300 m) of joint length for each kind of sealant and joint substrate.
 - 2. Test Method: Test joint sealants according to Method A, Field-Applied Sealant Joint Hand Pull Tab, in Appendix X1 in ASTM C 1193 or Method A, Tail Procedure, in ASTM C 1521.
- 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.

3.4 JOINT-SEALANT SCHEDULE

- A. Joint-Sealant Application: Exterior joints in horizontal traffic surfaces.
 - 1. Joint Locations:
 - a. Control and expansion joints.
 - b. Joints between different materials.
 - 2. Joint Scalant: Silicone.
 - 3. Joint-Scalant Color: As selected by Architect from manufacturer's full range of colors.
- B. Joint-Sealant Application: Exterior joints in vertical surfaces and horizontal nontraffic surfaces
 - 1. Joint Locations:
 - a. Joints in dimension stone cladding.
 - b. Joints between different materials listed above.
 - c. Perimeter joints between materials listed above and frames of doors and louvers.
 - d. Other joints as indicated.
 - 2. Joint Sealant: Urethane.
 - 3. Joint-Sealant Color: As selected by Architect from manufacturer's full range of colors.

- C. Joint-Sealant Application: Interior joints in vertical surfaces and horizontal nontraffic surfaces
 - 1. Joint Locations:
 - a. Perimeter joints of exterior openings where indicated.
 - b. Vertical joints on exposed surfaces of interior unit masonry walls and partitions.
 - c. Perimeter joints between interior wall surfaces and frames of interior doors and elevator entrances.
 - d. Other joints as indicated.
 - 2. Joint Sealant: Latex.
 - 3. Joint Sealant:
 - 4. Joint-Sealant Color: As selected by Architect from manufacturer's full range of colors.
 - 5. Joint Sealant: Acoustical.
 - 6. Joint Sealant;
 - 7. Joint-Sealant Color: As selected by Architect from manufacturer's full range.

END OF SECTION 079200

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SECTION 081113 - HOLLOW METAL DOORS AND FRAMES

PART 1 - GENERAL

1.1 SUMMARY

A. Section includes hollow-metal work.

1.2 DEFINITIONS

A. Minimum Thickness: Minimum thickness of base metal without coatings according to NAAMM-HMMA 803 or SDI A250.8.

1.3 ACTION SUBMITTALS

- A. Product Data: For each type of product.
 - 1. content. Include statement indicating cost for each product having recycled content.
- B. Shop Drawings: Include elevations, door edge details, frame profiles, metal thicknesses, preparations for hardware, and other details.
- C. Samples for Initial Selection: For units with factory-applied color finishes.
- D. Samples for Verification: For each type of exposed finish required.
- E. Schedule: Prepared by or under the supervision of supplier, using same reference numbers for details and openings as those on Drawings.

1.4 INFORMATIONAL SUBMITTALS

A. Product test reports.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

- A. <u>Manufacturers</u>: 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. Amweld International, LLC.
 - 2. Apex Industries, Inc.

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- 3. Ceco Door Products; an Assa Abloy Group company.
- 4. Commercial Door & Hardware Inc.
- 5. Concept Frames, Inc.
- 6. Curries Company; an Assa Abloy Group company.
- 7. Custom Metal Products.
- 8. Daybar.
- 9. Deansteel.
- 10. de La Fontaine Industries.
- 11. DKS Steel Door & Frame Sys. Inc.
- 12. Door Components, Inc.
- 13. Fleming-Baron Door Products.
- 14. Gensteel Doors Inc.
- 15. Greensteel Industries, Ltd.
- 16. HMF Express.
- 17. Hollow Metal Inc.
- 18. Hollow Metal Xpress.
- 19. J/R Metal Frames Manufacturing, Inc.
- 20. Karpen Steel Custom Doors & Frames.
- 21. L.l.F. Industries, Inc.
- 22. LaForce, Inc.
- 23. Megamet Industries, Inc.
- 24. Mesker Door Inc.
- 25. Michbi Doors Inc.
- 26. MPI Group, LLC (The).
- 27. National Custom Hollow Metal.
- 28. North American Door Corp.

- 29. Philipp Manufacturing Co (The).
- 30. Pioneer Industries, Inc.
- 31. Premier Products, Inc.
- 32. Republic Doors and Frames.
- 33. Rocky Mountain Metals, Inc.
- 34. Security Metal Products Corp.
- 35. Shanahans Manufacturing Ltd.
- 36. Steelcraft; an Ingersoll-Rand company.
- 37. Steward Steel; Door Division.
- 38. Stiles Custom Metal, Inc.
- 39. Titan Metal Products, Inc.
- 40. Trillium Steel Doors Limited.
- 41. West Central Mfg. Inc.

2.2 REGULATORY REQUIREMENTS

- A. Fire-Rated Assemblies: Complying with NFPA 80 and listed and labeled by a qualified testing agency acceptable to authorities having jurisdiction for fire-protection ratings and temperature-rise limits indicated, based on testing at positive pressure according to NFPA 252 or UL 10C.
 - 1. Smoke- and Draft-Control Assemblies: Provide an assembly with gaskets listed and labeled for smoke and draft control by a qualified testing agency acceptable to authorities having jurisdiction, based on testing according to UL 1784 and installed in compliance with NFPA 105.

2.3 INTERIOR DOORS AND FRAMES

- A. Heavy-Duty Doors and Frames: SDI A250.8, Level 2. At locations indicated in the Door and Frame Schedule
 - 1. Physical Performance: Level B according to SDI A250.4.
 - 2. Doors:
- B. Type: As indicated in the Door and Frame Schedule.
- C. Thickness: 1-3/4 inches (44.5 mm).

- D. Face: Uncoated, cold-rolled steel sheet, minimum thickness of 0.042 inch (1.0 mm).
- E. Edge Construction: Model 2, Seamless.
- F. Core: Vertical steel stiffener.
 - 1. Frames:
 - a. Materials: Uncoated, steel sheet, minimum thickness of 0.053 inch (1.3 mm).
 - b. Construction: Full profile welded.
 - 2. Exposed Finish: Prime.

2.4 FRAME ANCHORS

A. Jamb Anchors:

- 1. Masonry Type: Adjustable strap-and-stirrup or T-shaped anchors to suit frame size, not less than 0.042 inch (1.0 mm) thick, with corrugated or perforated straps not less than 2 inches (51 mm) wide by 10 inches (254 mm) long; or wire anchors not less than 0.177 inch (4.5 mm) thick.
- 2. Stud-Wall Type: Designed to engage stud, welded to back of frames; not less than 0.042 inch (1.0 mm) thick.
- 3. Compression Type for Drywall Slip-on Frames: Adjustable compression anchors.
- 4. Postinstalled Expansion Type for In-Place Concrete or Masonry: Minimum 3/8-inch-(9.5-mm-) 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.
- 5. Floor Anchors: Formed from same material as frames, minimum thickness of 0.042 inch (1.0 mm), and as follows:
- 6. Monolithic Concrete Slabs: Clip-type anchors, with two holes to receive fasteners.
- 7. Separate Topping Concrete Slabs: Adjustable-type anchors with extension clips, allowing not less than 2-inch (51-mm) height adjustment. Terminate bottom of frames at finish floor surface.

2.5 MATERIALS

- A. Recycled Content of Steel Products: Postconsumer recycled content plus one-half of preconsumer recycled content not less than 25 percent.
- B. Cold-Rolled Steel Sheet: ASTM A 1008/A 1008M, Commercial Steel (CS), Type B; suitable for exposed applications.
- C. Hot-Rolled Steel Sheet: ASTM A 1011/A 1011M, Commercial Steel (CS), Type B; free of scale, pitting, or surface defects; pickled and oiled.

- D. Metallic-Coated Steel Sheet: ASTM A 653/A 653M, Commercial Steel (CS), Type B.
- E. Frame Anchors: ASTM A 879/A 879M, Commercial Steel (CS), 04Z (12G) coating designation; mill phosphatized.
 - For anchors built into exterior walls, steel sheet complying with ASTM A 1008/A 1008M or ASTM A 1011/A 1011M, hot-dip galvanized according to ASTM A 153/A 153M, Class B.
- F. Inserts, Bolts, and Fasteners: Hot-dip galvanized according to ASTM A 153/A 153M.
- G. Power-Actuated Fasteners in Concrete: From corrosion-resistant materials.
- H. Grout: ASTM C 476, except with a maximum slump of 4 inches (102 mm), as measured according to ASTM C 143/C 143M.
- I. Mineral-Fiber Insulation: ASTM C 665, Type I (blankets without membrane facing).
- J. Glazing: Section 088000 "Glazing."
- K. Bituminous Coating: Cold-applied asphalt mastic, compounded for 15-mil (0.4-mm) dry film thickness per coat.

2.6 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. 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.
 - 2. Astragals: Provide overlapping astragal on one leaf of pairs of doors where required by NFPA 80 for fire-performance rating or where indicated.
- 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. Grout Guards: Weld guards to frame at back of hardware mortises in frames to be grouted.
 - 3. 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.
 - 4. Jamb Anchors: Provide number and spacing of anchors as follows:

- a. Masonry Type: Locate anchors not more than 16 inches (406 mm) from top and bottom of frame. Space anchors not more than 32 inches (813 mm) o.c., to match coursing, and as follows:
 - 1) Two anchors per jamb up to 60 inches (1524 mm) high.
 - 2) Three anchors per jamb from 60 to 90 inches (1524 to 2286 mm) high.
 - 3) Four anchors per jamb from 90 to 120 inches (2286 to 3048 mm) high.
 - 4) Four anchors per jamb plus one additional anchor per jamb for each 24 inches (610 mm) or fraction thereof above 120 inches (3048 mm) high.
- b. Stud-Wall Type: Locate anchors not more than 18 inches (457 mm) from top and bottom of frame. Space anchors not more than 32 inches (813 mm) o.c. and as follows:
 - 1) Three anchors per jamb up to 60 inches (1524 mm) high.
 - 2) Four anchors per jamb from 60 to 90 inches (1524 to 2286 mm) high.
 - 3) Five anchors per jamb from 90 to 96 inches (2286 to 2438 mm) high.
 - 4) Five anchors per jamb plus one additional anchor per jamb for each 24 inches (610 mm) or fraction thereof above 96 inches (2438 mm) high.
- c. Compression Type: Not less than two anchors in each frame.
- d. Postinstalled Expansion Type: Locate anchors not more than 6 inches (152 mm) from top and bottom of frame. Space anchors not more than 26 inches (660 mm) o.c.
- 5. Door Silencers: Except on weather-stripped frames, drill stops to receive door silencers.
 - 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. Hardware Preparation: Factory prepare hollow-metal work to receive templated mortised hardware; include cutouts, reinforcement, mortising, drilling, and tapping according to SDI A250.6, the Door Hardware Schedule, and templates.
 - Reinforce doors and frames to receive nontemplated, mortised, and surface-mounted door hardware.
 - 2. Comply with applicable requirements in SDI A250.6 and BHMA A156.115 for preparation of hollow-metal work for hardware.
- E. Stops and Moldings: Provide stops and moldings around glazed lites and louvers where indicated. Form corners of stops and moldings with mitered hairline joints.
 - Single Glazed Lites: Provide fixed stops and moldings welded on secure side of hollowmetal work.
 - 2. Multiple Glazed Lites: Provide fixed and removable stops and moldings so that each glazed lite is capable of being removed independently.
 - 3. Provide fixed frame moldings on outside of exterior and on secure side of interior doors and frames.
 - 4. Provide loose stops and moldings on inside of hollow-metal work.
 - 5. Coordinate rabbet width between fixed and removable stops with glazing and installation types indicated.

2.7 STEEL FINISHES

- A. Prime Finish: Clean, pretreat, and apply manufacturer's standard primer.
 - 1. Shop Primer: SDI A250.10.

2.8 ACCESSORIES

A. Grout Guards: Formed from same material as frames, not less than 0.016 inch (0.4 mm) thick.

PART 3 - EXECUTION

3.1 INSTALLATION

- A. Hollow-Metal Frames: Install hollow-metal frames of size and profile indicated. Comply with SDI A250.11 or NAAMM-HMMA 840 as required by standards specified.
 - 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. At fire-rated openings, install frames according to NFPA 80.
 - b. 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.
 - c. Install frames with removable stops located on secure side of opening.
 - d. Install door silencers in frames before grouting.
 - e. Remove temporary braces necessary for installation only after frames have been properly set and secured.
 - f. Check plumb, square, and twist of frames as walls are constructed. Shim as necessary to comply with installation tolerances.
 - g. Field apply bituminous coating to backs of frames that will be filled with grout containing antifreezing agents.
 - 2. Floor Anchors: Provide floor anchors for each jamb and mullion that extends to floor, and secure with postinstalled expansion anchors.
 - a. Floor anchors may be set with power-actuated fasteners instead of postinstalled expansion anchors if so indicated and approved on Shop Drawings.
 - 3. Metal-Stud Partitions: Solidly pack mineral-fiber insulation inside frames.
 - 4. Masonry Walls: Coordinate installation of frames to allow for solidly filling space between frames and masonry with grout.
 - 5. Concrete Walls: Solidly fill space between frames and concrete with mineral-fiber insulation.

- 6. In-Place Concrete or Masonry Construction: Secure frames in place with postinstalled expansion anchors. Countersink anchors, and fill and make smooth, flush, and invisible on exposed faces.
- 7. In-Place Metal or Wood-Stud Partitions: Secure slip-on drywall frames in place according to manufacturer's written instructions.
- 8. Installation Tolerances: Adjust hollow-metal door frames for squareness, alignment, twist, and plumb to the following tolerances:
- 9. Squareness: Plus or minus 1/16 inch (1.6 mm), measured at door rabbet on a line 90 degrees from jamb perpendicular to frame head.
- 10. Alignment: Plus or minus 1/16 inch (1.6 mm), measured at jambs on a horizontal line parallel to plane of wall.
- 11. Twist: Plus or minus 1/16 inch (1.6 mm), measured at opposite face corners of jambs on parallel lines, and perpendicular to plane of wall.
- 12. Plumbness: Plus or minus 1/16 inch (1.6 mm), measured at jambs at floor.
- B. 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 (3.2 mm) plus or minus 1/32 inch (0.8 mm).
- b. Between Edges of Pairs of Doors: 1/8 inch (3.2 mm) to 1/4 inch (6.3 mm) plus or minus 1/32 inch (0.8 mm).
- c. At Bottom of Door: 5/8 inch (15.8 mm) plus or minus 1/32 inch (0.8 mm).
- d. Between Door Face and Stop: 1/16 inch (1.6 mm) to 1/8 inch (3.2 mm) plus or minus 1/32 inch (0.8 mm).
- 2. Fire-Rated Doors: Install doors with clearances according to NFPA 80.
- 3. Smoke-Control Doors: Install doors and gaskets according to NFPA 105.

3.2 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. Remove grout and other bonding material from hollow-metal work immediately after installation.
- C. 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.

- D. Metallic-Coated Surface Touchup: Clean abraded areas and repair with galvanizing repair paint according to manufacturer's written instructions.
- E. Touchup Painting: Cleaning and touchup painting of abraded areas of paint are specified in painting Sections.

END OF SECTION 081113

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SECTION 083113 - ACCESS DOORS AND FRAMES

PART 1 - GENERAL

1.1 SUMMARY

- A. Section Includes:
 - 1. Access doors and frames for walls and ceilings.
 - 2. Floor access doors and frames.

1.2 ACTION SUBMITTALS

- A. Product Data: For each type of product.
- B. Shop Drawings: Include plans, elevations, sections, details, and attachments to other work.
- C. Samples: For each door face material.
- D. Schedule: Types, locations, sizes, latching or locking provisions, and other data pertinent to installation.

PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

- A. Fire-Rated Access Doors and Frames: Units complying with NFPA 80 tested according to the following test method:
 - 1. NFPA 252 or UL 10B for fire-rated access door assemblies installed vertically or.
 - 2. NFPA 288 for fire-rated access door assemblies installed horizontally.

2.2 ACCESS DOORS AND FRAMES FOR WALLS AND CEILINGS

- 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:
- B. <u>Basis-of-Design Product</u>: Subject to compliance with requirements, provide product indicated or comparable product by one of the following:
 - 1. Access Panel Solutions.
 - 2. Acudor Products, Inc.
 - 3. Alfab, Inc.
 - 4. <u>Babcock-Davis</u>.

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- 5. Cendrex Inc.
- 6. Elmdor/Stoneman Manufacturing Co.; Div. of Acorn Engineering Co.
- 7. Jensen Industries; Div. of Broan-Nutone, LLC.
- 8. J. L. Industries, Inc.; Div. of Activar Construction Products Group.
- 9. Karp Associates, Inc.
- 10. <u>Larsen's Manufacturing Company</u>.
- 11. Maxam Metal Products Limited.
- 12. Metropolitan Door Industries Corp.
- 13. MIFAB, Inc.
- 14. Milcor Inc.
- 15. Nystrom, Inc.
- 16. Williams Bros. Corporation of America (The).
- C. Source Limitations: Obtain each type of access door and frame from single source from single manufacturer.
- D. Fire-Rated, Flush Access Doors with Exposed Flanges:
 - Assembly Description: Fabricate door to fit flush to frame, with a core of mineral-fiber insulation enclosed in sheet metal. Provide self-latching door with automatic closer and interior latch release. Provide manufacturer's standard-width exposed flange, proportional to door size.
 - 2. Locations: floor.
 - 3. Fire-Resistance Rating: Not less than 1-1/2 hour.
 - 4. Temperature-Rise Rating: [450 deg F (250 deg C) at the end of 30 minutes.
 - Metallic-Coated Steel Sheet for Door: Nominal 0.040 inch (1.02 mm), 20 gage.
 - a. Finish: Factory finish.
 - 6. Frame Material: Same material, thickness, and finish as door.
 - 7. Hinges: Manufacturer's standard.

E. Hardware:

1. Latch: Self-latching bolt latch operated by ring turn with interior release.

2.3 FLOOR ACCESS DOORS AND FRAMES

- 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 or approved equal:
- B. <u>Basis-of-Design Product</u>: Subject to compliance with requirements, provide product indicated or comparable product by one of the following:
 - 1. Acudor Products, Inc.
 - 2. Babcock-Davis.

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- 3. <u>Bilco Company (The)</u>.
- 4. Cendrex Inc.
- 5. <u>Dur-Red Products</u>.
- 6. Halliday Products.
- 7. Jensen Industries; Div. of Broan-Nutone, LLC.
- 8. Karp Associates, Inc.
- 9. Maxam Metal Products Limited.
- 10. Metropolitan Door Industries Corp.
- 11. MIFAB, Inc.
- 12. Milcor Inc.
- 13. Nystrom, Inc.
- 14. U.S.F. Fabrication.
- 15. Williams Bros. Corporation of America (The).
- C. Floor Doors, General: Equip each door with adjustable counterbalancing springs, heavy-duty hold-open arm that automatically locks door open at 90 degrees, release handle with red vinyl grip that allows for one-handed closure, and recessed lift handle.
- D. Steel Angle-Frame Floor Door: Double-leaf opening. Galvanized structural-steel frame with 1/4-inch- (6.4-mm-) thick, diamond-pattern, galvanized structural-steel tread plate door; nonwatertight; loading capacity to support 300-lbf/sq. ft. (14.4-kN/sq. m) pedestrian live AASHTO H20 concentrated wheel load.
 - 1. Fire-Resistance Rating: Not less than that indicated 1-1/2 hours
 - Finish: Yellow with wording "FIRE DOOR DO NOT STORE MATERIALS ON SURFACE."
- E. Hardware: Provide the following:
 - 1. Hinges: Heavy-duty, stainless-steel butt hinges with stainless-steel pins.
 - 2. Latch: Stainless-steel slam latch.
 - 3. Lock: Keyed deadbolt lock.
 - 4. Hardware Material: Stainless steel, including latch and lifting mechanism assemblies, hold-open arms, and all brackets, hinges, pins, and fasteners.
- F. Insulation: Fiberglass with liner pan.
- G. Safety Accessories: Safety chains.

2.4 MATERIALS

- A. Steel Plates, Shapes, and Bars: ASTM A 36/A 36M.
- B. Rolled-Steel Floor Plate: ASTM A 786/A 786M, rolled from plate complying with ASTM A 36/A 36M or ASTM A 283/A 283M, Grade C or D.
- C. Steel Sheet: Uncoated or electrolytic zinc coated, ASTM A 879/A 879M, with cold-rolled steel sheet substrate complying with ASTM A 1008/A 1008M, Commercial Steel (CS), exposed.

- D. Metallic-Coated Steel Sheet: ASTM A 653/A 653M, Commercial Steel (CS), Type B; with minimum G60 (Z180) or A60 (ZF180) metallic coating.
- E. Frame Anchors: Same type as door face.
- F. Inserts, Bolts, and Anchor Fasteners: Hot-dip galvanized steel according to ASTM A 153/A 153M or ASTM F 2329.

2.5 FABRICATION

- A. General: Provide access door and frame assemblies manufactured as integral units ready for installation.
- B. Metal Surfaces: For metal surfaces exposed to view in the completed Work, provide materials with smooth, flat surfaces without blemishes. Do not use materials with exposed pitting, seam marks, roller marks, rolled trade names, or roughness.
- C. Doors and Frames: Grind exposed welds smooth and flush with adjacent surfaces. Furnish attachment devices and fasteners of type required to secure access doors to types of supports indicated.
- D. Recessed Access Doors: Form face of panel to provide recess for application of applied finish. Reinforce panel as required to prevent buckling.
 - 1. For recessed doors with plaster infill, provide self-furring expanded metal lath attached to door panel.
- E. Latching Mechanisms: Furnish number required to hold doors in flush, smooth plane when closed.
 - 1. For cylinder locks, furnish two keys per lock and key all locks alike.
 - 2. For recessed panel doors, provide access sleeves for each locking device. Furnish plastic grommets and install in holes cut through finish.

2.6 FINISHES

- A. Comply with NAAMM's "Metal Finishes Manual for Architectural and Metal Products" for recommendations for applying and designating finishes.
- B. Protect mechanical finishes on exposed surfaces from damage by applying a strippable, temporary protective covering before shipping.
- C. Appearance of Finished Work: Noticeable variations in same piece are not acceptable. Variations in appearance of adjoining components are acceptable if they are within the range of approved Samples and are assembled or installed to minimize contrast.
- D. Steel and Metallic-Coated-Steel Finishes:

1. Factory Finish: Immediately after cleaning and pretreating, apply manufacturer's standard two-coat, baked-on finish consisting of prime coat and thermosetting topcoat, with a minimum dry-film thickness of 1 mil (0.025 mm) for topcoat.

PART 3 - EXECUTION

3.1 INSTALLATION

- A. Comply with manufacturer's written instructions for installing access doors and frames.
- B. Install doors flush with adjacent finish surfaces or recessed to receive finish material.

3.2 ADJUSTING

- A. Adjust doors and hardware, after installation, for proper operation.
- B. Remove and replace doors and frames that are warped, bowed, or otherwise damaged.

END OF SECTION 083113

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SECTION 086200 - UNIT SKYLIGHTS

PART 1 - GENERAL

1.1 SUMMARY

- A. Section Includes:
 - 1. Self-flashing unit skylights with integral curbs.
 - 2. Unit skylights mounted on prefabricated curbs.

1.2 ACTION SUBMITTALS

- A. Product Data: For each type of unit skylight.
- B. Shop Drawings: For unit skylight work. Include plans, elevations, sections, details, and connections to supporting structure and other adjoining work such as site erected curb.
- C. Samples: For each type of exposed finish required and each type of glazing.
- D. Product Schedule: For unit skylights. Use same designations indicated on Drawings.
- E. INFORMATIONAL SUBMITTALS
- F. Qualification data.
- G. Product test reports.
- H. Field quality-control reports.
- I. Sample warranty.

1.3 CLOSEOUT SUBMITTALS

A. Maintenance data.

1.4 WARRANTY

- A. Special Warranty: Manufacturer agrees to repair or replace components of unit skylights that fail in materials or workmanship within specified warranty period.
 - 1. Warranty Period: Five years from date of Substantial Completion.



PART 2 - PRODUCTS

2.1 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:
- B. Basis-of-Design Product: Subject to compliance with requirements, provide Skyline Sky-Lites, LLC -model TAN -FCMD Tandem Flat Curb Mounted Double Glazed with integral aluminum curb or comparable product by one of the following:
 - 1. Acralight International.
 - 2. Auburn Skylights; Major Industries, Inc.
 - 3. Bristolite Skylights.
 - 4. CPI Daylighting Inc.
 - 5. <u>Dur-Red Products</u>.
 - 6. Exarc Skylights, Inc.
 - 7. Fiore Skylights, Inc.; a division of Pepco Manufacturing Co.
 - 8. Fox Lite, Inc.; Skymaster Skylights.
 - 9. Glazed Structures Inc.
 - 10. Kalwall Corporation.
 - 11. Lane-Aire Manufacturing Corporation.
 - 12. Naturalite Skylight Systems; Oldcastle Glass Engineered Products.
 - 13. Plasteco, Inc.
 - 14. PECOT Skylights; Plastic Engineering Company of Tulsa, Inc.
 - 15. SABIC Polymershapes.
 - 16. Skyline Sky-Lites, LLC.
 - 17. Solar Industries, Inc.
 - 18. Sunglo Skylight Products.
 - 19. VELUX America Inc.
 - 20. Wasco Products, Inc.
 - 21. Or Approved Equal

2.2 PERFORMANCE REQUIREMENTS

- A. Unit Skylight Standard: Comply with AAMA/WDMA/CSA 101/I.S.2/A440 for definitions and minimum standards of performance, materials, components, accessories, and fabrication unless more stringent requirements are indicated.
 - 1. Performance Class and Grade: Class CW-PG 50.
 - 2. Certification: AAMA-, WDMA-, or CSA-certified unit skylights with label attached to each.
- B. Thermal Transmittance: NFRC 100 maximum U-factor of 0.60 Btu/sq. ft. x h x deg F (3.43 W/sq. m x K)].

- C. Windborne-Debris-Impact Resistance: Provide unit skylights that pass Wind Zone 2 when tested according to ASTM E 1886. Test specimens shall be no smaller in width and length than unit skylights indicated for use on Project and shall be installed in same manner as unit skylights indicated for use on Project.
 - 1. Small-Missile Test: For unit skylights located more than 30 feet (9.1 m) above grade and Large-Missile Test: For all unit skylights regardless of height above grade.

2.3 UNIT SKYLIGHTS

- A. Unit Shape and Size: As indicated, Field verification required.
- B. Insulating Glass:
 - 1. Exterior Lite: 6-mm tinted, heat-strengthened and fully tempered glass.
 - 2. Interior Lite: Laminated glass; two plies of 3-mm clear heat-strengthened glass with 0.030-inch (0.762-mm) clear polyvinyl butyral interlayer.
 - 3. Interspace Content: Argon.
 - 4. Low-Emissivity Coating: 60 Low "E" Solar ban.
- C. Glazing Gaskets: EPDM, neoprene, partially vulcanized butyl tape, or liquid-applied elastomeric sealant
- D. Integral Curb: Extruded-aluminumVinyl, self-flashing type.
 - 1. Extruded-Aluminum Shapes: ASTM B 221 (ASTM B 221M).
 - 2. Height: 8 inches (200 mm).
 - 3. Construction: Double wall.
 - 4. Insulation: Manufacturer's standard rigid.
 - a. Exposed Insulation: Cover face of insulation exposed to interior of building with aluminum or vinyl liner.
- E. Condensation Control: Fabricate unit skylights with integral internal gutters and nonclogging weeps to collect and drain condensation to the exterior.
- F. Thermal Break: Fabricate unit skylights with thermal barrier separating exterior and interior metal framing.
- G. Fasteners: Same metal as metal being fastened, nonmagnetic stainless steel, or other noncorrosive metal as recommended by manufacturer. Finish exposed fasteners to match material being fastened. Provide nonremovable fastener heads.

2.4 ALUMINUM FINISHES

A. Mill Finish: Manufacturer's standard.

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B. Clear Anodic Finish: AAMA 611, AA-M12C22A41, Class I, 0.018 mm or thicker.

PART 3 - EXECUTION

3.1 INSTALLATION

- A. Coordinate installation of unit skylight with installation of substrates, vapor retarders, roof insulation, roofing membrane, and flashing as required to ensure that each element of the Work performs properly and that combined elements are waterproof and weathertight.
- B. Comply with recommendations in AAMA 1607 and with manufacturer's written instructions for installing unit skylights.

3.2 FIELD QUALITY CONTROL

- A. Testing Agency: Engage a qualified testing agency to perform tests and inspections.
- B. After completion of installation and nominal curing of sealant and glazing compounds but before installation of interior finishes, test for water leaks according to AAMA 501.2.
- C. Perform test for total area of each unit skylight.
- D. Work will be considered defective if it does not pass tests and inspections.
- E. Additional testing and inspections, at Contractor's expense, will be performed to determine compliance of replaced or additional work with specified requirements.

3.3 CLEANING

A. Clean exposed unit skylight surfaces according to manufacturer's written instructions. Touch up damaged metal coatings and finishes.

END OF SECTION 086200

SECTION 087100 - DOOR HARDWARE

PART I - GENERAL

1.1 SUMMARY

- A. Section includes:
 - 1. Mechanical door hardware for the following:
 - a. Swinging doors.
 - 2. Cylinders for door hardware specified in other Sections.
- B. Products furnished, but not installed, under this Section include the products listed below. Coordinating and scheduling the purchase and delivery of these products remain requirements of this Section.
 - 1. Thresholds and lock cylinders to be installed under other Sections.
 - 2. Permanent lock cores to be installed by Owner.

1.2 ACTION SUBMITTALS

- A. Product Data: For each type of product indicated.
- B. Samples: For each exposed product and for each color and texture specified.
- C. 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. Format: Use same scheduling sequence and format and use same door numbers as in the Contract Documents.
 - b. 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.

2. Keying Schedule: Prepared by or under the supervision of Installer, detailing Owner's final keying instructions for locks.

1.3 QUALITY ASSURANCE

- A. 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.
- B. DHI has four certification designations: Architectural Hardware Consultant (AHC); Certified Door Consultant (CDC); Electrified Hardware Consultant (EHC), and Architectural Opening Consultant (AOC), which signifies that a consultant has earned AHC, CDC, and EHC certification. CDCs are trained to understand only requirements of doors and frames. Retain second or third option in subparagraph below if Project includes electrified door hardware.

C.

- D. Fire-Rated Door Assemblies: Where fire-rated door assemblies are indicated, provide door hardware rated for use in assemblies complying with NFPA 80 that are listed and labeled by a qualified testing agency, for fire-protection ratings indicated, based on testing at positive pressure according to NFPA 252 or UL 10C, unless otherwise indicated.
- 1.4 DELIVERY, STORAGE, AND HANDLING

A.

B. Deliver keys and permanent cores to Owner by registered mail or overnight package service.

1.5 WARRANTY

- A. 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.
 - 1. Warranty Period: Three years from date of Substantial Completion, unless otherwise indicated.
 - a. Manual Closers: 1 year from date of Substantial Completion.

PART 2 - PRODUCTS

2.1 SCHEDULED DOOR HARDWARE

A. Provide door hardware for each door to comply with requirements in this Section.

DOOR HARDWARE

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- 1. Door Hardware Sets: Provide quantity, item, size, finish or color indicated, and manufacturers' products products complying with BHMA designations referenced.
- 2. Sequence of Operation: Provide electrified door hardware function, sequence of operation, and interface with other building control systems indicated.
- 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. References to BHMA Designations: Provide products complying with these designations and requirements for description, quality, and function.

2.2 HINGES

- A. Hinges: BHMA A156.1. Provide template-produced hinges for hinges installed on hollow-metal doors and hollow-metal frames.
 - 1. 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:
 - a. Baldwin Hardware Corporation.
 - b. Bommer Industries, Inc.
 - c. <u>Cal-Royal Products</u>, Inc.
 - d. <u>Hager Companies</u>.
 - e. <u>IVES Hardware</u>; an Ingersoll-Rand company.
 - f. Lawrence Hardware Inc.
 - g. McKinney Products Company; an ASSA ABLOY Group company.
 - h. PBB, Inc.
 - i. Stanley Commercial Hardware; Div. of The Stanley Works.
 - j. Or Approved Equal

2.3 MECHANICAL LOCKS AND LATCHES

- A. Strikes: Provide manufacturer's standard strike for each lock bolt or latchbolt complying with requirements indicated for applicable lock or latch and with strike box and curved lip extended to protect frame; finished to match lock or latch.
 - 1. Flat-Lip Strikes: For locks with three-piece antifriction latchbolts, as recommended by manufacturer. or
 - 2. Rabbet Front and Strike: Provide on locksets for rabbeted meeting stiles.
- B. Bored Locks: BHMA A156.2; Grade 1 or 2; Series 4000.
 - 1. 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:
 - a. Arrow USA; an ASSA ABLOY Group company.

- b. Best Access Systems; Div. of Stanley Security Solutions, Inc.
- c. <u>Cal-Royal Products, Inc.</u>
 d. <u>Corbin Russwin Architectural Hardware; n ASSA ABLOY Group Company.</u>
- e. Falcon Lock; An Ingersoll-Rand Company.
- f. K2 Commercial Hardware; a Black & Decker Corp. company.
- g. Marks USA.
- h. Medeco Security Locks, Inc.; an ASSA ABLOY Group company.
- i. PDQ Manufacturing.
- j. SARGENT Manufacturing Company; an ASSA ABLOY Group company.
- k. Schlage Commercial Lock Division; an Ingersoll-Rand company.
- 1. Weiser Lock Corp.; a Black & Decker Corp. company.
- m. Yale Security Inc.; an ASSA ABLOY Group company.
- n. Or Approved Equal.
- C. Mortise Locks: BHMA A156.13; Operational Grade 1stamped steel case with steel or brass parts; Series 1000.
 - 1. Manufacturers: Subject to compliance with requirements,
 - a. Accurate Lock & Hardware Co.
 - b. Adams Rite Manufacturing Co.; an ASSA ABLOY Group company.
 - c. Arrow USA; an ASSA ABLOY Group company.
 - d. Best Access Systems; Div. of Stanley Security Solutions, Inc.
 - e. Cal-Royal Products, Inc.
 - f. Corbin Russwin Architectural Hardware; an ASSA ABLOY Group company.
 - g. Falcon Lock; an Ingersoll-Rand company.
 - h. Marks USA.
 - i. PDQ Manufacturing.
 - j. SARGENT Manufacturing Company; an ASSA ABLOY Group company.
 - k. Schlage Commercial Lock Division; an Ingersoll-Rand company.
 - 1. Yale Security Inc.; an ASSA ABLOY Group company.
 - m. Or Approved Equal.

2.4 MANUAL FLUSH BOLTS

- A. Manual Flush Bolts: BHMA A156.16; minimum 3/4-inch (19-mm) throw; designed for mortising into door edge.
 - 1. 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:
 - a. Adams Rite Manufacturing Co.; an ASSA ABLOY Group company.
 - b. Burns Manufacturing Incorporated.
 - c. Don-Jo Mfg., Inc.
 - d. Door Controls International, Inc.
 - e. Hiawatha, Inc.
 - f. IVES Hardware; an Ingersoll-Rand company.
 - g. Trimco.



2.5 LOCK CYLINDERS

- A. Lock Cylinders: Tumbler type, constructed from brass or bronze, stainless steel, or nickel silver.
 - 1. Manufacturer: Same manufacturer as for locking devices.
 - 2. 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:
 - a. Arrow USA; an ASSA ABLOY Group company.
 - b. ASSA, Inc.; An ASSA ABLOY Group Company.
 - c. <u>Best Access Systems</u>; Div. of Stanley Security Solutions, Inc.
 - d. Corbin Russwin Architectural Hardware; an ASSA ABLOY Group company.
 - e. Falcon Lock; an Ingersoll-Rand company.
 - f. Medeco Security Locks, Inc.; an ASSA ABLOY Group company.
 - g. SARGENT Manufacturing Company; an ASSA ABLOY Group company.
 - h. Schlage Commercial Lock Division; an Ingersoll-Rand company.
 - i. Yale Security Inc.; an ASSA ABLOY Group company.
 - j. Or Approved Equal .
- B. Construction Master Keys: Provide cylinders with feature that permits voiding of construction keys without cylinder removal. Provide 10 construction master keys.

2.6 KEYING

- A. Keying System: Factory registered, complying with guidelines in BHMA A156.28, Appendix A. Incorporate decisions made in keying conference.
 - 1. Existing System: Cooriondate with Buil;ding Facilities existing system and requirements.
 - a. Master key or grand master key locks to Owner's existing system or.
 - b. Re-key Owner's existing master key system into new keying system.
 - 2. Keyed Alike: Key all cylinders to same change key.
- B. Keys: Brass.
 - 1. Stamping: Permanently inscribe each key with a visual key control number and include the following notation:
 - a. Notation: "DO NOT DUPLICATE." Or Information to be furnished by Owner.
 - 2. Quantity: In addition to one extra key blank for each lock, provide the following:
 - a. Coordinate with Building facilities for requirements

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- b. Cylinder Change Keys: Three
- c. Master Keys: Five.
- d. Grand Master Keys: Five.
- e. Great-Grand Master Keys: Five.

2.7 OPERATING TRIM

- A. Operating Trim: BHMA A156.6; stainless steel, unless otherwise indicated.
 - 1. 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:
 - a. Burns Manufacturing Incorporated.
 - b. Don-Jo Mfg., Inc.
 - c. Forms + Surfaces.
 - d. Hager Companies.
 - e. Hiawatha, Inc.
 - f. IVES Hardware; an Ingersoll-Rand company.
 - g. Rockwood Manufacturing Company.
 - h. Trimco.
 - i. Or Approved Equal.

2.8 ACCESSORIES FOR PAIRS OF DOORS

- A. Coordinators: BHMA A156.3; consisting of active-leaf, hold-open lever and inactive-leaf release trigger; fabricated from steel with nylon-coated strike plates; with built-in, adjustable safety release; and with internal override.
- B. Carry-Open Bars: BHMA A156.3; prevent the inactive leaf from opening before the active leaf; provide polished brass or bronze carry-open bars with strike plate for inactive leaves of pairs of doors unless automatic or self-latching bolts are used.
- C. Astragals: BHMA A156.22.

2.9 SURFACE CLOSERS

- A. Surface Closers: BHMA A156.4; rack-and-pinion hydraulic type with adjustable sweep and latch speeds controlled by key-operated valves and forged-steel main arm. Comply with manufacturer's written recommendations for size of door closers depending on size of door, exposure to weather, and anticipated frequency of use. Provide factory-sized closers, adjustable to meet field conditions and requirements for opening force.
 - 1. 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:



- b. Corbin Russwin Architectural Hardware; an ASSA ABLOY Group company.
- c. <u>DORMA Architectural Hardware; Member of The DORMA Group North America.</u>
- d. <u>Dor-O-Matic; an Ingersoll-Rand company.</u>
- e. <u>K2 Commercial Hardware; a Black & Decker Corp. company.</u>
- f. LCN Closers; an Ingersoll-Rand company.
- g. Norton Door Controls; an ASSA ABLOY Group company.
- h. Rixson Specialty Door Controls; an ASSA ABLOY Group company.
- i. SARGENT Manufacturing Company; an ASSA ABLOY Group company.
- j. Yale Security Inc.; an ASSA ABLOY Group company.
- k. Or Approved Equal.

2.10 DOOR GASKETING

- A. Door Gasketing: BHMA A156.22; air leakage not to exceed 0.50 cfm per foot (0.000774 cu. m/s per m) of crack length for gasketing other than for smoke control, as tested according to ASTM E 283; with resilient or flexible seal strips that are easily replaceable and readily available from stocks maintained by manufacturer.
 - 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:
 - a. <u>Hager Companies</u>.
 - b. M-D Building Products, Inc.
 - c. National Guard Products.
 - d. Pemko Manufacturing Co.; an ASSA ABLOY Group company.
 - e. Reese Enterprises, Inc.
 - f. Sealeze; a unit of Jason Incorporated.
 - g. Zero International.
 - h. Or Approved Equal.

2.11 THRESHOLDS

- A. Thresholds: BHMA A156.21; fabricated to full width of opening indicated.
 - 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:
 - a. <u>Hager Companies</u>.
 - b. M-D Building Products, Inc.
 - c. National Guard Products.
 - d. Pemko Manufacturing Co.; an ASSA ABLOY Group company.
 - e. Reese Enterprises, Inc.
 - f. Rixson Specialty Door Controls; an ASSA ABLOY Group company.
 - g. Sealeze; a unit of Jason Incorporated.

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- h. Zero International.
- i. Or Approved Equal.

2.12 FABRICATION

- A. Fasteners: Provide door hardware manufactured to comply with published templates prepared for machine, 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. Fire-Rated Applications:
 - a. Wo Machine Screws: For the following:
 - 1) Hinges mortised to doors or frames
 - 2) Strike plates to frames.
 - 3) Closers to doors and frames.
 - b. Steel Through Bolts: For the following unless door blocking is provided:
 - 1) Closers to doors and frames.
 - 2. Spacers or Sex Bolts: For through bolting of hollow-metal doors.
 - 3. 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.

PART 3 - EXECUTION

3.1 INSTALLATION

- A. Steel Doors and Frames: For surface applied door hardware, drill and tap doors and frames according to ANSI/SDI A250.6.
- B. 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.
- 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

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inches (750 mm) of door height, whichever is more stringent, unless other equivalent means of support for door, such as spring hinges or pivots, are provided.

- D. Lock Cylinders: Install construction cores to secure building and areas during construction period.
 - 1. Replace construction cores with permanent cores as directed by Owner.
 - 2. Furnish permanent cores to Owner for installation.
- E. Key Control System: Tag keys and place them on markers and hooks in key control system cabinet, as determined by final keying schedule.
- F. Thresholds: Set thresholds for exterior doors and other doors indicated in full bed of sealant complying with requirements specified in Section 079200 "Joint Sealants."
- G. Stops: Provide floor stops for doors unless wall or other type stops are indicated in door hardware schedule. Do not mount floor stops where they will impede traffic.
- H. Perimeter Gasketing: Apply to head and jamb, forming seal between door and frame.
- I. Meeting Stile Gasketing: Fasten to meeting stiles, forming seal when doors are closed.
- J. Door Bottoms: Apply to bottom of door, forming seal with threshold when door is closed.
- K. 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.
- 3.2 FIELD QUALITY CONTROL
 - A. Independent Architectural Hardware Consultant: Owner will engage a qualified independent Architectural Hardware Consultant to perform inspections and to prepare inspection reports.
- 3.3 DOOR HARDWARE SCHEDULE

END OF SECTION 087100

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SECTION 092300 - GYPSUM PLASTERING

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. Section Includes:
 - 1. Gypsum plasterwork on expanded-metal lath.

1.3 ACTION SUBMITTALS

A. Product Data: For each type of product indicated.

1.4 QUALITY ASSURANCE

- A. Fire-Resistance Ratings: Where indicated, provide gypsum plaster assemblies identical to those of assemblies tested for fire resistance per ASTM E 119 by a qualified testing agency. Identify products with appropriate markings of applicable testing agency.
 - 1. Indicate design designations from UL's "Fire Resistance Directory" or from the listings of another qualified testing agency.

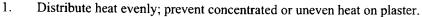
1.5 DELIVERY, STORAGE, AND HANDLING

A. Store materials inside under cover and keep them dry and protected against damage from weather, direct sunlight, surface contamination, corrosion, construction traffic, and other causes.

1.6 PROJECT CONDITIONS

- A. Comply with ASTM C 842 requirements or gypsum plaster manufacturer's written recommendations, whichever are more stringent.
- B. Room Temperatures: Maintain temperatures at not less than 55 deg F or greater than 80 deg F for at least seven days before application of gypsum plaster, continuously during application, and for seven days after plaster has set or until plaster has dried.
- C. Avoid conditions that result in gypsum plaster drying out too quickly.

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- 2. Maintain relative humidity levels for prevailing ambient temperature that produce normal drying conditions.
- 3. Ventilate building spaces in a manner that prevents drafts of air from contacting surfaces during plaster application and until plaster is dry.

PART 2 - PRODUCTS

2.1 GYPSUM PLASTER ASSEMBLIES

2.2 EXPANDED-METAL LATH

- 1. Alabama Metal Industries Corporation; a Gibraltar Industries company.
- 2. CEMCO.
- 3. Clark Western Building Systems.
- 4. <u>Dietrich Metal Framing; a Worthington Industries company.</u>
- 5. MarinoWARE.
- 6. Phillips Manufacturing Co.
- B. Expanded-Metal Lath: ASTM C 847, cold-rolled carbon-steel sheet, ASTM A 653/A 653M, G60,hot-dip galvanized zinc coated.

1.

2.3 ACCESSORIES

- A. General: Comply with ASTM C 841 and coordinate depth of trim and accessories with thicknesses and number of plaster coats required.
- B. Metal Accessories:
- C. <u>Manufacturers</u>: 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>Alabama Metal Industries Corporation</u>; a Gibraltar Industries company.
 - 2. CEMCO.
 - 3. Clark Western Building Systems.
 - 4. <u>Dietrich Metal Framing</u>; a Worthington Industries company.
 - 5. MarinoWARE.
 - 6. Phillips Manufacturing Co.
 - 7. Cornerbeads: Fabricated from zinc-coated (galvanized) steel.
 - 8. Casing Beads: Fabricated from zinc-coated (galvanized) steel; square-edged style; with expanded flanges.
- D. :

a.

2.4 MISCELLANEOUS MATERIALS

- A. Water for Mixing and Finishing Plaster: Potable and free of substances capable of affecting plaster set or of damaging plaster, lath, or accessories.
- B. Bonding Compound: ASTM C 631.
- C. Steel Drill Screws: For metal-to-metal fastening, ASTM C 1002 or ASTM C 954, as required by thickness of metal being fastened; with pan head that is suitable for application; in lengths required to achieve penetration through joined materials of no fewer than three exposed threads.
- D. Fasteners for Attaching Metal Lath to Substrates: Complying with ASTM C 841.
- E. Wire: ASTM A 641/A 641M, Class 1 zinc coating, soft temper, not less than 0.0475-inch diameter, unless otherwise indicated.
 1.

2.5 BASE-COAT PLASTER MATERIALS

- A. Base-Coat Plasters, General: ASTM C 28/C 28M.
- B. Lightweight Gypsum Ready-Mixed Plaster: With mill-mixed perlite aggregate.
 - 1. <u>Products</u>: Subject to compliance with requirements, available products that may be incorporated into the Work include, but are not limited to, the following:
 - a. National Gypsum Company; Gold Bond Gypsolite.
 - b. <u>USG Corporation; Structo-Lite</u>.
 - c. >.
- C. Gypsum Neat Plaster: For use with job-mixed aggregates.

2.6 FINISH-COAT PLASTER MATERIALS

- A. Gypsum Gaging Plaster: ASTM C 28/C 28M.
 - 1. <u>Products</u>: Subject to compliance with requirements, available products that may be incorporated into the Work include, but are not limited to, the following:
 - a. <u>National Gypsum Company; Gauging Plaster (Super-White)</u>.
 - b. <u>USG Corporation</u>; Red Top Gauging Gypsum Plaster.
- B. Gypsum Ready-Mixed Finish Plaster: Manufacturer's standard, mill-mixed, gaged, interior finish.

- 1. <u>Products</u>: Subject to compliance with requirements, available products that may be incorporated into the Work include, but are not limited to, the following:
 - a. <u>National Gypsum Company</u>; Gold Bond Kal-Kote Smooth.
 - b. <u>USG Corporation</u>; Red Top Finish Plaster.

C. ASTM C 61/C 61M.

- 1. <u>Products</u>: Subject to compliance with requirements, available products that may be incorporated into the Work include, but are not limited to, the following:
 - a. <u>USG Corporation; Red Top Keene's Cement.</u>
 - b. Or approved equal>.
- D. Lime: ASTM C 206, Type S, special finishing hydrated lime.
 - 1. <u>Products</u>: Subject to compliance with requirements, available products that may be incorporated into the Work include, but are not limited to, the following:
 - a. <u>USG Corporation</u>; Ivory or Snowdrift Finish Lime.
 - b. Or approved equal
- E. Lime: ASTM C 206, Type N, normal finishing hydrated lime.
 - 1. <u>Products</u>: Subject to compliance with requirements, available products that may be incorporated into the Work include, but are not limited to, the following:
 - a. <u>USG Corporation</u>; Grand Prize Finish Lime.
- F. Aggregates for Float Finishes: ASTM C 35, sand; graded per ASTM C 842.

2.7 PLASTER MIXES

 Mixing: Comply with ASTM C 842 and manufacturer's written instructions for applications indicated.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine nonstructural and structural metal framing, substrates, and hollow-metal frames, for compliance with requirements and other conditions affecting performance of the Work.
- B. Proceed with installation only after unsatisfactory conditions have been corrected.

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3.2 PREPARATION

A. Protect adjacent work from soiling, spattering, moisture deterioration, and other harmful effects caused by plastering.

3.3 INSTALLATION, GENERAL

A. Fire-Resistance-Rated Assemblies: Install components according to requirements for design designations from listing organization and publication indicated on Drawings.

3.4 INSTALLING EXPANDED-METAL LATH

- A. Expanded-Metal Lath: Install according to ASTM C 841.
 - 1. Vertical Furring: Install flat diamond-mesh lath.
 - 2. Flat-Ceiling and Horizontal Framing: Install flat diamond-mesh lath.

3.5 INSTALLING ACCESSORIES

- A. General: Install according to ASTM C 841.
- B. Cornerbeads: Install at external corners.
- C. Casing Beads: Install at terminations of plasterwork, except where plaster passes behind and is concealed by other work and where metal screeds, bases, or frames act as casing beads.

3.6 PLASTER APPLICATION

- A. General: Comply with ASTM C 842.
 - 1. Do not deviate more than plus or minus 1/8 inch in 10 feet from a true plane in finished plaster surfaces, as measured by a 10-foot straightedge placed on surface.
 - Grout hollow-metal frames, bases, and similar work occurring in plastered areas, with base-coat plaster material, before lathing where necessary. Except where full grouting is indicated or required for fire-resistance rating, grout at least 6 inches at each jamb anchor.
 - 3. Finish plaster flush with metal frames and other built-in metal items or accessories that act as a plaster ground unless otherwise indicated. Where casing bead does not terminate plaster at metal frame, cut base coat free from metal frame before plaster sets and groove finish coat at junctures with metal.
 - 4. Provide plaster surfaces that are ready to receive field-applied finishes indicated.

B. Base Coats:

1. Base Coats over Expanded-Metal Lath: Gypsum neat plaster with job-mixed sand for scratch and brown coats.

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- 2. Base Coats over Expanded-Metal Lath:
 - a. Scratch Coat: Gypsum wood-fibered plaster; neat or with job-mixed sand.
 - b. Brown Coat: Gypsum neat plaster with job-mixed sand
- C. Finish Coats:
 - 1. Finish-Coat Mix for Float Finishes: Gypsum gaging plaster.
- D. Plaster Finishes:
 - 1. Provide float finish.

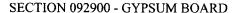
3.7 PLASTER REPAIRS

A. Repair or replace work to eliminate cracks, dents, blisters, buckles, crazing and check cracking, dry outs, efflorescence, sweat outs, and similar defects and where bond to substrate has failed.

3.8 CLEANING AND PROTECTION

A. Remove temporary protection and enclosure of other work. Promptly remove plaster from door frames, windows, and other surfaces not indicated to be plastered. Repair floors, walls, and other surfaces stained, marred, or otherwise damaged during plastering.

END OF SECTION 092300



PART 1 - GENERAL

1.1 SUMMARY

- A. Section Includes:
 - 1. Interior gypsum board.

1.2 ACTION SUBMITTALS

A. Product Data: For each type of product.

1.3 PERFORMANCE REQUIREMENTS

- A. Fire-Resistance-Rated Assemblies: For fire-resistance-rated assemblies, provide materials and construction identical to those tested in assembly indicated according to ASTM E 119 by an independent testing agency.
- B. Low Emitting Materials: For ceiling and wall assemblies, provide materials and construction identical to those tested in assembly and complying with the testing and product requirements of the California Department of Health Services' "Standard Practice for the Testing of Volatile Organic Emissions from Various Sources Using Small-Scale Environmental Chambers."
- 1.4 GYPSUM BOARD, GENERAL

1.5 INTERIOR GYPSUM BOARD

- A. <u>Manufacturers</u>: 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>American Gypsum</u>.
 - 2. <u>CertainTeed Corp.</u>
 - 3. Georgia-Pacific Gypsum LLC.
 - 4. <u>Lafarge North America Inc.</u>
 - 5. National Gypsum Company.
 - 6. PABCO Gypsum.
 - 7. <u>Temple-Inland</u>.
 - 8. <u>USG Corporation</u>.
 - 9.
- B. Gypsum Wallboard: ASTM C 1396/C 1396M.



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- C. Gypsum Board, Type X: ASTM C 1396/C 1396M.
 - 1. Thickness: 5/8 inch
 - 2. Long Edges: Tapered and featured beveled for prefilling.

1.6 TRIM ACCESSORIES

- A. Interior Trim: ASTM C 1047.
 - 1. Material: Galvanized.

1.7 JOINT TREATMENT MATERIALS

- A. General: Comply with ASTM C 475/C 475M.
- B. Joint Tape:
 - 1. Interior Gypsum Board: Paper.
 - 2.
- C. Joint Compound for Interior Gypsum Board: For each coat use formulation that is compatible with other compounds applied on previous or for successive coats.

1.8 AUXILIARY MATERIALS

A. Steel Drill Screws: ASTM C 1002, unless otherwise indicated.

PART 2 - EXECUTION

2.1 APPLYING AND FINISHING PANELS

- A. Comply with ASTM C 840.
- B. Examine panels before installation. Reject panels that are wet, moisture damaged, and mold damaged.
- C. Isolate perimeter of gypsum board applied to non-load-bearing partitions at structural abutments, except floors. Provide 1/4- to 1/2-inchwide spaces at these locations and trim edges with edge trim where edges of panels are exposed. Seal joints between edges and abutting structural surfaces with acoustical sealant.
- D. Prefill open joints beveled edges, and damaged surface areas.
- E. Apply joint tape over gypsum board joints, except for trim products specifically indicated as not intended to receive tape.

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- F. Gypsum Board Finish Levels: Finish panels to levels indicated below and according to ASTM C 840:
 - 1. Level 5:
 - a. Primer and its application to surfaces are specified in Section 099123 "Interior Painting."
- G. Protect adjacent surfaces from drywall compound and texture finishes and promptly remove from floors and other non-drywall surfaces. Repair surfaces stained, marred, or otherwise damaged during drywall application.
- H. Remove and replace panels that are wet, moisture damaged, and mold damaged.

END OF SECTION 092900

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SECTION 09 91 23 - PAINTING

PART 1 GENERAL

1.1 DESCRIPTION

A. The Contractor shall make surface preparation and field application of paints and coatings.

1.2 RELATED SECTIONS

- A. Section 15 07 53- Mechanical Identification
- B. Section 05 12 00 Structural Steel
- C. Section 05 50 00 Metal Fabrication

1.3 REFERENCES

- A. ASTM D16 Definitions of Terms Relating to Paint, Varnish, Lacquer, and Related Products.
- B. NACE (National Association of Corrosion Engineers) Industrial Maintenance Painting.
- C. NPCA (National Paint and Coatings Association) Guide to U.S. Government Paint Specifications.
- D. PDCA (Painting and Decorating Contractors of America) Painting Architectural Specifications Manual.
- E. SSPC (Steel Structures Painting Council) Steel Structures Painting Manual.

1.4 DEFINITIONS

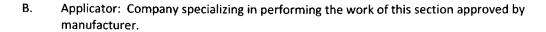
A. Conform to ASTM D16 for interpretation of terms used in this Section.

1.5 SUBMITTALS

- A. Product Data: Provide data on all finishing products.
- B. Samples: Submit two samples, 2 x 3 inch in size illustrating range of colors available for each surface finishing product scheduled.
- C. Manufacturer's Instructions: Indicate special surface preparation procedures, substrate conditions requiring special attention, and application.

1.6 QUALIFICATIONS

A. Manufacturer: Company specializing in manufacturing the Products specified in this section with minimum three years experience.



1.7 REGULATORY REQUIREMENTS

A. Conform to applicable fire code for flame and smoke rating requirements for finishes.

1.8 FIELD SAMPLES

A. Accepted sample may not remain as part of the Work.

1.9 DELIVERY, STORAGE, AND HANDLING

- A. Deliver, store, protect and handle products to site under provisions of Section 01600.
- B. Deliver products to site in sealed and labeled containers; inspect to verify acceptability.
- C. Container label to include manufacturer's name, type of paint, brand name, lot number, brand code, coverage, surface preparation, drying time, cleanup requirements, color designation, and instructions for mixing and reducing.
- D. Store paint materials at minimum ambient temperature of 45 degrees F and a maximum of 90 degrees F, in ventilated area, and as required by manufacturer's instructions.

1.10 ENVIRONMENTAL REQUIREMENTS

- A. Do not apply materials when surface and ambient temperatures are outside the temperature ranges required by the paint product manufacturer.
- B. Do not apply exterior coatings during rain or snow, or when relative humidity is outside the humidity ranges required by the paint product manufacturer.
- C. Minimum Application Temperatures for Latex Paints: 45 degrees F for interiors; 50 degrees F for exterior; unless required otherwise by manufacturer's instructions.
- D. Minimum Application Temperature for Varnish Finishes: 65 degrees F for interior or exterior, unless required otherwise by manufacturer's instructions.

1.11 EXTRA MATERIALS

- A. Provide 1 gallons of each color, type, and surface texture to Owner.
- B. Label each container with color, type, texture, room locations, and in addition to the manufacturer's label.

PART 2 PRODUCTS

2.1 MANUFACTURERS

- A. Manufacturer: Paint for use over primed ferrous metal surfaces.
 - 1. Devoe Corp., Mirrolac Alkyd Gloss Enamel #70XX.
 - 2. Benjamin Moore, Impervo High Gloss Enamel #133
 - 3. P& L, Effecto Enamel
 - 4. Tnemec Co., N27Typoxy (Epoxy Paint)
 - 5. Paint compatible with or matching manufacturer's equipment paint, for touch-up Painting.
- B. Manufacturers Primers for previously painted steel under Alkyd enamel
 - 1. Glidden, Y-4570 Glid-Guard Alkyd Metal Primer
 - 2. Benjamin Moore, Iron-clad Retardo Rust Inhibitive Primer #163
 - 3. Tnemec Co., Con-lux Ferrox 25 Red Primer
 - 4. Primer compatible with or matching equipment manufacturers paint system for touch-up painting.
- C. Manufacturers Paint for use over primed galvanized metal
 - 1. Devoe, Deflex 4020 DTM Flat interior/exterior waterborne Finish
 - 2. Glidden, Lifemaster Pro High Performance Acrylic Coating # 6925"
- D. Manufacturers Paint for use over CMU walls and finished floors. See drawing S-503 for schedule
 - 1. Tnemec Co., epoxy paint

2.2 MATERIALS

- A. Coatings: Ready mixed, except field-catalyzed coatings. Process pigments to a soft paste consistency, capable of being readily and uniformly dispersed to a homogeneous coating; good flow and brushing properties; capable of drying or curing free of streaks or sags.
- B. Accessory Materials: Linseed oil, shellac, turpentine, paint thinners and other materials not specifically indicated but required to achieve the finishes specified, of commercial quality.

PART 3 EXECUTION

3.1 EXAMINATION

- A. Verify that surfaces are ready to receive work as instructed by the product manufacturer.
- B. Examine surfaces scheduled to be finished prior to commencement of work. Report any condition that may potentially affect proper application.

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C. Test shop applied primer for compatibility with subsequent cover materials.

3.2 PREPARATION

- A. Remove or mask electrical plates, hardware, light fixture trim, escutcheons, and fittings prior to preparing surfaces or finishing.
- B. Correct defects and clean surfaces which affect work of this section. Remove existing coatings that exhibit loose surface defects.
- C. Seal with shellac and seal marks which may bleed through surface finishes.
- D. Impervious Surfaces: Remove mildew by scrubbing with solution of tri-sodium phosphate and bleach. Rinse with clean water and allow surface to dry.
- E. Aluminum Surfaces Scheduled for Paint Finish: Remove surface contamination by steam or high pressure water. Remove oxidation with acid etch and solvent washing. Apply etching primer immediately following cleaning.
- F. Insulated Coverings: Remove dirt, grease, and oil from canvas and cotton.
- G. Galvanized Surfaces: Remove surface contamination and oils and wash with solvent. Apply coat of primer.
- H. Uncoated Steel and Iron Surfaces: Remove grease, mill scale, weld splatter, dirt, and rust. Where heavy coatings of scale are evident, remove by wire brushing or sandblasting; clean by washing with solvent. Apply a treatment of phosphoric acid solution, ensuring weld joints, bolts, and nuts are similarly cleaned. Spot prime paint after repairs.
- I. Shop Primed Steel 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. Prime metal items including shop primed items.

3.3 APPLICATION

- A. Apply products in accordance with manufacturer's instructions.
- B. Do not apply finishes to surfaces that are not dry.
- C. Apply each coat to uniform finish.
- D. Apply each coat of paint slightly darker than preceding coat unless otherwise approved.
- E. Allow applied coat to dry before next coat is applied.
- F. Where clear finishes are required, tint fillers to match wood. Work fillers into the grain before set. Wipe excess from surface.



3.4 FINISHING MECHANICAL AND ELECTRICAL EQUIPMENT

- A. Refer to Section 15075 for schedule of color-coding.
- B. Paint shop primed equipment.
- C. Remove unfinished louvers, grilles, covers, and access panels on mechanical and electrical components and paint separately. Prime and paint non-insulated and exposed pipes, conduit, boxes, insulated and exposed ducts, hangers, brackets, collars and supports, except where items are prefinished.
- D. All non-insulated mechanical pipe shall be primed with Tnemec Co. No. 10-99 and epoxy-painted with Tnemec Series N27Typoxy (epoxy paint) or approved equal.
- E. Paint exposed conduit and electrical equipment occurring in finished areas.
- F. Color code equipment, piping, conduit, and exposed duct work in accordance with requirements indicated.
- G. Reinstall electrical cover plates, hardware, light fixture trim, escutcheons, and fittings removed prior to finishing.

3.5 FINISHING EXISTING PIPE SUPPORT STEELWORK

- A. Existing pipe support steelwork shall be cleaned free of rust and grit in accordance to the method outlined in Steel Structures Painting Council (SSPC).
- B. Provide type of primer indicated on steel under the following application conditions.
 - General application: Modified alkyd rust-inhibitive type containing no lead equal to Tnemec Co. No. 10-99 or Con-lux Ferrox 25 Red Primer. Product shall have BSA or MEA approval for use on structural steel. Red oxide paint is not acceptable.
- C. Final coat on steel shall be Tnemec Series N27Typoxy (Epoxy Paint) or similar.

3.6 FIELD QUALITY CONTROL

A. Field inspection and testing will be performed under provisions of Section 01400.

3.7 CLEANING

- A. Clean work under provisions of 01700.
 - B. Collect waste material, which may constitute a fire hazard, place in closed metal containers and remove daily from site.

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END OF SECTION 09 90 00

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SECTION 10 14 23 - SIGNAGE

PART 1 - GENERAL

1.1 SUMMARY

- A. This Section includes the following:
 - 1. Plaques.
 - 2. Panel signs.

1.2 DEFINITIONS

A. ADA-ABA Accessibility Guidelines: U.S. Architectural & Transportation Barriers Compliance Board's "Americans with Disabilities Act (ADA) Accessibility Guidelines for Buildings and Facilities; Architectural Barriers Act (ABA) Accessibility Guidelines."

1.3 SUBMITTALS

- A. Product Data: For each type of product indicated.
- B. Shop Drawings: Show fabrication and installation details for signs.
 - 1. Show sign mounting heights, locations of supplementary supports to be provided by others, and accessories.
 - 2. Provide message list, typestyles, graphic elements, including tactile characters and Braille, and layout for each sign.
- C. Samples: For each sign type and for each color and texture required.

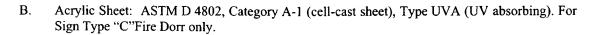
1.4 QUALITY ASSURANCE

- A. Regulatory Requirements: Comply with applicable provisions in ADA-ABA Accessibility Guidelinesand] ICC/ANSI A117.1.
- B.

PART 2 - PRODUCTS

2.1 MATERIALS

A. Bronze Castings: ASTM B 584, Alloy UNS No. C86500 (No. 1 manganese bronze).



2.2 PLAQUES

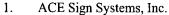
- A. Available Manufacturers: Subject to compliance with requirements, manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:
- B. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
- C. Basis-of-Design Product: Subject to compliance with requirements, provide a comparable product by one of the following:
 - 1. Matthews International Corporation; Bronze Division.
 - 2. Advance Corporation; Braille-Tac Division.
 - 3. A. R. K. Ramos.
 - 4. Gemini Incorporated.
 - 5. Mills Manufacturing Company.
 - 6. Nelson-Harkins Industries.
 - 7. Southwell Company (The).
 - 8. Or Approved Equal
- D. Cast Plaques: Provide castings free of pits, scale, sand holes, and other defects, as follows:
 - 1. Plaque Material: Bronze.
 - 2. Background Texture: Manufacturer's standard leatherette texture.
 - 3. Mounting: Concealed studs for substrates encountered.
- E. Etched Plaques: Provide metal sheet for etching, as follows: For Sign Type "C" Fire Door Only.
 - 1. Plaque Material: Acrylic.
 - 2. Color(s): As indicated.
 - 3. Edge Style: Plain bevel.
 - 4. Mounting: Concealed studsfor substrates encountered.
 - 5. Thickness: 0.125 inch (3.18 mm)thick.

2.3 PANEL SIGNS

- A. Available Manufacturers: Subject to compliance with requirements, manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:
- B. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
- C. Basis-of-Design Product: Subject to compliance with requirements, provide the product indicated on Drawings or a comparable product by one of the following:

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- 2. Advance Corporation; Braille-Tac Division.
- 3. Allen Industries Architectural Signage
- 4. Allenite Signs; Allen Marking Products, Inc.
- 5. APCO Graphics, Inc.
- 6. ASI-Modulex, Inc.
- 7. Best Sign Systems Inc.
- 8. Bunting Graphics, Inc.
- 9. Fossil Industries, Inc.
- 10. Gemini Incorporated.
- 11. Grimco, Inc.
- 12. Innerface Sign Systems, Inc.
- 13. InPro Corporation
- 14. Matthews International Corporation; Bronze Division.
- 15. Mills Manufacturing Company.
- 16. Mohawk Sign Systems.
- 17. Nelson-Harkins Industries.
- 18. Seton Identification Products.
- 19. Signature Signs, Incorporated.
- 20. Supersine Company (The)
- 21. Or Approved Equal
- D. Interior Panel Signs: Provide smooth sign panel surfaces constructed to remain flat under installed conditions within a tolerance of plus or minus 1/16 inch (1.5 mm) measured diagonally from corner to corner, complying with the following requirements:
 - 1. Acrylic Sheet: 0.080 inch (2.03 mm) thick.
 - 2. Edge Condition: Square cut.
 - 3. Corner Condition: Square.
 - 4. Mounting:Unframed.
 - a. Wall mounted with concealed anchors.
 - b. Manufacturer's standard anchors for substrates encountered.
 - 5. Color: As indicated.
 - 6. Tactile Characters: Characters and Grade 2 Braille raised 1/32 inch (0.8 mm) above surface with contrasting colors.

2.4 ACCESSORIES

A. Anchors and Inserts: Provide nonferrous-metal or hot-dip galvanized anchors and inserts for exterior installations and elsewhere as required for corrosion resistance. Use toothed steel or lead expansion-bolt devices for drilled-in-place anchors. Furnish inserts, as required, to be set into concrete or masonry work.

2.5 FABRICATION

A. General: Provide manufacturer's standard signs of configurations indicated.

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- Welded Connections: Comply with AWS standards for recommended practices in shop welding. Provide welds behind finished surfaces without distortion or discoloration of exposed side. Clean exposed welded surfaces of welding flux and dress exposed and contact surfaces.
- 2. Mill joints to tight, hairline fit. Form joints exposed to weather to exclude water penetration.
- 3. Conceal fasteners if possible; otherwise, locate fasteners where they will be inconspicuous.
- B. Colored Coatings for Acrylic Sheet: For copy and background and frame colors, provide colored coatings, including inks, dyes, and paints, that are recommended by acrylic manufacturers for optimum adherence to acrylic surface and that are UV and water resistant for five years for application intended.

PART 3 - EXECUTION

3.1 INSTALLATION

- A. Locate signs and accessories where indicated, using mounting methods of types described and complying with manufacturer's written instructions.
 - 1. Install signs level, plumb, and at heights indicated, with sign surfaces free of distortion and other defects in appearance.
 - 2. Interior Wall Signs: Install signs on walls adjacent to latch side of door where applicable. Where not indicated or possible, such as double doors, install signs on nearest adjacent walls. Locate to allow approach within 3 inches (75 mm) of sign without encountering protruding objects or standing within swing of door.
- B. Wall-Mounted Signs: Comply with sign manufacturer's written instructions except where more stringent requirements apply.
 - 1. Mechanical Fasteners: Use nonremovable mechanical fasteners placed through predrilled holes. Attach signs with fasteners and anchors suitable for secure attachment to substrate as recommended in writing by sign manufacturer.
 - 2. Flush Mounting: Mount characters with backs in contact with wall surface.
 - 3. Projected Mounting: Mount characters at projection distance from wall surface indicated.
- C. Cast-Metal Plaques: Mount plaques using standard fastening methods to comply with manufacturer's written instructions for type of wall surface indicated.
 - 1. Concealed Mounting: Mount plaques by inserting threaded studs into tapped lugs on back of plaque. Set in predrilled holes filled with quick-setting cement.

END OF SECTION 101423

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SECTION 141200 - DUMBWAITER

PART 1 - GENERAL

1.01 SECTION INCLUDES

A. One (1) counter loading dumbwaiter with 300-pound capacity operating at 50 fpm.

1.02 REGULATORY REQUIREMENTS

- A. All clearances, workmanship, construction, design and materials shall be in accordance with the requirements of the latest ASME A17.1 Code and all codes or rules of the City, State, other authorities having legal jurisdiction, and the codes herein after named.
- B. The ASME A17.1 Code shall take preference except where other codes having jurisdiction include more stringent or conflict with the ASME A17.1 Code.1

1.03 QUALITY ASSURANCE

- A. Approved Dumbwaiter Manufacturers:
 - 1. Matot
 - 2. Atlas
 - 3. Giant Lift

B. Qualifications:

- 1. The work of this Section shall be performed by contractors regularly engaged in the business of manufacturing dumbwaiters of the type and character required by these specifications.
- 2. Skilled tradesmen must be employees of the contractor and perform the work on a timely basis. Employees must be trained by the manufacturer and be supervised by the dumbwaiter contractor.
- 3. Contractor must have successfully performed similar installations of exact equipment as proposed for this contract.

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1.04 SUBMITTALS

A. Submit the following:

- 1. Fully dimensioned hoistway/wellway plan and section of each unit indicating:
 - a. Platform (with cab), hoistway and entrance dimensions
 - b. All running clearances
 - c. Location of fixtures
 - d. Buffers
 - e. Machinery location and access requirements
 - f. Fixture details including hall lanterns, hall pushbutton stations, car operating panel, etc.
 - g. Wiring diagrams

2. Calculations

- a. Rail loads
- b. Pit reactions
- c. Electrical loads including starting, accelerating and running currents. Include all auxiliary loads.

1.05 PERMITS, TESTING AND INSPECTIONS

- A. File necessary drawings for approval of all authorities having jurisdiction, obtain and pay all required fees for permits and inspections, etc., which may be required for the execution of his work. Copies of all permits shall be forwarded to the Construction Manager.
- B. Obtain, arrange and/or pay for any necessary permits, tests and inspections.
- C. Furnish all test instruments and materials required at the time of final inspection. The inspection outlines in the American Standard Practice for the inspection of Elevators, Inspector's Manual A17.2 (latest edition) will be followed.

DUMBWAITER

D. After hour tests of systems such as emergency generators or fire service shall be conducted at no extra cost to the Owner.

1.06 CONSTRUCTION FACILITIES AND TEMPORARY CONTROLS

A. Delivery, Storage and Handling

- 1. Deliver materials to the site ready for use in the accepted manufacturer's original and unopened containers and packaging, bearing labels as to type of material, brand name and manufacturer's name. Delivered materials shall be identical to accepted samples.
- 2. Store materials under cover in a dry and clean location, off the ground. Remove delivered materials which are damaged or otherwise not suitable for installation from the job site and replace with acceptable materials.

1.07 CONTRACT CLOSE-OUT

A. Guarantee and Warranties:

- 1. Warrant the equipment installed under these specifications against defects in material and workmanship and correct any defects not due to ordinary wear and tear or improper use or car which may develop within one year from the date each elevator is completed and placed in permanent operation and accepted by the Owner and Construction Manger. This section shall apply separately to each unit as completed and placed in operation.
- 2. This warrantee shall be written and issued at the completion of each unit prior to final payment.

1.08 OPERATING AND MAINTENANCE DATA

- A. Furnish neatly bound instructions giving the method of control and operation, together with data on all switches, relays and other devices as will be needed for serving and for ordering replacements.
- B. Furnish bound instructions and recommendations for maintenance, with special reference to lubrication and lubricants.
- C. Furnish three (3) sets of complete and legible "as-built" field wiring diagrams, layouts and straight line diagrams showing the electrical connections, functions, and sequence of operation of all apparatus connected with the system both in machine room and in

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hoistway, together with photographs or cuts of controller repairs parts with part numbers listed.

1.09 NOT USED

1.10 ADVERTISING

A. Advertising privileges shall be retained by the Owner. It shall be the duty of the Contractor to keep the job site free of posters, signs, and/or decorations. Contractor's logo shall not appear on faceplates or entrance sills.

1.11 ACCEPTANCE TESTING

- A. Provide at least five (5) days prior written notice to the Owner, and Consultant regarding the exact date on which work specified in the Contract Documents will reach completion on any single unit of vertical transportation equipment. In addition to conducting whatever testing procedures may be required by local inspecting authorities, in order to gain approval of the completed work, and before seeking approval of said work by the Owner, perform the required tests in the presence of the Consultant. Provide test instruments, test weights, and qualified field labor as required to safely operate the elevator under load conditions that vary from empty car to full rated load and, in so doing, to successfully demonstrate compliance with performance standards set forth herein with regard to:
 - 1. Door performance times
 - 2. Floor-to-floor performance times
 - 3. Floor leveling accuracy
 - 4. Operation of all features

1.12 KEYS

A. Upon the initial acceptance of work specified by the Contract Documents on each unit of vertical transportation equipment, deliver to the Owner, four (4) keys for each new key-operated device that is provided.

1.13 PAINTING & FINISHES

A. No less than two (2) coats of rust inhibiting machinery enamel shall be applied to exposed ferrous metal surfaces in both the hoistway and pit that do not have a galvanized, anodized, baked enamel, or special architectural finishes.

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- B. Prior to seeking final acceptance of the completed work as specified by the Contract Documents, apply two (2) coats of rust inhibiting enamel paint to the elevator machinery located within the machine room including the machine room floor.
- C. Architectural metal surfaces of bronze or similar non-ferrous materials which, under the Specifications, shall be refinished, reclad and/or provided new, shall be sufficiently clear coated so as to resist tarnishing during normal usage for a period of not less than twelve (12) months after initial acceptance by the Owner or Agent.
- D. All equipment including buffers, crosshead, safety plank, pump unit, controller, governor, disconnect switch, etc., shall be identified by 4" high numerals which shall contrast with the background to which it is applied. The identification shall be either decalcomania or stencil type.
- E. Paint or provide decal-type floor designation not less than six inches high on hoistway doors (hoistway side), fascias and/or walls as required by A17.1, Rule 100.7 at intervals not exceeding 7'-0". The color of paint used shall contrast with the color of the surfaces to which it is applied.

PART 2 - PRODUCTS

2.01 GENERAL DESCRIPTION

A. Dumbwaiter - DW1

1.	Quantity -	One (1)
2.	Type -	Counter loading winding drum dumbwaiter
3.	Capacity (lbs.) -	300
4.	Speed (fpm) -	50
5.	Travel (feet) -	18'-0" (Verify in field)
6.	Number of Stops -	Two (2) at 1 & 2
7.	Number of Openings -	Two (2)
		Front – Two (2) at 1 & 2
8.	Operation -	Automatic Call and Send

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9.	Control -	Alternating current
10.	Car Size -	2'-4" wide x 2'-0" deep x 2'-6" high
11.	Guide Rails -	Heavy-duty steel channels
12.	Cab -	Stainless steel enclosure with collapsible gate.
13.	Hoistway Doors -	2'-3" wide x 3'-0" high bi-parting, manual
14.	Machine Type -	Drum below at Basement
15.	Power Supply -	208-3-60
16.	Signals -	As described herein

2.02 HOISTING AND RELATED EQUIPMENT

A. Hoisting Motor

- 1. Alternating current, reversible induction type with high internal resistance, squirrel cage motor.
- 2. Suitable for severe requirements of dumbwaiter service, capable of developing high starting torque with low starting current.
- 3. Rated per A.I.E.E. standards for 50 degree C. for 15 minutes or 30-minute motors; with capacity to operate dumbwaiter at rated load and speed without overheating.
- 4. Motor Bearings: Anti-friction bearing metal sleeve type with oil reservoirs, automatic self-lubrication, oil gauges, capped filler openings and drains; or ball/roller type arranged for grease lubrication, fitting with grease gun connections and drain plugs. Bearings and lubricant reservoirs shall be virtually dust tight, and shall incorporate effective lubricant seals or other means to prevent lubricant leakage.

B. Hoisting Machine

- 1. Drum type with motor, brake, traction and deflector sheaves mounted on a common base bedplate.
- 2. Bedplate: Cast iron in one piece or heavy structural steel shapes welded together. The bedplate shall be rigid, with accurately planed or milled surfaces to seat all parts on the bedplate. Cap screws or through bolts shall be used to secure parts to the bedplate. Use of brackets or other extensions to the bedplate to secure parts is not permitted.
- 3. Deflector sheaves shall be suitably grooved and mounted to the output side of the reducer.
- 4. Brake: The brake drum shall be the face of the coupling between the motor and the worm shaft; it shall be keyed between the motor and the worm shaft; it shall be keyed or shrunk directly to the worm shaft. The brake shall be in two sections, of the shoe type and shall be designed to effectively stop and hold the car under all conditions of loading and operation. Brake shoes shall be applied by spring under compression; pressure shall be adjustable. Brake drum shall be carefully balanced. Brake shall be released by an electro-magnet, which shall be designed so no objectionable humming noise is produced in operation. The circuit of the brake magnet shall be opened by the safety devices to apply the brake at limits of travel on failure of the current.
- 5. Hoisting Ropes: Properly sized to provide safety factor per ASME A17.1. Ropes shall be steel, non-preformed, and conform to all of the requirements for the type of wire rope suitable for this use.

2.03 HOISTING EQUIPMENT

A. Car Guide Rails

1. Cold rolled or planed steel standard tees, channels, or angles, 4.9 pounds per linear foot (minimum), secured to steel tower by heavy clamps and brackets. Guide rails shall be continuous from the floor of the hoistway to a point far enough above the top overtravel to prevent guide shoes from leaving the rails. Support guide rails from structural steel angles as shown on the drawings. The angles shall be provided under this contract and attached to steel framing or the hoistway enclosure as approved by the structural engineer.

Joints shall be tongue and groove, fitted with bolted splice plates, with lock washers on bolts.

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3. Guide rails shall be heavy-duty type sufficiently sized and bracketed for the specified duty, speed and travel of the dumbwaiter. Indicate material selection and bracket intervals on shop drawing for approval.

B. Guide Shoes

Adjustable cast iron, self-aligning swivel type securely fastened to car at top and bottom of stiles. Removable non-metallic liners are not acceptable.

Guide shoes shall be specifically arranged and designed for this high speed application and shall suit the hoistway clearances. Provide details for approval during the submittal phase.

C. Car

- 1. Construction: Substantially fabricated, with all necessary reinforcements, and with all members and panels rigidly riveted or welded together.
- 2. Car Sides and Top: No less than No. 14 U.S.S. gauge stainless steel.
- 3. Car Bottom: No less than No. 10 U.S.S. gauge stainless steel.
- 4. Provide 16-gauge stainless steel solid car gate on the dumbwaiter. The gate shall have a gate switch to prevent operation of the dumbwaiter if the gate is open. Provide a glass vision panel in each gate, matching the ones in the hoistway entrances.
- 5. The car shall make level stops within 1/4" of the floor landings.
- 6. Car Light: The car shall have a lamp receptacle outlet mounted in a recess in the car top so that no portion of the lamp projects below the car ceiling. Outlet shall be connected to the building lighting system at a junction box located at the center of travel. Car light shall illuminate when hoistway door is open.
- 7. Nameplate: Installed in the car, showing the name of the dumbwaiter manufacturer and the maximum lifting capacity in pounds, in stamped, etched, or raised letters.
- 8. Provide slack rope device conforming to ASME A17.1 Code.

D. Normal Terminal Stopping Devices

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- 1. Cam operated devices, fitted with rubber/composition tired rollers for quite operation, located in hoistway or on the car.
- 2. Top and bottom devices shall stop the car automatically and independently of the operating devices. Car moving at normal operating speed shall be stopped within top/bottom overtravels.

2.04 HOISTWAY ENTRANCES

A. General

- 1. Provide frames, doors, removable panels, hardware, anchorage devices, and all accessories and devices necessary to complete the installation. Work shall be strong, rigid, and neat in appearance. Exposed joints shall be face welded and ground smooth and flush. Exposed surfaces shall be 301/304 stainless steel with a No. 4 finish.
- 2. Entrances shall bear 1 1/2 hour fire rating as certified by Underwriters Laboratories, Inc. or approval equal.

B. Doors

- 1. Doors shall be flush hollow metal construction, one (1) inch thick, consisting of two flat No. 16 U.S.S. gauge stainless steel sheets, reinforced at all edges with channel members securely fastened to both sheets.
- 2. Doors shall have a glass vision panel of 1/4 inch thick wire glass, not less than 3 inches nor more than 4 inches in diameter. Glass shall be secured in place with glazing beads or other approved fastenings on the hoistway side of the door.
- 3. Bi-parting doors shall have substantial guide shoes riveted to door. Door guide rails shall be built of steel angles or heavy steel plates securely riveted together and to the frame construction.

C. Frames

1. No. 16 U.S.S. gauge stainless steel combination buck and frames. Frames shall fit hoistway walls and allowance to accommodate wall finishes.

D. Assemblies

1. Doors, frames and trim shall be assembled into units with steel guides, sheaves, and hardware ready for building into the walls.

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E. Interlocks and Contacts

- 1. Each hoistway door shall be equipped with an approved door interlock. The interlock shall prevent the operation of the driving machine by the normal operating device unless the hoistway door is locked in the closed position, as defined by ANSI A17.1, except when the car is in the landing zone and is either stopped or being stopped.
- 2. Interlocks shall also prevent the opening of a hoistway door from the landing side unless the car is within the landing zone and is either stopped or being stopped at that level.
- 3. Interlocks shall be located so that they are not accessible from the landing side when the hoistway doors are closed.

F. Access Doors

1. A fire rated hinged access door, frame assembly and latch set shall be provided and installed for access to the machine and controls where necessary. The materials and finishes shall match the entrances.

2.05 CONTROL EQUIPMENT OPERATING DEVICES, APPOINTMENTS

A. Control System

1. The control system consists of operating devices, electrically connected with controller magnets, that make connections governing the selection of travel direction, running and stopping. Control system shall be suitable for the type of motor used and the type of operation specified.

B. Controller

1. Controller Panel:

- a. Approved moisture resisting dielectric material having dielectric and structural properties suitable for its intended use. The material shall not support combustion. The panel shall be mounted on a substantial iron or steel frame. The panel shall be mounted in an approved location.
- 2. Switches shall be mounted on the panel front. Connections, resistances, etc., shall be mounted on the panel back. Wiring shall be neatly formed and securely fastened in place. All equipment mounted on the controller panel shall be readily accessible and easily renewable. All controller switches shall be magnet operated

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and have contacts designed to insure full even contacts; they shall be proportioned to prevent overheating.

- 3. Wiring from the external circuits shall be brought to terminals on the controller panel. Terminals shall have suitable, indelible identification to facilitate circuit testing. All connections of external circuits to the controller panel circuits shall be made with compression type terminal lugs or with terminal eyelets set on the wire by means of a special setting tool.
- 4. The controller shall incorporate a potential switch, direction switches, reverse phase relay, overload protection, and all other devices required for specified operation.
- 5. Potential switch shall be arranged to disconnect motor and break circuit when opened. The switch may be operated each time the car stops and starts but shall be opened by specified safety devices.
- 6. Direction switches shall make and break circuits and reverse motor. These switches shall be interlocked electrically. Power shall be applied to and removed from the brake and motor simultaneously.
- 7. Reverse phase relay shall be arranged to initiate opening of the main line upon the reversal of any phase.

C. Call and Send Operations

1. Full Call and Send Push Button Operation: Operating devices shall be push button fixtures containing one push button for each floor served, located adjacent to each hoistway door opening. Push buttons shall be electrically connected with controller so that the car can be sent to opening or called from and opening by pressing the corresponding push button at any floor. Pressing a push button, while the car is in motion or while any door is open, shall have no effect.

D. Appointments

- 1. Combination Door Open and ln-Use Signal: The landing push button fixture at each opening shall be equipped with a lighted IN USE signal.
- 2. Arrival Lanterns: A lantern next to each hoistway entrance shall illuminate to indicate car arrival. It shall remain lighted until the car leaves the landing.

E. All fixtures shall be attached with tamper proof spanner head screws.

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PART 3 - EXECUTION

3.01 INSTALLATION

A. General

- 1. Install work per ANSI A17.1 requirements and reviewed shop drawings. Install equipment so it can be readily served.
- 2. Equipment clearances and wiring shall satisfy National Electrical Code.
- B. Install guide rails plumb and parallel, within 1/8" maximum deviation; do necessary shimming with metal, securely fastened in place.

C. Hoistway Entrances

1. Spaces between sills and car shall not exceed 3/4".

D. Conduit and Wiring

- 1. General: Install all wiring necessary for the proper operation of the equipment per National and local electrical code standards. All wiring shall test free from short circuits or grounds. Insulation resistance between conductors, and conductors and ground, shall be at least one megohm.
- 2. Traveling Cables: Suspend, anchor, and run traveling cables so the strain on conductors is minimal, connections to terminal blocks are free from all strain, and cables are always free from contact with the hoistway construction and other equipment. Hang cables to obtain proper size loop. Abrupt cable bends are not permitted. Terminate cables at junction boxes at mid-point of travel; leave outer cable covering intact between junction boxes.
- 3. Conduit: Flexible metal conduit may be used for short runs between equipment such as risers and limit switches, interlocks, push button boxes, etc., and between controllers and machine motors and machine brakes. Run other conductors in rigid steel conduit or metal wireways, installed in an orderly manner within the hoistway. Exposed conduit in the service areas and outside the dumbwaiter hoistways shall be not be permitted.

3.02 FIELD QUALITY CONTROL

A. Acceptance Tests

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1. Conduct all tests required to obtain regulatory agency approval for dumbwaiter installation.

B. Additional Tests

1. In addition to acceptance test, perform in the Architect's presence, all reviews and tests necessary to establish compliance with Contract Documents.

3.03 ADJUSTMENT AND CLEANING

A. Adjustment

- 1. Adjust controllers, leveling switches, stopping switches and other control equipment to operate within accepted design tolerances.
- 2. Adjust car-leveling devices so car stops within 1/4" of finished floor.
- 3. Lubricate equipment.

B. Cleaning

- 1. Remove loose materials and filings from hoistway surfaces.
- 2. Clean hoistway and machine room floors of dirt, oil and grease.
- 3. Remove tools, equipment, unused materials, and packing and crating materials from the project.

END OF SECTION 141200

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SECTION 142005 - ELEVATOR CABS

PART 1 - GENERAL

1.01 GENERAL REQUIREMENTS

A. Work of this Section shall conform to the requirements of incorporating all required safety codes, local laws or other services, procedures, filing and tests in accordance with the governing authorities standards.

1.02 DESCRIPTION

A. Work Included

- 1. The intent of the specifications is to provide a cab enclosure construction and interior finish standard for all passenger and/or passenger/service elevators duplicating the present configuration, size, operation or system type.
- 2. The description of work covers the following:
 - a. Wall finishes.
 - b. Returns, transom, entrance and door finishes.
 - c. Floor coverings.
 - d. Ventilation systems.
 - e. Lighting.

B. Clarifications/Exceptions

- 1. Particular attention must be given to the fact that a singular design document is being employed for various types of new or existing systems (new vs. remodel).
 - a. Applicable criteria must be adjusted to suit each individual situation, however; all design modifications are subject to DCAS' express approval.

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1.03 QUALITY ASSURANCE

A. Qualifications

- 1. The work of this Section shall be performed by contractors regularly engaged in the business of manufacturing and modernizing elevator cabs of the type and character required by these specifications.
- 2. The following information shall be submitted for review during the administration of the contract:
 - a. List of similar installations located in the New York City area, having cabs of similar construction and character as that being proposed for this project, arranged to show name of project, elevator company installing cabs and date of completed installation.
 - b. Complete literature, performance and technical data describing the company, its facilities and its principals.
 - c. Verification that the company has experience producing cabs of the quality and detail as indicated in these specifications.

B. Regulatory Agencies

- 1. All clearances, workmanship, construction, design and materials shall be in accordance with the requirements of the latest ASME A17.1 Code and all codes of the City, State, other authorities having legal jurisdiction and the codes hereinafter named.
- 2. The New York City RS-18 Code shall govern except where other codes have jurisdiction include more stringent rules or conflict with the local code.

C. Reference Standards

- 1. ASME A17.1 and latest amendments and supplements.
- 2. New York City Building Code.
- 3. NEC 2002 as adopted by New York City with amendments.

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- 4. UBC and ANSI A17.1 for seismic requirements.
- 5. NAAMM National Association of Architectural Metal Manufacturers.

1.04 WARRANTY

- A. The Contractor shall warrant the work in accordance with the General Conditions and the following requirements. When a conflict occurs, the General Conditions shall prevail.
- B. The Contractor shall warrant the Work specified herein for one (1) year after date of acceptance by DCAS against becoming unserviceable or developing an objectionable appearance resulting from either defective or non-conforming materials and workmanship.
- C. The Contractor shall warrant that all assemblies, components, and finishes specified comply with the Contract Documents, and all applicable codes, regulations and local restrictions and are compatible with each other, adjoining substrates, materials, Work, and other conditions of installations, and expected use.
- D. The Contractor shall warrant against premature material failure due to improper product design, fabrication or installation.
- E. Defects shall include, but not be limited to, the following:
 - 1. Noticeable deterioration of finish: Discoloration, peeling, oxidation, non-uniformity of color and sheen, warp, twist and oil-canning.
 - 2. Loose or missing parts.
 - 3. Failure of any and all equipment and its components.
 - 4. Missing or deteriorated sound insulation.
 - 5. Vibrations, rattling and improper venting with associated noise.
 - 6. Non-alignment of wall and ceiling panels.
 - 7. Insecure wall paneling mounting.

1.05 SUBMITTALS

A. Submittal Schedule

- 1. Within thirty (30) days of the Order to Commence the primary Contract, the selected Subcontractor shall provide schedule of all submittals employing format and enumerating all architectural drawings, samples and miscellaneous submittals by name, quantity, etc.
- B. Submit samples of the following listed items at the same time as the submission of the shop drawings for each cab type. The Resident Engineer and Consultant reserve the right to request additional samples which will show fabrication techniques, workmanship of components and design of hardware and other exposed auxiliary items.

<u>Item</u>	Quantity	Size_	Description
S1	. 1	4 in. x 4 in.	Section of rear wall and sidewall panel finish.
S2	1	As required	Ceiling lighting assembly
S3	3	4 in. x 4 in.	Section of door panel and front return finish.
S4	1	6 in. Long	Stainless steel handrail assembly.
S5	1	6 in. Long	Nickel silver sill or selected sill.
S6	1	4 in. x 4 in.	Section of ceiling finish.
S8	1	12 in. x 12 in	. Protective pad and color.
S9	1	6 in. Long	Stainless steel or other base.

C. Shop Drawings

- 1. Provide six (6) copies of shop drawings for each type of cab including scaled plans, elevations, reflected ceiling plans, and sections, and large scale details noting dimensions, materials, finishes, gauges, clearances, joints, fasteners, and anchoring methods.
- 2. Locate and define hinged and removable panels, show the adjustability of the wall panels, access panels, emergency doors and ceiling panels, light fixtures, operating and signal panels and devices, locks, wiring, lamps and bulbs, power receptacles and

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finishes for car operating panels, fixed and hinged and all other required components and accessories. Provide details of handrails and their supporting devices, concealed ventilation slots, concealed pad hook arrangements, etc.

3. Shop drawings shall be fully coordinated with Primary Elevator Contractor, fixtures and other devices.

D. Product Data

1. Submit to the Consultant for review, catalog cuts, data sheets and color brochures to indicate the performance, fabrication, materials, accessories, components and finishes proposed for the elevator cabs (i.e., fan, lighting fixtures, etc.).

E. Maintenance Instructions

- 1. Provide four (4) printed maintenance manuals including time schedules and instructions for the maintenance for each item specified. Instruct and demonstrate the proper maintenance to DCAS' designated representative.
- 2. Provide recommendations for the car and maintenance of the specified metal and related cab finishes including manufacturer's recommend materials and products.

1.06 PRODUCT HANDLING

A. Protection

1. Use all means to protect materials of this Section before, during and after fabrication.

B. Requirements

1. In the event of damage, immediately make all repairs and replacements necessary to the satisfaction of the Consultant and at no additional cost to DCAS.

C. Delivery

 Materials shall be delivered to the site ready for use in the manufacturer's original and unopened containers and packaging, bearing labels as to type of material and manufacturer's name. Delivered materials shall be identical to accepted samples. Provide heavy-duty protection paper for non-coated items. Material shall be easily removed.

D. Storage

1. Ensure that the materials are stored under cover in a dry and clean location, off the ground. Delivered materials, which are damaged or otherwise not suitable for installation, shall be removed from the job site and replaced with acceptable materials.

PART 2 - PRODUCTS

2.01 CAR ENCLOSURES

A. General – All Elevators

1. The design, materials and finishes of the cab enclosures shall be as specified below:

2. Materials:

- a. Cold-Rolled Sheet Steel Sections: ASTM A366
- b. Rolled Steel Floor Plate: ASTM A786
- c. Steel Supports and Reinforcement: ASTM A36
- d. Aluminum-Alloy Rolled Tread Plate: ASTM B632
- e. Stainless Steel: ASTM A167 Type 302 or 304
- f. Stainless Steel Bars and Shapes: ASTM A276
- g. Stainless Steel Tubes: ASTM A269
- h. Aluminum Extrusions: ASTM B221
- i. Nickel Silver Extrusions: ASTM BI 51
- j. Plastic Laminate (Comply with NEMA LD3, 0.05" thick, color, texture and finish as specified.)

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- k. Bronze or Muntz Metal.
- B. Car Shell (New) PE1 to PE6, JE7-10
 - 1. Steel Shell: 14 gauge furniture steel reinforced and designed to accept the new finished wall panels. Finish shell panels with one (1) coat of rust inhibitive primer and two (2) coats of enamel paint. Apply 1/8" thick, rubberized sound deadening material to the hoistway side of the shell.
 - a. All panels shall have minimum radii. Apply sealant beads to panel joints before bolting together with lock washers.
 - b. Where applicable, side emergency exit shall be of inconspicuous flush design, fitted with concealed hinges and an approved locking arrangement.
 Provide a three-point locking system; at top, bottom and side. Provide an additional five-pin keyed lock and electrical safety switch per local code.
 - 2. Canopy: Where applicable canopy construction methods shall match the shell walls. Use not less than No. 12 gauge furniture sheet steel, and adequately support and brace canopy to comply with the loading requirements of the local codes and ASME A17.1 Standards.
 - a. Provide necessary cutouts for the installation of fan and top emergency exit. Arrange exit panel to swing up using a heavy-duty piano hinge. The exit panel shall have dual locks, necessary stops and a handle. Provide electrical safety switch to prevent operation of the elevator with car top open. When in the locked position, the panel shall be flush with the interior face of the canopy with hairline joints.
 - 3. Base: Provide a finished Stainless Steel base. Provide concealed vent slots above side and rear wall base for proper ventilation of the car based on the CFM of the exhaust fan and car interior size, as required by code. Arrange and size vent slots for quiet operation without any whistling. Use 16 gauge baffles to protect the hoistway side of the vent slots. Prepare Base to accept finished floor, as selected by DCAS.
 - 4. Flooring: Recess and prepare platform with marine grade plywood sub-flooring to accept the finished flooring.

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a. Provide new car door entrance saddle using a nickel silver sill with mounting cradles designed for the present car door configuration and set to receive new flooring, as further specified.

C. Interior Finishes

- 1. Wall Panels (New) PE1 to PE6
 - a. Provide woven wire panels, as selected by DCAS, using material as manufactured by Cambridge Metal or an approved equal.
 - b. Finish rear side of panels with appropriate surface material to support the mounting of panel clips. Ensure that the panels will not become dislodged during the normal operation of the elevator, during safety applications and buffer engagements. Special provisions shall be furnished to prevent removal of the panels through acts of vandalism and misuse.
 - c. Fabricate panels as shown with stainless steel 1/8-inch thick miter-angle edge using concealed hardware and/or permanent adhesive.
 - d. Provide stainless steel flush decorative band under handrail mounting as shown with brushed horizontal No. 4 finish.
 - e. Provide stainless steel base finish with ventilation slots as indicated herein.
 - f. Design and align wall panels, two (2) vertical panels for side walls and three (3) vertical panels for rear wall to match ceiling layout.

2. Wall Panels (New) – JE 7-10

- a. The wall panels shall be constructed of 3/4" thick marine grade plywood. Each removable panel section shall be faced with a selected walnut wood veneer, framed in 1/16" thick bronze.
- b. Frame members shall be separated by 1/2" thick polished metal trim and fitted with 3-1/2" by 3-1/2" polished bronze metal plates at corners.
 - (1) Each panel shall be faced using solid hardwood rails, stiles and raised panels above and below the handrails specified below.

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- (2) Apply furniture steel or suitable laminate to shaft side of panels to prevent warping or other deformations.
- (3) Finish rear side of panels with appropriate surface material for support mounting of removable panel clips. Panels shall be secured as required by code so as to prevent removal or dislodgment during normal operation, buffer engagement, high speed stops or safety applications.
- c. Fabricate panels as shown with bronze 1/16 inch thick miter-angle edge using concealed hardware and/or permanent adhesive.
- d. Provide bronze flush decorative band under handrail mounting as shown with brushed horizontal No. 4 finish.
- e. Provide bronze base finish with ventilation slots as indicated herein.
- f. Design and align wall panels, three (3) vertical panels for side walls and three (3) vertical panels for rear wall to match ceiling layout.

3. Car Fronts - JE 7-10

- a. Front return panels shall be No. 4 brushed bronze with vertical graining and have required cutouts for the keyed switches, indicators, emergency light fixture, car operating station, and the specified special control and signaling devices applicable to each unit.
 - (1) Engrave the elevator identification number and capacity, a "No Smoking" sign, and other code mandated signs directly to the front return panel top section. Applied panels are unacceptable.
- b. Transom shall be 14 gauge, No. 4 Muntz bronze metal and be reinforced and constructed the same as the front return panels with vertical graining.
- c. Provide post entrance jambs with 14 gauge bronze and through bolt to the floor and to the reinforced header section with concealed tabs and hardware.

4. Car Fronts - PE1 to PE6

- a. Front return panels shall be No. 4 brushed stainless steel with vertical graining and have required cutouts for the keyed switches, indicators, emergency light fixture, car operating station, and the specified special control and signaling devices applicable to each unit.
 - (1) Engrave the elevator identification number and capacity, a "No Smoking" sign, and other code mandated signs directly to the front return panel top section. Applied panels are unacceptable.
- b. Transom shall be 14 gauge, stainless steel metal and be reinforced and constructed the same as the front return panels with vertical graining.
- c. Provide post entrance jambs with 14 gauge stainless steel and through-bolt to the floor and to the reinforced header section with concealed tabs and hardware.

5. Cab Doors - PE1 to PE6, JE7-10

- a. Standard 1" thick, 14 gauge hollow metal flush construction, reinforced for power operation and insulated for sound deadening. Finish hatch side with 16 gauge furniture steel and face cab side with 16 gauge stainless steel sheet steel with vertical grain to match jamb and transom. Provide 16 gauge bronze metal for Elevator Nos. JE7 and 8.
 - (1) The door panels shall have no binder angles. All welds shall be continuous, ground smooth and invisible.
 - (2) Drill and reinforce doors for installation of door operator hardware, door protective device, door gibs, etc.

6. Ceiling - PE1 to PE6. JE7-10

- a. Provide a floating type ceiling in six (6) sections with panels aligned per wall configuration layout.
 - (1) Maintain a ventilation channel on all sides 1" to 1-1/2" with exposed finishes matched to the interior design.
 - (2) Locate recessed down lights with PL lamps in the center of each panel.

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E. Ventilation - All Elevators

- 1. The exhaust-type system shall include a blower driven by a direct connected motor and mounted on top of car with isolation to effectively prevent transmission of vibration to the car structure. The blower shall have not less than two (2) operating speeds. The ventilation system shall be sized to provide one air change per minute at low speed and 1.5 air changes per minute at high speed. The unit design and installation shall be such that the maximum noise level, when operating at high speed, shall not exceed 55 dBA approximately three feet (3') above the car floor. A three-position switch to control the blower shall be provided in the car station.
- 2. The exhaust blower shall start upon the pressing of a car or landing call button and shall stop at a predetermined time (approximately 2 minutes) after the car has answered the last registered call.

F. Protective Pads and Pad Hooks

1. Provide pad hooks at locations, as required, at top and bottom of side and rear walls. Protective pads shall cover the side and rear walls. Provide cutouts in pads for access to the cab operating and signaling devices, handrails or other projected apparatus. Pads shall be fire-resistant canvas with two (2) layers of cotton batting padding.

G. Lighting – All Elevators

1. Provide six (6) recess high-hat type down lights equipped with PL lamps and surface ring fixture lenses matched to ceiling finishes.

H. Flooring – All Elevators

1. Provide Fritz flexible marble tile in a classic 100/300 series Marble Mosaic, TM finish, or approved equal. Clean and seal the tile per the manufacturer's specifications. Apply a minimum of two (2) coats of the Original Equipment Manufacturers (O.E.M.) polish finish.

PART 3 - EXECUTION

3.01 PRE-APPROVED EQUIPMENT MANUFACTURERS AND SUPPLIERS

A. The following manufacturer's have been pre-approved for use on this project:

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- 1. Cambridge Metal
- 2. Fritz Tile
- 3. National Cab
- 4. EDI/EDC
- 5. CEC

3.02 MATERIALS, WORKMANSHIP AND FINISHES

- A. All work shall conform to the Specification's details and, where not indicated, construction shall conform to recognized shop practice for high quality work.
- B. All work shall be executed by mechanics skilled in the trades and the Contractor shall not employ any careless or incompetent workmen on the work.
- C. All materials shall be the best of their respective kinds. All panels shall be stainless steel unless otherwise indicated.
- D. All ferrous metal, which is not exposed to view, shall be finished with one (1) coat of rust inhibitive primer and finished painted with two (2) coats of enamel prior to delivery.

E. Flatness of Panels

1. Panels, fascias, plate, stiffeners, and fabricated or laminated sheet items shall read as flat and free of bow or "oil canning" when installed. Exposed metal faces shall be of such flatness as to conform to the following: For rectangular areas with lengths or width up to and/or including 24", the maximum overall variation on plane between high and low point shall not exceed 1/32", and the maximum overall variation on plane between high and low points within a panel shall not exceed 1/16".

F. Reinforcing

1. Install reinforcement as required for hardware and necessary for performance requirements, sag resistance and rigidity.

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G. Corner Construction

1. Maximum exposed edge radius at corner bends shall be 1/16". There shall be no visible grain separation at the bend.

H. Continuity

- 1. Maintain accurate relation of planes and angles, with hairline fit of contacting members.
 - a. Uniformity of Finish:
 - (1) Abutting ribbed members shall not have an integral color or texture variation greater than half the range indicated in the sample pair submittal.

I. Fasteners

1. Conceal fasteners throughout. No exposed fasteners shall be used without specific approval of DCAS unless specified herein.

3.03 FINISHES

A. Stainless Steel Finishes

1. Remove scratches, abrasions, dents and other blemishes before applying finish. Apply Satin Finish, No. 4 long grain finish to the fabricated work, with texture and reflectivity as required by DCAS.

3.04 INSPECTION

- A. Study the Contract Documents with regard to the work as specified and required so as to ensure its completeness.
- B. Examine surface and conditions to which this work is to be attached or applied, and notify DCAS, in writing, if conditions or surfaces are detrimental to the proper and expeditious installation of the work. Starting the work shall imply acceptance of the surfaces and conditions to perform the work as specified.

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- C. Verify, by measurements at the job site, dimensions affecting the work. Bring field dimensions, which are at variance with those on the accepted shop drawings to the attention of DCAS. Obtain the decision regarding corrective measures before the start of fabrication of items affected.
- D. Cooperate in the coordination and scheduling of the work of this Section with the work of other sections so as not to delay job progress.

3.05 INSTALLATION

- A. Fabricate the elevator cab(s) using skilled workmen in strict accordance with the final accepted shop drawings and other submittals.
- B. Comply with the code, applicable seismic requirements, manufacturers instructions and recommendations.
- C. Coordinate work with the work of other trades for proper time and sequence to avoid construction delays and to ensure right-of-way of system. Use lines and levels to ensure dimensional coordination of the work.
- D. Provide and install fans, light fixtures, switches, controls, safety and maintenance and operating devices in strict accordance with the submitted wiring diagrams and applicable codes and regulations having jurisdiction.
- E. After installation, touch up in the field, surfaces of shop primed elements, which have become scratched or damaged.
- F. Lubricate operating parts of system as recommended by the manufacturer.

3.06 PROTECTION AND CLEANING

- A. Adequately protect surfaces against accumulation of paint, mortar, mastic and disfiguration or discoloration and damage during shipment and installation.
- B. Upon completion, remove protection and thoroughly clean work and have it free from discoloration, scratches, dents and other surface defects.
- C. The finished installation shall be free of defects. Before final completion and acceptance of the building, repair and/or replace defective work to the satisfaction of DCAS at no additional cost.

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END OF SECTION 142005

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14 21 23 - ELECTRIC TRACTION PASSENGER ELEVATORS

PART 1 - GENERAL

1.1 SUMMARY AND DEFINITIONS

A. Related Documents

- 1. General Conditions
- 2. 14 20 05 Elevator Cabs
- 3. 14 12 00 Dumbwaiter
- 4. Drawings No. EL-1, 2, 3, 4 and 5

B. Intent

- 1. This section includes electric traction passenger.
- 2. The following outlines the scope of work covered in this Section:

 This is a turn-key project requiring the complete modernization of a six car passenger group and four Simplex Judges' elevators. The modernization includes and is not limited to the replacement of all major components i.e. hoist machines, controllers, wiring, motor drive fixtures and cabs.
- 3. Related equipment shall be designed, constructed, installed and adjusted to produce the highest results with respect to smooth, quiet, convenient and efficient operation, durability, economy of maintenance, and the highest standard of safety.
- 4. It is not the intent of these specifications to detail the construction and design of all parts of the equipment, but it is expected that the type, materials, design, quality of work and construction of each part shall be adequate for the service required, durable, properly coordinated with all other parts, and in accordance with the best commercial standards applicable and of the highest commercial efficiency possible.
- 5. Electric and magnetic circuits and related parts shall be of proper size, design and material to avoid heating and arcing, and all other objectionable effects which may reduce the efficiency of operation, economy of maintenance and/or net-useful life of the apparatus.
- 6. Minimum requirements for design, materials, etc., are for certain parts of the equipment. Equivalent requirements approved by the Consultant shall apply to such parts as are of special design, construction or material and to which the specified requirements are not directly applicable. These minimum requirements as a whole shall be considered as establishing proportionate general minimum standards for all parts of the equipment.
- 7. The Consultant may permit variations from the requirement of these specifications to permit use of the Contractor's standard equipment, provided such standard equipment is in every way adequate for the intended use and meets the full intent of these specifications. All such variations proposed by the manufacturer shall be called to the attention of the Consultant and shall only be made if approved in writing.
- 8. General requirements for design, materials and construction are intended primarily to apply to the heavy-duty and important parts of the equipment specifically mentioned and to other parts of similar duty and importance. Less important and light-duty parts may be of the standard design, materials and construction provided that, in the opinion of the

Consultant, such standards are in accordance with the best commercial practice and are fully adequate for the purpose of use. All such variations shall be made only on the Consultant's written approval.

- 9. All equipment and component parts installed, supplied or provided under this contract shall be manufactured and distributed by a third-party, non-installer company servicing the vertical transportation industry.
 - a. Apparatus shall conform to the design and construction standards referenced herein, and shall be rated the best commercial grade suitable for this application.
 - b. Equipment and component systems shall not employ any experimental devices or proprietary designs that could hamper and/or otherwise prohibit subsequent maintenance repairs or adjustments by all qualified contractors.
 - c. Manufacturers of the apparatus shall provide technical support and parts replacements for their equipment and component systems for a minimum of twenty (20) years, and issue such guarantee of support to the purchaser with written certification naming the final DCAS of their product(s) to ensure the apparatus or systems remain maintainable regardless of who may be selected for future service.
- 10. All equipment provided shall be factory and field tested with a history of design reliability and net-useful life established.
 - a. Contractor must be able to demonstrate the apparatus to be installed has been used successfully in a substantially similar manner under comparable conditions.
 - b. If the apparatus proposed differs substantially in construction, material composition, design, size, capacity, duty or other such rating from the equipment previously used for the same purpose by the manufacturer, the Consultant may reject the apparatus or require the vendor test and demonstrate the adequacy and suitability for this particular situation. Any necessary tests shall be performed at the sole expense of the Contractor with no prior guarantee of acceptance after the testing procedure.
- 11. The Contractor shall not use as part of the permanent equipment any experimental devices, proprietary design, components, construction of materials which have not been fully tried out in at least substantially similar or under comparable service, except as may be especially approved by the Consultant. If any important equipment or devices to be used on this installation differ substantially in construction, materials, design, size, capacity or duty from corresponding items previously used for the same purpose by the manufacturer, they shall pass such tests as the Consultant may require to fully show their adequacy and suitability. These tests shall be in addition to tests herein specified and shall be made at the expense of the Contractor.

- 12. Certain design limitations, tests, etc., are herein specified as a partial check of the adequacy of design, construction and materials used. These requirements do not cover all features necessary to ensure satisfactory and approved operation, etc., of the equipment.
- 13. It is understood, the entire system shall be designed, fabricated, modified and/or upgraded in full compliance with applicable local laws and code standards. The absence of a particular item or requirement shall not relieve the Contractor of the full and sole responsibility for such equipment, features and/or procedures.
- 14. With the exception of only those items specifically identified as being performed by others, the Specifications are intended to include all engineering, material, labor, testing, and inspections needed to achieve work specified by the Contract Documents. Inasmuch as it is understood that any incidental work necessary to complete the project is also covered by the Specifications, bidders are cautioned to familiarize themselves with the existing job site conditions. Additional charges for material or labor shall not be permitted subsequent to execution of the Contract.
- 15. Bidders must report discrepancies or ambiguities occurring in the Specifications to the Consultant for resolution, otherwise the Specifications shall be deemed acceptable in their existing form.

C. Description

- 1. Work Included: The extent of the work is indicated on the drawings.
- 2. Work of this Section includes labor, materials, tools, equipment, appliances and services required to manufacture, deliver and install the units complete as shown on the drawings, as specified herein, and/or as required by job conditions.
- 3. The work and /or requirements specified in all sections is described in singular with the understanding that identical work shall be performed on all units or associated systems unless otherwise specified herein.
- 4. The work shall include, but is not limited to the following:
 - a. Six (6) 3000lbs. capacity geared/gearless traction passenger elevator operating at 500 fpm. To be provided with gearless machines.
 - b. Four (4) 1500lbs. capacity geared/gearless traction passenger elevator operating at 350 fpm. To be provided with gearless machines.

D. Abbreviations and Symbols

1. The following abbreviations, Associations, Institutions, and Societies may appear in the Project Manual or Contract Documents:

AHJ	Authority Having Jurisdiction
AIA	American Institute of Architects
ANSI	American National Standards Institute
ASME	American Society of Mechanical Engineers
ASTM	American Society for Testing and Materials
AWS	American Welding Society
BOCA	Building Officials and Code Administrators International, Inc Basic
	National Building Code

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IEEE Institute of Electrical and Electronics Engineers
NEC National Electrical Code
NEMA National Electrical Manufacturers Association
NFPA National Fire Protection Agency
OSHA Occupational Safety and Health Act

E. Codes and Ordinances / Regulatory Agencies

1. Work specified by the Contract Documents shall be performed in compliance with applicable Federal, State, and municipal codes and ordinances in effect at the time of Contract execution. Regulations of the Authority Having Jurisdiction shall be fulfilled by the Contractor and Subcontractors. The entire installation, when completed, shall conform with all applicable regulations set forth in the latest editions of:

- a. Local and/or State laws applicable for logistical area of project work.
- b. New York Building Code
- c. New York City Elevator Code Appendix K / Appendix K3
- d. Safety Code for Elevators and Escalators, ASME A17.1 and all supplements.
- e. Guide for Inspection of Elevators, Escalators, and Moving Walks, ASME A17.2.
- f. Safety Code for Existing Elevators and Escalators, ASME A17.3.
- g. Guide for emergency evacuation of passengers from elevators, ASME A17.4.
- h. National Electrical Code (ANSI/NFPA 70).
- i. American With Disabilities Act Accessibility Guidelines for Building and Facilities.
- j. ASME A17.5/CSA-B44.1 Elevator and escalator electrical equipment.
- 2. The Contractor shall advise DDC's Representative of pending code changes that could be applicable to this project and provide quotations for compliance with related costs.

F. Reference Standards

- 1. AISC Specification for the Design, Fabrication and Erection of Structural Steel for Buildings.
- 2. ICC/ANSI A117.1 Buildings and Facilities Providing Accessibility and Usability for Physically Handicapped People.
- 3. ANSI/AWS D1.1 Structural Welding Code, Steel.
- 4. ANSI/NFPA 80 Fire Doors and Windows.
- 5. ANSI/UL 10B Fire Tests of Door Assemblies.
- 6. APA American Plywood Association.
- 7. ASTM A36 Steel Supports and Reinforcement.
- 8. ASTM A139 Electric-Fusion (ARC) Welded Steel Pipe (NPS 4 Inch and Over).
- 9. ASTM A276 Stainless Steel Bars and Shapes.
- 10. ASTM A446 Steel Sheet, Zinc Coated (Galvanized) by the Hot-Dip Process, Structural (Physical) Quality.
- 11. ASTM A786 Rolled Steel Floor Plate.
- 12. ASTM B36 (36M) Bronze Sheet (alloy) UNS No.C2800 (Muntz metal).
- 13. ASTM B151 Nickel Silver Extrusions.

- 14. ASTM B221 Aluminum and Aluminum-Alloy Extruded Bars, Rods, Wire, Shapes and Tubes.
- 15. ASTM B455 Bronze Extrusions.
- 16. ASTM B632 Aluminum-alloy Rolled Tread Plate.
- 17. NEMA LD3 High Pressure Decorative Laminates
- 18. ANSI/IEEE 519-1992
- 19. ANSI/IEEE Guide for Surge Withstand Capability (SWC) Tests
- 20. ANSI Z97.1 Laminated/Safety Tempered Glass

G. Definitions

- 1. Defective Work: Operation or control system failure, including excessive malfunctions; performances below specified ratings; excessive wear; unusual deterioration or aging of materials or finishes; unsafe conditions; need for excessive maintenance; abnormal noise or vibration; and similar unusual, unexpected, and unsatisfactory conditions.
- 2. Definitions in ASME A17.1 as amended or modified by the AHJ apply to work of this Section.

1.2 PERMITS AND SUBMITTALS

A. Permits

- 1. Comply with the requirements of Division 01.
- 2. Prior to commencing work specified by the Contract Documents, the Contractor shall, at its own expense, obtain all permits or variances as may be required by the AHJ and provide satisfactory evidence of having obtained said permits and variances to both DDC and Consultant.
- 3. File necessary drawings for approval of all Authorities Having Jurisdiction.
- 4. The Elevator Contractor shall undertake the necessary review and search procedure to identify open applications and/or outstanding violations for this property; and, close-out such applications and/or expunge such violations relative to the project scope as required for final acceptance by the AHJ.
 - a. Outstanding applications and violations must be indicated on the request for permit filing for this procedure to ensure such applications and/or violations are dismissed accordingly.
 - b. All relative costs shall be included in the base bid proposal with the understanding that corrective actions are covered under the specified scope of work.

B. Submittals

- 1. Prior to beginning the work, the Contractor shall submit and have approved copies of layout drawings, shop drawings and standard cuts. These items shall include:
 - a. A plan view of the hoistway and machine room
 - b. Elevation of the pit
 - c. All accessories.

- 2. The Consultant and DDC's Representative shall pass on the submittals with reasonable promptness and the Contractor shall be responsible to ensure that there will be no delay in their work or that of any other trade involved.
- 3. Particular attention shall be given to land mark consideration.
- 4. Approved filing and submittal requirements must be completed before equipment and related materials are ordered.
- 5. Copies of Department of Buildings' permits and/or governing authority's documents will be posted at the job site with copies issued to DDC's Agent, DDC's Representative and Consultant.
- 6. Samples of wood, metal, plastic, paint or other architectural finish material applicable to this project shall be submitted for approval by DDC's designee.
- 7. It shall be understood that approval of the drawings and cuts by DDC's designee, Architect and/or Consultant shall be for general arrangement only and does not include measurements which are the Contractor's responsibility or approval of variations from the contract documents required by the AHJ.
- 8. The Contractor shall prepare a record log and maintain all submittals, shop drawings, catalog cuts and samples.

C. Submittals

- 1. Comply with the requirements of Section 01300.
- 2. Submit the following

a. Samples

Item No.	Quantity	Size	Description
S1	3	12" x 12"	Exposed finishes as requested by Architect
S2	1	Actual	Each fixture as requested by the Architect
S3	1	Actual	Mitered, corner construction of entrance frame

The samples shall be:

- 1) Held on site after inspection and used as a standard for acceptance or rejection of subsequent production units.
- 2) Labeled to identify their intended use and relation to the documents, e.g., car finishes, control panel, etc.
- 3) Returned to the elevator contractor at the completion of the project.

Subject to approval, where an item of equipment is a standard item, copies of the manufacturer's catalogue or brochure may be accepted provided that all dimensions and relevant information are shown in the catalogue or brochure.

- b. Shop Drawings Submit computer generated layout drawings for approval. Include the following:
 - 1) A listing of all components, devices and sub-systems including:

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- a) Manufacturer and location of plant
- b) Size and model number
- 2) Machine room plan indicating:
 - a) Location of equipment
 - b) Service connections
 - c) Reactions
- 3) Fully dimensioned hoistway plan and section of each unit indicating:
 - a) Platform (with cab), hoistway and entrance dimensions
 - b) All running clearances
 - c) Location of fixtures
 - d) Buffers, service ladders and pit reactions
 - e) Location of inserts
 - f) Rail Reactions
- 4) Entrance details
- 5) Sill support detail
- 6) Fixture details including hall lanterns, hall pushbutton stations, car operating panel, etc.
- 7) Wiring diagrams
- 8) Insert diagrams
- 9) Cab details including wall, ceiling, base, handrail, lighting, fixtures, front return and transom plans and sections

3. Calculations

- a. Rail loads
- b. Pit and machine room reactions
- c. Heat emissions in machine room
- d. Electrical loads including, accelerating and running currents. Include all auxiliary loads.

D. Submittals

- 1. Comply with the requirements of Division 01.
- 2. Submit the following
 - a. Samples

Item No.	Quantity	Size	Description
S1	3	4" x 6"	Exposed finishes as requested by Architect
S2	1	Actual	Each fixture as requested by the Architect

E. Measurements and Drawings

- 1. Drawings or measurements included with the bidding material shall be for the convenience of the bidders only and full responsibility for detailed dimensions lies with the Contractor.
- 2. In the execution of the work on the job, the Contractor shall verify all dimensions with the actual conditions.
- 3. Where the work of the Elevator Contractor is to join other trades, the shop drawings shall show the actual dimensions and the method of joining the work of the various trades.

F. Substitutions

- 1. Requests for substitutions will be considered under the following limitations and situations:
 - a. Work or equipment specified becomes unavailable through unforeseen events such as strikes, loss of manufacturer's plant through fire, flood or bankruptcy.
- Requested substitutions will be reviewed and adjudged. Failure of the Consultant to
 raise objection shall not constitute a waiver of any of the requirements of the Contract
 Documents.
- 3. Request for substitutions shall include complete data with drawings and samples as required, including the following:
 - a. Quality Comparison Proposed substitution versus the specified product.
 - b. Changes required in other work because of the substitution.
 - c. Effect on the construction schedule.
 - d. Cost Data Resulting from the proposed substitution versus the specified product. The Contractor shall certify that the cost data presented is complete and includes all related costs under this Contract.
- 4. When proposing a substitution, the Contractor represents that:
 - a. They have investigated the proposed substitution and have determined that it is equal to or better than the product specified.
 - b. They will guarantee the substitution in the same manner as the product specified.
 - c. They will coordinate and make other changes as required in the work as a result of the substitution.
 - d. They waive all claims for additional costs as a result of the substitution, with the exception of those identified above under "cost data".
- 5. The Commissioner will be sole judge of the acceptability of the proposed substitution.
- 6. The Commissioner will have authority to approve or reject substitutions or to change the specified standards of quality. However, neither this authority to act under this provision nor any decision made in good faith, either to exercise or not to exercise this authority, shall give rise to any duty or responsibility of the Commissioner to the Contractor, any Subcontractor, any Sub-Subcontractor, any of their agents or employees or any other persons performing the work or offering the perform the work.

- G. Not Used
- H. Not Used

I. Keys

- 1. Upon the initial acceptance of work specified by the Contract Documents on each unit, the Contractor shall deliver to DDC, six (6) keys for each new general key-operated device that is provided in accordance with ASME A17.1, Part 8 standards as may be adopted and modified by the AHJ.
- 2. All other keying of access or operation of equipment shall be provided in accordance with ASME A17.1 Part 8 as may be adopted and modified by the AHJ.

J. Diagnostic Tools

- 1. Prior to seeking final acceptance of the project, the Contractor shall deliver to DDC any specialized tools required to perform diagnostic evaluations, adjustments, and/or programming changes on any microprocessor-based control equipment installed by the Contractor. All such tools shall become the property of DDC.
 - a. DDC's diagnostic tools shall be configured to perform all levels of diagnostics, systems adjustment and software program changes which are available to the Contractor.
 - b. DDC's diagnostic tools that require periodic re-calibration and/or re-initiation shall be performed by the Contractor at no additional cost to DDC for a period equal to the term of the maintenance agreement from the date of final acceptance of the project.
 - c. The Contractor shall provide a temporary replacement, at no additional cost to DDC, during those intervals in which DDC might find it necessary to surrender a diagnostic tool for re-calibration, re-initiation or repair.
- 2. Contractor shall deliver to DDC, printed instructions, access codes, passwords or other proprietary information necessary to interface with the microprocessor-control equipment.
- K. Printed Circuit Boards, Software Programs and Spare Parts

L. Spare Parts

- 1. Provide the following spare parts under the terms of this agreement and store same in new approved cabinets to be located in the elevator machine room with provisions for locking and ventilation. All spare parts shall be of the same type, design and of the same manufacturer as the parts used as a result of the modernization.
 - a. 10 Ea. GAL, or approved equal hoistway door interlock assembly complete of each type used.

- b. 6 Ea. GAL, or approved equal hoistway and car door hanger track assemblies complete on each type used.
- c. 25 Ea. GAL or approved equal hoistway and car door rollers.
- d. 25 Ea. GAL, or approved equal interlock release rollers.
- e. 2 Ea. Door detector assemblies complete, including power supplies and control units.
- f. 10 Ea. Car and counterweight guides complete.
- g. 25 Ea. Roller wheels complete of each type used.
- h. 2 Ea. Leveling unit and encoder unit complete.
- i. 10 Ea. Hoistway limit switch.
- j. 2Ea. GAL, or approved equal car door clutch assembly of each type used.
- k. 3 Ea. Load weighing device used.
- l. 24 Ea. Push button assemblies. Mechanical for each type used including contact blocks.
- m. 24 Ea. Vandal-resistant buttons for each type used.
- n. 6Ea. GAL, or approved equal gate switches.
- o. 5 Ea. Toggle switch and keyswitch assemblies for each different type used.
- p. 20 Ea. Keys for each different type used. (Extra above other requirements herein.)
- q. 10 Ea. LED position indicators and drive boards for each different type used, including program chips.
- r. 10 Ea. Stop switch.
- s. 5 Ea. Printed circuit boards for each different type control system used (controller, dispatcher, encoder, door operator, telemetering, etc.)
- t. 6 Ea. High and low voltage relays for controller for each different type used, including VVVF-AC drive.
- u. 3 Ea. Spare parts indicated in the Telemetering and Intercommunications Section.
- v. 1 Ea. Remote fault monitoring computer system in motor room.
- w. 2 Ea. VVVF-AC Drives complete of each type used.
- x. 2 Ea. Monitors for each used, controllers and dispatcher.
- y. 2 Ea. Brake coils for each type in use.
- z. 1 Ea. Brake assembles complete of each type in use.
- aa. 1 Ea. Chokes and filters of each different type used.
- bb. 6 Ea. Power supplies of each different type used.
- cc. 6 Ea. Feedback tachometers of each type used.
- dd. 6 Ea. Encoders for each type used.
- ee. 100 Ea. Door gibs.
- ff. 3 Ea. Emergency lighting units complete of each different type used.
- gg. 2 Ea. Door operators of each type in use.
- hh. 4 Ea. Door motors of each type in use.
- ii. 2 Ea. Side and top Emergency exit switch assembles.
- jj. 2 Ea. Top of car run boxes complete.
- kk. 24 Ea. Hall Lantern bell/gong.
 - 5 Ea. Hall Lantern covers of each type used.
- II. 1 Set EEPROM chips for all elevator controls and dispatcher, final as built.
- mm. 6 Ea. Fans for cabs.
- nn. 3 Ea. Lobby panel components, switches (keyed and toggle), glass doors.

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list. Contractor has to provide each spare part with manufacturer number.

Wiring Diagrams, Operating Manuals and Maintenance Data

- 1. Comply with the requirements of Division 01.
- 2. Contractor shall deliver to DDC, four (4) identical volumes of printed information organized into neatly bound manuals prior to seeking final acceptance of the project.

Spare parts list have to be submitted by Elevator Company on the Letter head for review and approval by Consultant and DDC to comply with specification spare part

- 3. The manuals shall also be submitted in electronic format on non-volatile media, incorporating raw 'CAD' and/or Acrobat 'PDF' file formats.
- 4. Manuals, as well as electronic copies, shall contain the following:
 - a. Step-by-step adjusting, programming and troubleshooting procedures that pertain to the solid-state microprocessor-control and motor drive equipment.
 - b. Passwords or identification codes required to gain access to each software program in order to perform diagnostics or program changes.
 - c. A composite listing of the individual settings chosen for variable software parameters stored in the software programs of both the motion and dispatch controllers.
 - d. Method of control and operation.
- 5. Contractor shall provide four (4) sets of "AS INSTALLED" straight-line wiring diagrams in both hard and electronic format in accordance with the following requirements:
 - a. Displaying name and symbol of each relay, switch or other electrical component utilized including identification of each wiring terminal.
 - b. Electrical circuits depicted shall include all those which are hard wired in both the machine room and hoistway.
 - c. Supplemental wiring changes performed in the field shall be incorporated into the diagrams in order to accurately replicate the completed installation.
- 6. Furnish four (4) bound instructions and recommendations for maintenance, with special reference to lubrication and lubricants.
- 7. Manuals or photographs showing controller repair parts with part numbers listed.

N. Training

- 1. Prior to seeking final acceptance of the project, the Contractor shall conduct an eight-hour training program on-site with building personnel selected by DDC.
- 2. The focus of the session shall include:
 - a. Instructions on proper safety procedures to utilize in assisting passengers that may become entrapped inside an elevator car.
 - b. Explain each control feature and its correct sequence of operation.
- 3. Control features covered shall include but, not be limited to:

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- a. Independent Service Operation
- b. Attendant Service Operation
- c. Emergency Fire Recall Operation Phase I
- d. Emergency In-car Operation Phase II
- e. Emergency Power Operation
- f. Emergency Communications Equipment
- g. Security Operating Features
- h. Remote Monitoring/Controls.
- O. Not Used
- P. Not Used

1.3 QUALITY ASSURANCE

- A. Materials and Quality of Work
 - 1. All materials are to be new and of the best quality of the kind specified.
 - 2. Installation of such materials shall be accomplished in a neat manner and be of the highest quality.
 - a. Should the Contractor receive written notification from DDC stating the presence of inferior, improper, or unsound materials or quality of installation, the Contractor shall, within twenty-four (24) hours, remove such work or materials and make good all other work or materials damaged.
 - b. Should DDC permit said work or materials to remain, DDC shall be allowed the difference in value or shall, at its election, have the right to have said work or materials repaired or replaced as well as the damage caused thereby, at the expense of the Contractor, at any time with in one (1) year after the completion of the work; and neither payments made to the Contractor, nor any other acts of DDC shall be construed as evidence of acceptance and waiver.
- B. Mechanical Design Requirements (General)
 - 1. The following typical requirements shall apply to all parts of the work where applicable and are supplementary to other requirements noted under the respective headings.
 - a. All bearings, pivots, guides, guide shoes, gearing, door hanger sheaves, door hanger tracks and similar elements subject to friction or rolling wear in the entire elevator installation shall be accurately and smoothly finished and shall be arranged and equipped for adequate and convenient lubrication. Means shall be provided for flushing and draining the larger bearings and gear case. All oiling holes shall have dustproof, self-cleaning caps.
 - b. Bearings of governor and governor sheaves and important supporting bearings of other parts in motion when the elevator is traveling shall, unless otherwise

- specified or approved, be of ball or roller bearing type or shall have renewable linings of bronze or babbitt metal.
- c. Bearings for brake levers and similar uses where the amount of movement under load is light and the wear negligible may be unlined.
- d. All plain bearings shall be liberally sized in accordance with the best commercial elevator usages which have proved entirely satisfactory on heavy-duty installations.
- e. Bearings of motors shall be arranged and equipped for adequate automatic lubrication. Ring or chain oilers, spring-fed grease cups and equivalent devices properly used in accordance with the best commercial elevator practice will be acceptable. Approved means shall be provided for visibly checking the amount of lubricant contained and for flushing and draining. Means shall also be provided for preventing leakage of lubricant when the reservoirs or grease cups are filled to proper levels.
- f. Ball and roller bearings shall be of liberal size and of a type and make which have been extensively and successfully used on other similar, heavy-duty elevator installations. They shall be fully enclosed. Loading, lubrication, support and all other conditions of use shall be in accordance with the recommendations of the bearing manufacturer based on previous extensive and satisfactory elevator usage.
- g. All armature spiders and similar items intended to rotate with their shafts shall be keyed and/or firm press or shrunk fit on the shafts. Set screw fastening will be permitted only for minor items not subject to hoisting loads and where means for field adjustment is required.
- h. All bolts used to connect moving parts, bolts carrying hoisting stresses and all other bolts, except guide rail bolts, subject to vibration or shock shall be fitted with adequate means to prevent loosening of the nuts and bolts. Bolts transmitting important shearing stresses between machine parts shall have tight body fit in drilling holes.
- i. All machine work, assembling and installing shall be done by skilled and experienced mechanics using first-class, modern equipment and tools. All work shall be thoroughly high grade in every respect. All parts will be manufactured to high precision standards so that wearing parts will be readily interchangeable with stock repair parts with a minimum of field fitting.
- j. All bearing and sliding surfaces of shafts, pins, bearings, bushings, guides, etc., shall be smoothly and accurately finished. They shall be assembled and installed in accurate alignment and with working clearance most suitable for the load, speed, lubrication and other conditions of use.
- k. Structural steel used for supporting and securing equipment and for the construction of car slings, etc., shall conform to the A.S.T.M. specification for Structural Steel for Buildings. Design stresses shall not exceed those specified in the local Building Code.
- 1. Castings of motor frames, sheaves, gear casings, etc., shall be of the best quality metallurgically controlled, hard, close grained gray machinery cast iron, free from blow holes, sand holes, or shrinkage cracks, ground to remove overruns, sanded and machined so as to leave a finish suitable for its particular application. Surfaces of sheaves and brake drums shall be entirely free from defects and shall show a hardness of not less than 220 Brinell.
- C. Electrical Design Requirements (General)

- 1. The following typical requirements shall apply to all parts of the work and are supplementary to other requirements noted under the respective headings.
 - a. The design and construction of the motors shall conform to the requirements of these specifications and to the ASME Standards for Rotating Electrical Machinery with revisions issued to the first day when the work of this Contract was advertised.
 - 1) Motors shall operate successfully under all loads and speeds and during acceleration and deceleration.
 - 2) Motors shall be designed for quiet operation without excessive heat.
 - 3) Insulation on motor coils and windings and on all insulated switch, relay, brake and other coils shall conform to the requirements for Class "H" insulation, as defined in ASME Standards for Rotating Electrical Machinery. All motors shall be impregnated twice.
 - 4) Switches, relays, etc., on controller, starter and signal panels and similar items on other parts of the equipment shall be the latest improved type for the condition of use. They shall function properly in full accordance with the requirements of the machines controlled and with the specified operating requirements of the elevator. Any of these parts showing wear or other injurious effects during the guarantee period to the extent that abnormal maintenance is required or indicated shall be replaced with proper and adequate parts by the Contractor.
 - 5) Contacts in elevator motor circuits which are intended to be opened by governors or other safety devices shall be copper to carbon or other approved non-fusing type.
 - 6) Where required, controllers and other component parts of the installation shall be labeled in accordance with the latest codes and standards as adopted and/or otherwise modified by the AHJ.
 - 7) Electrical equipment, motors, controllers, etc., installed under this contract shall have necessary CSA/US or UL listing. Equipment shall be labeled or tagged accordingly.
- D. Structural, Mechanical and Electrical Design Parameters
 - 1. The mechanical and electrical systems and the building structure have been designed for the following design loads:
 - 2. Power supply: 208 Volts, 60 Cycles, 3
 - 3. Electrical Loads: As shown on the drawings
 - 4. Heat Release: As shown on the drawings
 - 5. Not Used
 - 6. Not Used
 - 7. Electrical equipment, motors, controllers, etc., installed under this contract shall have necessary CSA/US or UL listing. Equipment shall be labeled or tagged accordingly.
- E. Materials, Painting and Finishes

- 1. Two (2) coats of rust inhibiting machinery enamel shall be applied to exposed ferrous metal surfaces in the pit that do not have a galvanized, anodized, baked enamel, or special architectural finishes.
- 2. Two (2) coats of rust inhibiting enamel paint to the machinery located within the machine room and secondary level (where applicable) as well as to the machine room floors. Architectural metal surfaces of bronze or similar non-ferrous materials which are specified [to be refinished, reclad and/or provided new], shall be sufficiently clear coated so as to resist tarnishing during normal usage for a period of not less than twelve (12) months after final acceptance by DDC.
- 3. Identify all equipment including buffers, crosshead, safety plank, machine, controller, drive, governor, disconnect switch, etc., by 4" high numerals which shall contrast with the background to which it is applied. The identification shall be either decalcomania or stencil type.
- 4. Paint or provide decal-type floor designation not less than six (6) inches high on hoistway doors (hoistway side), fascias and/or walls as required by Code at intervals not exceeding 7'-0". The color of paint used shall contrast with the color of the surface to which it is applied.

F. Painting

- 1. Upon the completion of the project, the Contractor shall paint the Machine Room, the Pit and Storage Areas, floor, ceiling and walls and all elevator related equipment therein, including railings and metal stairways. Patch and repaint machine room and storage area walls, ceiling and floor in accordance with the following:
 - a. Prepare surfaces to receive paint; thoroughly clean of grime, grease, dirt, loose material and other substances that may interfere with proper adhesion of paint. Provide barrier coats over incompatible primers or remove and repaint. Paint dry surfaces only.
 - b. Remove or protect hardware, hardware accessories, plates, signs, trim for HVAC work, machined surfaces, lighting fixtures and similar items in place and not to be finish painted. Disconnect and move equipment adjacent to areas scheduled to be painted. Reposition and reconnect items and remove protection upon completion of each space.
 - c. Fill dents, cracks, hollow places, open joints, and other irregularities with a filler suitable for the purpose.
 - d. Prime surfaces as required not more than eight (8) hours after cleaning except as otherwise specified by the prime paint manufacturer.
 - e. Repaint machine room with an Elastomeric Acrylic Latex paint in a color as indicated below.
 - f. All paints shall be Benjamin Moore, Glidden or approved equal, brushed or rolled onto the surfaces. Spraying around the equipment shall not be permitted.

2. Paint Selection:

Ceilings & Upper	Regal Aquaglo #333 (Latex Semi-Gloss Enamel)
Walls:	Decorators White - 04, by Benjamin Moore, Glidden
	or approved equal

Walls:	Regal Aquaglo #333 (Latex Semi-Gloss Enamel)	
·	Cool Sky 2067 – 60, by Benjamin Moore, Glidden or	
	approved equal	
Floors:	Industrial Coating - M22 Battleship Gray - 75 b Benjamin Moore, Glidden or approved equal	
Machines:	Industrial Coating - M26 Safety Blue - 35 by Benjamin	
	Moore, Glidden or approved equal	
Primers:	Latex Primer No. 023 "Fresh Start" by Benjamin	
	Moore, Glidden or approved equal	

G. Handicapped Requirements (ADAAG)

- 1. Locate door reopening devices at 5" and 29" above the finish floor when individual contact projection apparatus is employed.
- 2. Locate the alarm button and emergency stop switch at 35", and floor and control buttons not more than 48" above the finished floor. The alarm button shall illuminate when pressed for visual acknowledgement to user.
- 3. Provide raised markings in the panel to the left of the car call and other control buttons. Letters and numbers shall be a minimum of 5/8" and raised .03" and shall be in contrasting color to the call buttons and cover plate.
- 4. The centerline of the hall push button shall be 42" above the finished floor.
- 5. The hall arrival lanterns or cab direction lantern provided shall sound once for the "up" direction and twice for the "down" direction. Design and locate fixtures per Federal standards.
- 6. Provide floor designations at each entrance on both sides of jamb at a height of 60" above the floor. Designations shall be 2" high, raised .03" on a contrasting color background as selected by DDC.
 - a. Use cast metal plates and polished numbers secured with tamper-proof hardware.
- 7. Provide an audible signal to tell passenger that the car is stopping or passing a floor served by the elevator.
- 8. Provide signal controls for passenger entry/exit transitions per Federal standards.
- 9. Ensure sill-to-sill running clearances do not exceed 1-1/4" at all landings served.
- 10. Provide visual call acknowledgment signal for cab emergency intercommunication device.33333

H. Oualifications

- 1. The work shall be performed by a company specialized in the business of manufacturing, installing and servicing conveying systems of the type and character required by these specifications with a minimum of three (3) years experience.
- 2. Prior written acceptance is required for manufacturers other than those listed. Requests for acceptance will not be considered unless they are submitted and include the following information:
 - a. Complete literature, performance and technical data describing the proposed equipment.

b. Location of closest service office from which conveying system will be maintained.

c. Location of closest parts inventory for this installation.

1.4 DELIVERY, STORAGE, HANDLING AND COORDINATION

A. Delivery and Storage of Material and Tools

- 1. Comply with the requirements of Division 01.
- 2. Delivery, Storage and Handling:
 - a. Deliver materials to the site ready for use in the accepted manufacturer's original and unopened containers and packaging, bearing labels as to type of material, brand name and manufacturer's name. Delivered materials shall be identical to accepted samples.

b. Store materials under cover in a dry and clean location, off the ground.

- c. Remove delivered materials which are damaged or otherwise not suitable for installation from the job site and replace with acceptable materials.
- 3. DDC shall bear no responsibility for the materials, equipment or tools of the Contractor and shall not be liable for any loss thereof or damage thereto.
- 4. The Contractor shall confine storage of materials on the job site to the limits and locations designated by DDC and shall not unnecessarily encumber the premises or overload any portion with materials to a greater extent than the structural design load of the Facility.

B. Work With Other Trades / Coordination

- 1. Coordinate installation of sleeves, block outs, equipment with integral anchors, and other items that are embedded in concrete or masonry for the applicable equipment. Furnish templates, sleeves, equipment with integral anchors, and installation instructions and deliver to Project site in time for installation.
- 2. Coordinate sequence of installation with other work to avoid delaying the Work.
- 3. Coordinate locations and dimensions of other work relating to elevators including pit ladders, sumps, and floor drains in pits; entrance subsills; machine beams; and electrical service, electrical outlets, lights, and switches in pits and machine rooms, secondary levels, overhead sheave rooms and hoistways.

C. Removal of Rubbish and Existing Equipment

- 1. On a scheduled basis, the Contractor shall remove from the job site all rubbish generated in performing work specified in the Contract Documents.
- 2. Any component of the existing elevator plant that is not reused under the scope of work specified in the Contract Documents shall become property of the Contractor and, as such, shall be removed from the premises at the Contractor's sole expense.
- 3. The Contractor agrees to dispose of the aforementioned equipment and rubbish in accordance with any and all applicable Federal, State, and municipal environmental

regulations, and further accepts all liability that may result from handling and/or disposing of said material.

D. Protection of Work and Property

- 1. The Contractor shall continuously maintain adequate protection of all their work from damage and shall protect DDC's property from injury or loss arising out of this contract.
- 2. The Contractor shall make good any such damages, injury or loss, except such as may be directly caused by agents or employees of DDC.
- 3. The Contractor shall provide all barricades required to protect open hoistways or shafts per OSHA regulations. Such protection shall include any necessary guards or other barricades for employee protections during and after the modernization procedure.

E. Related Work by the Elevator Contractor Included in the Base Bid

- 1. The following requirements shall be applicable based on prevailing conditions at the site of work and/or mandated modifications for code compliance.
 - a. Installation of new fully enclosed, externally operated, fused (or circuit breaker), auxiliary disconnect switch(es), properly located in accordance with local law that can be locked in the open (off) position, as required.
 - b. Installation of new electrical conduit and power feeders between the load side of existing and new main line disconnect switches and new elevator control equipment.
 - c. Provide hoist rope guards at the car and counterweight drop side of the hoisting machine sheave to prevent accidental contact with the hoisting ropes. The guard shall extend from the point where the hoisting ropes penetrate the machine room floor slab to a point beyond where the ropes contact the traction and deflector sheaves. The guards shall be constructed so as to conceal pinch-points between ropes and sheave grooves.
 - d. The top surface of any setback or projection in the hoistway that measures 2" or more in width shall be beveled at an angle of not less than 75 degrees from horizontal. Each bevel plate shall be constructed from prime painted 14 gauge cold-rolled steel and installed so as to conform with ASME A17.1 elevator safety code as modified by, and/or in addition to codes and standards accepted by the AHJ.
 - e. Provide the following signage, plates and tags:
 - Provide each walk-in pit entrance door with a sign reading "Danger Elevator Pit" or the equivalent thereof. Letters shall be not less than 2" high.
 - 2) In addition to (1) above, walk-in pits with pit door stop switches shall be provided with a sign that reads "WARNING Opening the Pit Door will Stop the Elevator".
 - Provide access doors to each electrical control room, secondary or machinery space with signs that read "ELEVATOR MACHINE ROOM". Letters shall be not less than 2" high.
 - 4) Provide all required manufacturer data plates and installation-specific tags and signs of the types and styles containing information as required by applicable Codes and Standards as adopted and/or modified by the AHJ.

- f. Where the pit extends more than 3 feet below the sill of the pit access door, provide a permanent fixed metal ladder.
 - 1) Ladder shall extend no less than 48" above the sill of the access door. Handgrips shall extend from the ladder to a point no less than 48" above the sill of the access door where the ladder does not comply.

2) The rungs shall be a minimum of 12" wide. Where prevailing conditions prevent a 12" wide rung, the rung may be reduced to no less than 9".

The rungs shall be spaced 12" on center.

- 4) A clear distance of no less than 4 ½" from the centerline of the rungs and handgrips to the nearest permanent object in back of the ladder shall be provided.
 - a) Where prevailing conditions prohibit the installation of the required ladder as specified above, the Elevator Contractor shall coordinate requirements necessary for compliance with the Authority Having Jurisdiction.
- g. Provide a standard railing conforming to Code on the outside perimeter of the car top on all sides where the perpendicular distance between the edges of the car top and the adjacent hoistway enclosure exceeds 300 mm (12 in.) horizontal clearance or as otherwise required by the Authority Having Jurisdiction.

h. Provide necessary patching, repairing and installation of masonry and/or dry wall

for smooth and legal elevator hoistways.

i. Provide any required repair of smoke holes with subway grating covers in the machine rooms and/or secondary levels where applicable. All smoke ventilation provisions, including duct work, dampers, fans, fire control interfaces, in accordance with local codes, shall be reviewed for proper operation.

j. Subsequent to the contract execution, the Contractor shall perform the following procedures and engineering tasks relative to balance loading of system and cab work included under base specification requirements and alternative/optional

upgrades:

1) Perform balance load testing to determine existing conditions and requirements applicable to new/modified equipment.

- Provide data for Purchaser and/or their agents to evaluate any limitations that may be placed on design/finish options due to prevailing conditions or total suspended loading.
- k. Subsequent to the contract execution, the Contractor shall perform a Violation search and review of all open Applications in conjunction with the filing procedure. Subsequently, any and all outstanding Violations and/or open Applications shall be indicated on the Request for Permit; and such outstanding Violations shall be expunged and open Applications closed out as part of this filing procedure.
 - If requirements and/or work necessary to satisfy outstanding Violation or Applications are <u>not</u> included in the contracted scope of work, the Elevator Contractor shall prepare an itemized listing with relative extra costs to cure

the condition(s) and expunge and/or close out the Violation or Application for DDC's and Consultants' review/approval prior to executing such work procedures.

F. Related Work

- The following requirements shall be applicable based on prevailing conditions at the site
 of work and/or mandated modifications for code compliance.
 - a. Installation of new main line power feed with related disconnect switch designed and located per local law requirements.
 - b. Installation of auxiliary power feed with related distribution panel(s) and disconnect(s) designed and located per local law requirements.
 - Voltage shall be 110 VAC with one 15 Amp circuit breaker or fuse for lighting of each individual elevator car enclosure.
 - Circuit breakers and/or fused disconnects shall be lockable in the "OFF" position in accordance with applicable code.
 - c. Installation of new permanent lighting fixtures with protective guards and 110 volt duplex GFI receptacles inside the machine room. Illumination shall be no less than 30 foot-candles at floor level. A light control switch shall be provided immediately adjacent to the machine room entrance door. Provide necessary receptacles as required by Elevator Contractor to supply power to auxiliary elevator equipment and/or remotely located monitors.
 - d. Provide machinery spaces of the secondary level directly below the machine room with permanent lighting fixtures having protective guards and a duplex GFI receptacle. Illumination shall be no less than 19 foot-candles at floor level. A light control switch shall be provided immediately adjacent to the secondary level entrance door/ladder in accordance with code.
 - e. Provide each elevator pit with a 110 volt GFI duplex receptacle and a permanent lighting fixture equipped with protective guard. Illumination shall be no less than 10 foot-candles at pit floor level. A light control switch shall be provided and so positioned as to be readily accessible from the pit entrance door or ladder.
 - f. Installation of hoistway and machine room smoke relief provisions in accordance with local laws.
 - g. Provide each machine room, secondary space and pit with a self-closing, self-locking access door. Locking means shall be spring-type arranged to permit the doors to be opened from the inside without a key.
 - h. Installation of fire emergency control interface provisions for automatic recall of the elevator(s) through operation of the fire detection system. Provisions shall be made for alternate designated fire recall landing with connection contingent on Codes recognized by the local governing authority. The interfacing contacts shall be wired to an electrical junction box located inside each elevator machine room for connection to the elevator control systems by the Elevator Contractor. Each wire shall be clearly labeled with its control function. Coordinate the type of interface required for the specific elevator control apparatus with the Elevator Contractor.

- i. Installation of emergency power control interface provisions to signal the elevator control apparatus of a transfer from normal (utility) power to the building emergency (generator) power supply. Also, provide additional control interface to give advanced notification to the elevator control apparatus that the power source will transfer from emergency (generator) power to normal (utility) power. Interfacing contacts shall be wired to an electrical junction box located inside each machine room for connection to the elevator control equipment by the Elevator Contractor. Coordinate the type of interface required for the specific elevator control apparatus with the Elevator Contractor.
 - On the line side of each main line disconnect switch, provide some means to absorb power that may be regenerated by the elevator hoist motor during emergency power operation.
 - 2) Normal Power/Emergency Power Control Signals consisting of two (2) dry contacts provided by others to function as follows:
 - a) One (1) dry contact normally open to make when Normal Power is available. (Logic state of dry contact is to be confirmed by the Manufacturer of the Elevator Control Equipment).
 - b) One (1) dry contact normally open to make when emergency power is available. (Logic state of dry contact is to be confirmed by the Manufacturer of the Elevator Control Equipment).
- j. Installation of HVAC provisions inside the machine room so as to maintain ambient temperature and humidity levels that are within the range specified by the microprocessor-control equipment manufacturers.
- k. Provide a class "ABC" fire extinguisher in electrical machinery and control spaces. Locate the extinguisher in close proximity to the access door.
- 1. Provide necessary telephone wiring with connection to local telephone service for remote elevator monitoring and/or two-way voice emergency communications systems.
 - 1) Terminate the telephone wiring in junction boxes or standard phone jack terminals in the machine room.
 - 2) Coordinate the quantity and termination method of individual phone connections with the Elevator Contractor.
 - 3) Identify each phone line for connection by the Elevator Contractor to the appropriate elevator device(s).
 - 4) Telephone wiring, where required by applicable codes, shall be installed in conduit.
- m. Sumps in pits where provided, shall be covered. The cover shall be level with the pit floor so as not to produce a tripping hazard.

1.5 WARRANTY AND WARRANTY SERVICES

A. Contract Close-Out, Guarantee and Warranties

- 1. Comply with the requirements of the General Conditions.
- 2. Guarantee and Warranties:
 - a. Warrant the equipment installed under these specifications against defects in material and quality of installation and correct any defects not due to ordinary wear and tear or improper use or car which may develop within one year from the date each elevator is completed and placed in permanent operation and accepted by DDC.
 - b. This warrantee shall be written and issued at the completion of each unit prior to final payment.

3. Interim Maintenance

- a. Provide full protective maintenance services and equipment coverage for ten (10) elevators prior to the commencement of work, and during the work implementation procedure, until final acceptance of the finished project. The ten (10) elevators will be divided into two (2) groups. Interim maintenance Group 1 will consists of elevators No. 2, 5, 6, 8, & 10. Interim maintenance Group 2 will consists of elevators No. 1, 3, 4, 7, & 9.
- b. Interim full comprehensive maintenance services shall be provided in accordance with the General Conditions.
- c. Labor costs related to interim maintenance and markup costs of interim maintenance materials shall be indicated on the bid form.
- d. All overtime work must be specifically authorized in writing in advance of performance of such work, and shall be paid at the rate of 1.5 times the Prevailing Wage as indicated in the "Office of the Comptroller, City of New York Prevailing Wage Schedule". The dollar value of the percent mark-up for work performed during overtime hours shall still be determined by multiplying the non-overtime prevailing wage rate times the bid percentage mark-up. For example, if the Contractor bids a 15% mark-up for the elevator/ service modernization mechanic and such a mechanic performs two (2) hours of overtime while the prevailing wage rate is \$72.26, the Contractor shall be entitled to a total amount of \$238.46: (1) 216.78 in wages (\$72.26 x 1.5 = \$108.39 per hour and \$108.39 x 2 hours = \$216.78) plus (2) a \$21.68 mark-up (\$72.26 x 0.15 = \$10.84 per hour and \$10.84 x 2 hours = \$21.68).
- e. Escalation Clause After registration, the Prevailing Wage rates listed in the Interim Maintenance section of the Bid Form may be subject to price increases. Price increases shall be predicated upon increases in the New York State Labor Law (Section 220 and/ or Section 230 for Building Service Employees) or any other applicable prevailing or living wage as mandated by the Comptroller of the City of New York or other official(s) having like jurisdiction. Increases to the Prevailing Wage Rate will be applied to the hourly rates on the effective date(s) of the increase(s). The increase(s) shall be applied on a prospective basis only, and shall not affect rates paid prior to the date of increase or rates to be paid for work performed prior to the date of increase.

- f. The Contractor shall provide a maintenance team consisting of a mechanic and helper who are familiar with the project. The team shall perform scheduled systematic examinations, adjustments, cleaning and lubrication of all machinery spaces, hoistway and pit. The team shall also perform category inspection and file with the DOB.
 - 1. The maintenance team must be available by cellphone for emergencies and repair calls by the Resident Engineer. The maintenance team must immediately report any entrapments to the Resident Engineer. A written report must be provided immediately by fax to (212) 669-2612. A permanent log book must be maintained at the job site and completed for all maintenance and repair work performed. The log book shall be available to DCAS or the Resident Engineer at all times for inspection. In the event of an elevator breakdown, repair work shall commence within two (2) hours.
- g. Maintenance requirements, in addition to scheduled and emergency repairs, renewals and testing, shall include but are not limited to:
 - 1. Examination of wire ropes to maintain proper tensioning and legal bottom clearances on a monthly basis for shortening and adjusting ropes as required and performance of all reshackling procedures per ASTM A17.1 standards and local laws in conjunction with maintenance of related slack cable devices, machines limits or other safety equipment.
 - 2. Examination, repair and replacement of all electrical wiring, traveling cables, conduits, connections and related apparatus extending from the main line power supply switch in the machine or other power supplies in hoistways.
 - 3. Maintenance of pit, hoistway and machine room lighting to include relamping, wiring and switch controls.
 - 4. Contractor shall monitor and maintain legal top and bottom running clearance.

B. Contract Close-Out, Guarantee and Warranties

- 1. The Contractor agrees to certify that work performed in accordance with the Contract Documents shall remain free of defects in materials and quality of work for a period of one (1) year after final acceptance of the completed project, or acceptance thereof by beneficial use on a unit by unit basis, whichever occurs first.
- 2. The sole duty of the Contractor under this warranty is to correct any non-conformance or defect and all damages caused by such defect without any additional cost to DDC and within fifteen (15) days of notification.
- 3. The express warranty contained herein is in lieu of all other warranties, express or implied, including any warranty of merchantability or fitness for a particular purpose.
- 4. In the event the Contractor fails to fulfill its obligations defined herein, DDC shall have the express right to perform the Contractor's obligations and to charge the Contractor the cost of such performance or deduct an equal amount from any monies due the Contractor.

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C. Warranty Service

1) Provide full comprehensive warranty services for a period of twelve (12) months after the final completion and acceptance of the project.

The entire elevator equipment shall be maintained as herein described, in accordance with the following detailed terms. Trained employees of the Contractor will use all reasonable care to keep the elevator in proper adjustment and in safe operating condition in accordance with all applicable Federal, State and local laws, ordinances and regulations.

The Contractor shall provide twice monthly scheduled systematic examinations, adjustments, cleaning and lubrication of all machinery, machinery spaces, hoistway and pit. The Contractor shall include a minimum of 4 hours per month that is to be dedicated to scheduled routine preventative maintenance.

The Contractor shall maintain all parts of the elevator consisting of, but not limited to hoisting machine, power drive, controller, brake, drive motor, master power door system, electrical and mechanical safety apparatus, operating and signal fixtures, fixed and moving mechanical equipment, and all other elevator signal scheduling, wire ropes and accessory equipment complete. The Contractor shall maintain legal bottom running clearances.

All work, including scheduled examinations and guarantee repairs in accordance with this contract are to be made during regular business hours of the Contractor as approved by the Owner's designee. After 4:30 PM and on Saturday, Sunday and Holidays, the Contractor shall provide immediate emergency service at no additional cost, for the elevator, 24 hours per day, seven days per week.

It is mutually agreed that the Contractor shall not be under any obligation to make any guarantee repairs or replacements except those incidental to the normal operation of the system, and that the Contractor is not required under this contract to make repairs or replacements necessitated by reason of malicious damage, fire (including electrical fire) which are the result of causes beyond the Contractor's control.

7) Emergency Call-Back Service (24 hours, seven days per week)

- The Emergency Call back Service shall begin with the award of the contract, to one year after final acceptance of the last elevator by DDC. The Contractor shall provide emergency call back service which consists of promptly dispatching qualified employees in response to requests, from the Owner by telephone or otherwise, for emergency adjustment or repairs on any day of the week, at any hour, day or night. Liquidated damages of \$1,200 per occurrence will be imposed for non-response. Emergency repairs shall be made within 4 hours to restore the equipment to operating order. If repairs cannot be made immediately, the mechanic shall notify the Owner's designee as to the reason why.
- 9) Response time shall not exceed one-half hour on regular working days during regular working hours.
- 10) Response time shall not exceed one hour during premium labor time periods of regular working days and on Saturdays, Sundays and Holidays.

1.6 AUXILIARY SYSTEMS AND TESTING PROCEDURES

- A. Emergency Power Selector Panel Operation and Testing (EPO Sequencer)
 - 1. Visual signals and operating devices noted in the following testing procedure are included in the "Emergency Power Selector Panel" section.
 - a. Automatic Mode: If an elevator is requested to return to the main floor, the selector panel lamp will pulse on and off. When this elevator has accepted the request to return, the lamp will illuminate continuously. When the elevator has returned to the main floor, the lamp will extinguish.
 - b. Manual Mode: If an elevator has been selected for service, the selector panel lamp will illuminate continuously. If it is desired to deselect this elevator, push the pushbutton or rotate the selector to deselect. The lamp will pulse on and off until the elevator has returned to the main floor. When the elevator has returned the lamp will extinguish.
 - 2. Emergency Power Operation Automatic/Manual Modes
 - a. Automatic Mode:
 - 1) If an elevator is requested to return to the main floor, the selector panel lamp will pulse on and off. When this elevator has accepted the request to return, the lamp will illuminate continuously. Means shall be provided adjacent to the selector switch(es) to indicate that the elevator is at the designated level with the doors in the normally open position.
 - The auto/manual keyed switch must be in the "AUTO" position when on Normal Power. When emergency power is initiated, the EPS (Emergency Power Sequencer) will attempt to sequentially return all elevators to the main floor. The number of elevators that can recall simultaneously is contingent on the amount of emergency power available. The order in which the elevators are returned can be predefined. If after a predetermined time (45 seconds) a selected elevator does not respond to the request to return, another elevator will be selected. When an elevator returns to the main floor, the elevator will open the doors to allow passengers to exit and then close its doors. If there are any elevators that are not at the main floor, the EPS will repeatedly attempt to return these elevators, while in Automatic Mode, a maximum of three (3) times.

b. Manual Mode:

1) The auto/manual keyed switch can be turned at any time to the "MANUAL" position. At the time the auto/manual keyed switch is turned to the "MANUAL" position, the elevator that was selected while in the Automatic Mode, will automatically return to the lobby floor, open the doors to allow passengers to exit the elevator, and be removed from service. The newly selected elevator will then begin operation and respond normally to hall and car calls.

3. Emergency Power Sequence Elevator Controller Interlocking Operation

- a. Automatic Mode EPS (Emergency Power Sequencer):
 - 1) With the loss of Normal Power, the stop signal input will be active to inhibit movement of all the elevators.
 - When the signal from the emergency generator signals that the power is stable, the EPS will attempt to return all elevators to the main floor. Selection of an elevator is based upon a stop signal output being active to the controller input for all of the elevators that have not been selected to return. The run signal will then be activated to request the selected elevator to return.
 - 3) If the request to return is accepted, the elevator will activate a run signal output to the EPS. If after a predetermined time the request to return is not accepted, the request will be withdrawn and another elevator will be selected for return operation.
 - 4) When the selected elevator has returned to the main floor, the doors will open to allow passengers to exit and then close its doors. The run signal output will be deactivated and the stop signal output will be activated.
 - 5) If while returning an elevator to the main floor or during a manual selection operating mode, the Normal Power becomes available, an input signal (Normal Power Returning) will be activated to force the elevator to slow down and stop at the nearest floor.
 - 6) After a predetermined time, the primary elevator controls will be designed to restart elevators one at a time under Normal Power.

b. Manual Mode EPS (Emergency Power Sequencer)

- 1) For an elevator to run in normal service while on emergency power, the run signal input will be released with the selector or push button positioned accordingly.
- To inhibit an elevator from running while on emergency power, the stop signal input will be activated with the selector or push button positioned accordingly.
- 3) If an elevator is running and Normal Power becomes available, a control signal input (Normal Power Returning) will be activated to force the elevator to slow down and stop at the nearest floor automatically and open the doors.
- 4) After Normal Power is restored, all elevators will be restarted on a sequential basis one (1) at a time.

c. Other E.P.O. Functions and Supplemental Descriptions

1) Prior to commencing emergency generator testing, a contingent of personnel familiar with elevator, emergency generator and any other power systems tied into the emergency generator must have communications established between the respective parties, preferably through the use of walkie-talkies or other battery-supported communication devices.

- 2) Testing of Transfer from Normal to Emergency Power
 - a) Pre-transfer Switch (Test Mode) At the emergency generator area a test signal to the elevator equipment must be provided before start of emergency generator testing. This signal must be brought to the elevator dispatch controllers via a "dry contact". (Dry contact logic to be determined by the Manufacturer of the Elevator Control Equipment.) This signal will immediately cause all elevators connected to the system to perform a normal slow down sequence and stop at the nearest available floor. All cars will stop and park with doors open.
 - b) Emergency generator will now be "on line" and when the generator ATS (Automatic Transfer Switch) is energized, connecting the elevator load to the emergency generator, the test signal should be turned "off". Moving the test switch to "off" will signal the elevator computer to commence automatic recall upon sensing emergency power transfer has occurred. (Depending on the requirements of the Elevator Equipment, a second set of contacts may be required to indicate that the emergency generator is on-line and to begin the automatic sequential return program.)
 - c) Immediate automatic selection of an elevator via built-in software, will return the selected elevator to the main lobby, open the doors and remove the elevator from service. The next elevator in the sequence will be automatically selected to be brought down.
 - d) After all cars that are able to be brought down and secured (with doors open), one car (the "duty" car) will be chosen by on-board controller software to run on emergency power operation.
 - e) If the selected "duty" car, automatically chosen by the controller software, is not desired, an alternate car can be selected by turning the Emergency Power Panel "Auto/Manual" keyed switch to the "Manual" position and move the "Emergency Panel Selection" switch to the position corresponding to the desired car. (The "Manual" key switch must remain in the "Manual" position for the chosen car to remain in service).
 - f) When another car is chosen with an elevator in motion, the car which was running at the time will return to the lobby, open doors and be removed from service. The chosen car will then go into service.
 - g) The emergency panel will be simplified so as to have an "Automatic Position" and "Manual Position". These positions will be keyed the same as the firemen's service keys in the designated lobbies.
 - 3) Testing of Transferring Emergency Generator to Normal Power
 - a) Prior to transferring to normal power, a "Pre-Transfer" signal shall be provided by the "ATS". Should an automatic "Pre-Transfer" signal not be provided, the assigned person at the "Emergency Generator Area" should operate the pre-transfer test switch "on".
 - b) The elevator which was running on the emergency generator will stop automatically at the nearest landing and park with the doors open.

c) The emergency generator can now be disconnected and normal power connected upon notification from building personnel that the elevator has parked and is not in motion.

- 1.7 NOT USED
- 1.8 NOT USED

PART 2 - OPERATION/PRODUCTS

- 2.1 Project Outline Scope of Work
 - A. PE1 to PE6- Passenger Public Group
 - 1. Modernization of six (6) existing gearless traction elevators functioning as a group.
 - B. JE7 and JE10- Judges Elevators
 - 1. Modernization of four (4) existing geared traction elevators functioning in a simplex mode, maintaining present design ratings and floors served. Provide car and hall card reader system. Provide new gearless AC Hoist Machines.
- 2.2 General Description
 - A. PE1 to PE6 (New York City I.D. Nos. P850 to P855)- Main Passenger Public Group

1.	Quantity-	Existing- Six (6)
2.	Type -	Passenger loading
3.	Capacity (lbs.) -	3,000
4.	Speed (fpm) -	500
5.	Travel -	Existing
6.	Floors Served -	PE1, 2: Seven (7) @ 1-7
7.	Front -	PE3-6: Eight (8) @ B, 1-7 All
8.	Operation -	New group automatic push button

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9.	Control -	New Micro Processor
10.	Hoist machine	New PM AC gearless machine
11.	Number of Push Button Risers	Two (2)
12.	Platform Size -	New
13.	Guide Rails -	Existing (side post planed steel tees)
14.	Buffers -	New
15.	Cab Enclosure -	New as specified
16.	Car Door Size -	3'-6" x 7'-0"
17.	Hoistway Door Size -	3'-6" x 7'-0"
18.	Door Operation -	Single speed, center opening
19.	Fixture and Signals -	New as specified
20.	Machine Type -	New AC PM gearless traction
21.	Machine Location -	Overhead –9 th Level
22.	Counterweight -	Existing (rebalance)
23.	Sheaves -	New
24.	Wire Rope -	New
25.	Wiring -	New
26.	Sling & Platform -	New
27.	Car Safety -	New
28.	Governors -	New
29.	Hoistway Door Panels -	Existing – Retain
30.	Hoistway Door Frame Assemblies -	Existing – Retain
31.	Motor Drives -	New VVVF-AC
32.	Power Supply -	208 volts, 3 Phase, 60 Cycle

33. Overspeed Protection	on-
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New

A. PE7-10 (New York City I.D. Nos. P856 to P859) – Judges Elevators

1.	Quantity -	Four (4) - Existing
2.	Type -	Passenger loading
3.	Capacity (lbs.) -	1,500
4.	Speed (fpm) -	350
5.	Travel in Feet -	Existing
6.	Floors Served	1-6, 6M
7.	Front -	All
8.	Operation -	New simplex automatic push button
9.	Control -	New microprocessor
10.	Hoist machine	New gearless PM AC hoist machine
11.	Number of Push Button Risers —	One (1)
12.	Platform Size -	New
13.	Guide Rails -	Existing (side post – planed steel tee's)
14.	Buffers -	New
15.	Cab Enclosure -	New as specified
16.	Car Door Size -	3'0" x 7'-0"
17.	Hoistway Door Size -	2'-4" x 7'-0"
18.	Door Operation -	Single speed, side opening
19.	Fixture and Signals -	New
20.	Machine Type -	New PM-AC Gearless Traction
21.	Machine Location -	Overhead –8 th Level Attic
22.	Counterweight -	Existing (rebalance)
23.	Sheaves -	New

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24.	Wire Rope -	New
25.	Wiring -	New
26.	Sling & Platform -	New
27.	Car Safety -	New
28.	Governors -	New
29.	Hoistway Door Panels -	Existing - retain
30.	Hoistway Door Frame Assemblies -	Existing - retain
31.	Motor Drives -	VVVF-AC
32.	Power Supply -	208 volts, 3 phase, 60 cycles
33.	Card Reader System -	New
34.	Overspeed Protection -	New

2.3 MANUFACTURERS

A. Pre-Approved Equipment Manufacturers

- 1. The following manufacturer's equipment and materials have been pre-approved for use on this project.
- 2. Other equipment not specifically mentioned shall be considered for approval on an individual basis.
 - a. Controller Computerized Elevator Controls, GAL (GALaxy), Motion Control Engineering, Elevator Controls Corporation, C&L Controls, Elevator Systems, Inc., Smartrise (low speed/rise applications simplex/duplex) Virginia Controls (low speed/rise applications simplex/duplex).
 - b. Tracks, Hangers, Interlocks and Door Operators G.A.L., Moline Accessories Corporation.
 - c. Fixtures G.A.L., Adams, EPCO, Monitor, E-Motive USA, C.E. Electronics, Innovation, PTL, MAD.
 - d. Door Protective Device Janus, Adams, G.A.L., T.L. Jones, Tri-Tronics.
 - e. Machines Hollister-Whitney, Titan, Imperial.
 - f. Motors and Motor Generators Imperial Electric, General Electric, Baldor, Reuland Electric.

- g. SCR Power Drives MagneTek DSD 412, MagneTek 'Quattro', MCE System 12, OEM drives or approved equal.
- h. VVVF Power Drives Mitsubishi, MagneTek, Yaskawa, TorqMax.
- i. Guide Rails AFD Industries.
- j. Electrical Traveling Cables Draka, James Monroe
- k. Guide Shoes/Rollers ELSCO, G.A.L.
- 1. Wire Ropes Paulsen, Bethlehem, Wayland, Draka, Brugg.
- m. Intercommunications/Telephones Telekone, approved equal.

2.4 SYSTEMS AND COMPONENTS

A. Control Equipment

- 1. Provide Galaxy Version 3 or latest version for all elevators.
- 2. Provide a microprocessor-based elevator control system.
- 3. Provide stand-alone dispatcher with dedicated power and circuit breaker.
- 4. Digital logic shall calculate optimum acceleration, deceleration and velocity patterns for the car to follow during each run.
- 5. Closed-loop distance and velocity feedback shall monitor the actual performance of the elevator car with the desired speed profile.
- 6. System operating software shall be stored in non-volatile, electrically programmable read only memory (EPROM), electrically erasable and programmable read only memory (EEPROM), or flash read only memory (flash ROM).
 - a. Elevator control relays, contactors, switches, capacitors, resistors, fuses, circuit breakers, overload relays, power supplies, circuit boards, static motor drive units, wiring terminal blocks and related components shall be totally enclosed inside a free-standing metal cabinet with hinged access doors.
 - b. Mechanical ventilation or air conditioning of the cabinet shall be provided and shall be adequate to dispose of the full load heat losses without exceeding 40° C (104° F) ambient temperature.
 - 1) Where integral air conditioners are not employed, control equipment cabinets shall be provided with forced air ventilation to prevent overheating of the electrical components housed therein.
 - 2) Where integral air conditioners are employed, control equipment cabinets shall be "NEMA 12" rated with no ventilation fans or slots.
 - c. All electrical wiring inside the control equipment cabinet shall be performed in a neat manner with field wiring terminated at stud blocks provided inside the control cabinet.
 - d. Each wiring terminal shall be clearly identified according to the nomenclature used on the "as built" wiring diagrams. No more than two (2) field wires may be connected to any single terminal stud.
 - e. Spare wires shall be tagged according to their point of termination, bundled, and placed at the bottom of the control equipment cabinet.
 - f. Each electrical component within the cabinet shall be permanently identified with symbols, identical to those used on the "as-built" wiring diagrams.

- g. A data plate that indicates the edition of the Code in effect at the time of installation and/or alteration shall be provided in accordance with applicable code and requirements of ASME A17.1 Code. The data plate shall be in plain view and securely attached on the mainline disconnect or on the controller.
- h. Control equipment shall comply with requirements of all applicable Sections of the ASME A17.1 Code as approved and adopted by the AHJ.
- i. The manufacturer's standard on-board "LCD" display shall be incorporated on the main processor board and/or otherwise incorporated in the controller cabinet. The "LCD" shall be capable of providing alpha-numeric characters to view the operational status of the elevator and/or group functions depending on the application. The display shall provide the user with necessary information for troubleshooting and reprogramming of the basic system parameters.
 - 1) Where the "LCD" is not an integral part of the controller and troubleshooting/reprogramming requires the use of a separate tool, the tool shall be maintained in the machine room and accessible to service personnel. This tool, along with all technical documentation for the correct use of the tool, shall remain the property of DDC.
 - 2) Password protection of critical programming features is required to prevent accidental changes to life-safety and other non-typical control settings.
 - Where a separate dispatch or group control panel is provided, a separate "LCD" display shall be provided to view group functions.

B. Gearless Elevator Hoisting Machine

- 1. Provide a (A.C.) permanent magnet synchronous motor (PMSM) gearless traction machine, specially designed and manufactured for elevator service. The machine shall have high starting torque and low starting current, rated for 50° C (90° F) continuous operation. Design machine to operate at 240 starts per hour without overheating.
 - a. The traction driving sheave and brake drum shall be cast integral and bolted securely to the main armature shaft.
 - b. Securely mount the machine frame, including motor fields, bearing stands and brake on a heavy steel bedplate.
 - c. The armature shaft shall be supported in ball or roller type bearings.
 - d. The driving sheave shall be cast from the best grade of metal with a Brinnell hardness of 215 to 230 and shall be machined with grooves, providing maximum traction with a minimum of rope and sheave wear.
 - e. Ensure that adequate ventilation of internal stator windings and rotating element is provided to prevent overheating with thermal overload protection. (Constant velocity fan for constant cooling.)
 - f. Equip housing with eyebolt(s) for lifting.
 - g. Provide a spring applied and electrically released electro-mechanical brake.
 - h. Swivel type brake shoes shall be applied to the braking surface simultaneously and with equal pressure by means of helical compression springs.
 - i. Design the brake for quick release to provide smooth and gradual application of the brake shoes.
 - j. Provide 14 gauge hoist cable guards at the car-drop and counterweight-drop side of the machine sheave.

- 1) Guards shall cover cables from the point of slab penetration to the point where the hoist cables contact the sheave.
- 2) Guards shall prevent access to cables at pinch points.
- 3) Guards shall have no sharp edges.
- 4) Guards shall be properly mounted to prevent vibration.
- k. Provide a raised machine arrangement so that the deflector sheave is located above the machine room slab. Provide adequate steel blocking members to support the machine assembly.
 - 1) Provide service platforms, grating, handrails, ladders and required accessories to service and maintain the hoisting machines.
- I. Where a secondary level exists, span the distance between the car and counterweight with an accurately grooved deflector sheave mounted in the secondary level.
- m. Provide a sheave guard to prevent hoisting rope from jumping off grooves and to prevent possible entrapment on both sides of the floor penetrations.
- n. Design and construct the hoisting machine based on passenger elevator cab enclosure weight as specified and as shown on the architectural drawings.

C. VVVF AC Drive

- 1. Provide a solid-state, variable voltage, variable frequency (VVVF), 3-phase AC hoist motor drive system as part of the microprocessor-based equipment.
 - a. VVVF drive system shall be a low-noise, flux-vector inverter device.
 - b. Include a digital LED readout and touch-key pad to facilitate software parameter adjustments, monitor system operation and display fault codes.
- 2. The drive shall utilize a 3-phase, full wave rectifier and capacitor bank to provide direct current power for solid-state inversion.
- 3. The inverter shall utilize IGBT power semiconductors and duty cycle modulation fundamental frequency of not less than one kilohertz to synthesize 3-phase, variable voltage variable frequency output.
- 4. The system shall be designed and configured with the following countermeasures for noise generated by the pulse-width modulated (PWM) inverters.
 - a. Control of radiated noise via inverter and/or motor cables.
 - b. Conducted noise through power lines.
 - c. Induction noise and ground noise.
- 5. Inverter shall be encased in metal and independently grounded.
- 6. A noise filter for the input power line shall be provided to prevent penetration into radios, wireless equipment and smoke detectors.
- 7. A 3% three-phase line reactor shall be provided on the power system rated at the utility voltage input to the drive and sized for the rated drive current.

- 8. Provide interconnection wiring and ground cables in accordance with the manufacturer's design requirements.
- 9. The drive shall:
 - a. Be configured as a complete digital drive system.
 - b. Utilize two (2) microprocessors one for power conversion circuitry a 16/32 BIT Microprocessor controlled PWM output and one for drive signal control circuitry.
 - c. Be totally software configurable through high level language.
 - d. Interface with external equipment/signals via either discrete local I/O connections or high speed Local Area Network (LAN).
 - e. Provide fully programmable and adjustable carrier frequency to 16KHz.
 - f. Be located within the limits of the control cabinet (where system size allows) or separately mounted in an appropriate chassis with hinged swing-out doors with clearances equal to the cabinet width dimensions.
 - g. Output frequency of 0-500 Hz.
 - h. Provide programmable linear or S-curve acceleration.
 - i. Provide free run or programmable linear or S-curve deceleration.
 - j. Have controlled reversing.
 - k. Have a minimum of 15 preset speeds.

10. Operating and Environmental Conditions:

- a. Have a service factor of 1.0.
- b. Rated for continuous duty.
- c. Humidity 90% rated humidity non condensing.
- d. Altitude 3300 feet without derate.
- e. Cooling forced air when required.
- f. Temperature 0-40°C (104°F) for UL Listing.
- g. Digital display for:
 - 1) Running output frequency, motor RPM, output current, voltage (Selectable).
 - 2) Setting Parameters values for setup and review.
 - 3) Trip separate message for each trip, last 30 trips to be retained in memory.

11. Protective Features:

- a. Motor overspeed.
- b. Adjustable current limit.
- c. Isolated control circuitry.
- d. Digital display for fault conditions.
- e. Selectable automatic restart at momentary power loss.
- f. Manual restart.
- g. Over/Under Voltage.
- h. Line to line and line to ground faults.
- i. Over-temperature.

- 12. The system shall provide full regenerative capabilities to control overhauling motor speed and reduce hoist motor deceleration time by allowing overhaul power to be discharged back into the power lines.
 - a. The regenerative section may be an integral part of the drive or a stand alone unit.

D. Sheaves

- 1. Provide new hoisting machine wire rope deflector sheave(s) with related apparatus and structural mounting supports for all elevators. Provide new car and counterweight 2:1 sheaves complete for Elevators No. 1-6.
 - a. Locate and size new sheave to maximize use of available clearances maintaining the present car and counterweight hitch drops.
 - b. New support bearings shall be of a roller type designed for a minimum of twice the total load calculation.
 - c. The sheaves shall be equipped with suitable lubrication devices.
 - d. Required new mounting beams and structural supports shall be interfaced with existing building structures as may be modified under the terms of this contract for the new design rated loading where applicable.
 - e. The deflector sheave shall be provided with means to guard the hoist ropes so they do not jump out of their respective grooves during a slack rope condition.

E. Overspeed Governor

- 1. Provide a speed governor, located overhead, to operate the car safety.
 - a. Maintain the proper tension in the governor rope with a weighted tension sheave located in the pit.
 - 1) Springs used to develop the tension are not acceptable.
 - b. Provide rope grip jaws, designed to clamp the governor rope to actuate the car safety upon a predetermined overspeed downward.
 - 1) Rope grip jaws directly coupled to the governor mechanism so as to float with governor movement shall not be permitted.
 - 2) The centrifugal type governor shall trip and set rope jaws within 60 degrees of governor sheave rotation after reaching rated tripping speed.
 - c. Design the governor rope tripping device so that no appreciable damage to or deformation of the governor rope shall result from the stopping action of the device in operating the car safety.
 - d. Provide an electrical governor overspeed protective device which shall remove power from the driving machine motor and brake before or at the application of the safety.
 - 1) The setting for the overspeed switch shall be as prescribed in the ASME A17.1 Safety Code.

- 2) Locate and enclose the switch to insure that excess lubrication will not enter the switch enclosure.
- 3) Overspeed switch shall operate in both direction of travel on systems employing a static power drive unit.
- e. Seal and tag the governor with the running speed, tripping speed and date last tested.
- f. Governor shall be manufactured by Northern Elevator or approved equal.

F. Automatic Leveling/Re-leveling and Positioning Device

- 1. Equip the elevator with a floor leveling device which shall automatically bring the car to a stop within 1/4" of any floor for which a stop has been initiated regardless of load or direction of travel.
- 2. This device shall also provide for releveling which shall be arranged to automatically return the elevator to the floor in the event the elevator should move below or above floor level in excess of 1/4".
- 3. This device shall be operative at all floors served and whether the hoistway or car door is open or closed provided there is no interruption of power to the elevator.

G. Load Weighing Device

- 1. Provide means to measure the load in the car within an accuracy of $\pm 4\%$ of the elevator capacity.
- 2. Provide one of the following types of devices:
 - a. A device consisting of four strain gauge load cells located at each corner of the car platform and supporting a free floating car platform and cab with summing circuits to calculate the actual load under varying conditions of eccentric loading.
 - b. A strain gauge device located on the crosshead, arranged to measure the deflection of the crosshead and thus determine the load in the car.
 - c. A device consisting of four strain gauge load cells, supporting the weight of the elevator machine with summing circuits to calculate the actual load under varying conditions of load.
 - d. A device to measure the tension in the elevator hoist ropes and thus determine the load in the car.
- 3. Arrange that the output signal from the load weighing device be connected as an input to the signal and motor control systems to pre-torque of the hoisting machine motors where applicable.
- 4. Provide audible and visual signals in connection with the load weighing device when used as an "overload" device.

H. Ascending Car Overspeed Protection Device

- 1. Provide a device designed to prevent an ascending elevator from striking the hoistway overhead structure.
- 2. The device shall decelerate the car with any load up to the rated capacity by applying an emergency brake.

- The device shall detect an ascending car overspeed condition of not greater than 10% higher than the speed that the car governor is set to trip.
- The device, when activated, shall prevent operation of the car until the device is b. manually reset.
- The device shall meet the requirements of the ASME A17.1 Safety Code as may be c. modified by the Authority Having Jurisdiction.

Unintended Car Movement Protection Device I.

- Provide a device to prevent unintended car movement away from the landing when the car and hoistway doors are not in the closed and locked.
 - The device shall prevent such movement in the event of failure of: a.
 - 1) The electric driving machine motor
 - 2) The brake
 - 3) The machine shaft or shaft coupling
 - 4) Gearing
 - 5) Control system
 - Any component upon which the speed of the car depends 6)
 - Suspension ropes and the drive sheave of the traction machine are excluded. 7)
 - The device shall prevent operation of the car until the device is manually reset.
 - The device shall meet the requirements of the ASME A17.1 Safety Code as may be modified by the Authority Having Jurisdiction.

J. **Emergency Brake**

- Provide a mechanical device, independent of the normal braking system, that will stop the elevator should it overspeed or move in an unintended manner.
- The device used may be arranged to apply force to the car or counterweight rails, suspension or compensation ropes, drive sheave or brake drum.
- The emergency brake shall be provided with a marking plate indicating the range of total masses (car with attachments and its load) for:
 - The range of speeds at which it is set to operate. a.
 - The criteria such as rail lubrication requirements that are critical to the b. performance.

K. Machine Beams (Existing)

- Provide additional support beams, angles, plates, bearing plates, blocking steel members, etc., to support new machine, governors, dead end hitches, deflector and overhead sheaves from existing machine beams where applicable.
- Contractor shall verify adequacy of all existing supports scheduled to be reused and 2. report same to DDC.
- L. Governor Rope Tension Assembly

- 1. Provide a governor rope tension assembly.
 - a. Maintain the proper tension in the governor rope with a weighted tension sheave located in the pit.
 - 1) Springs used to develop the tension are not acceptable.
 - b. The sheave shall be of proper diameter and set directly plumb with the governor rope drop to prevent the rope from pulling off of the sheave at an angle.

c. Lubrication fittings shall be provided on the assembly.

- d. The assembly shall have necessary rope guards to prevent accidental contact of the rope/sheave by service personnel and to prevent the governor rope from jumping off of the sheave.
- e. Design governor to prevent false tripping because of conditions caused by rope dynamics.

M. Car and Counterweight Buffer

- 1. Provide new buffers with necessary blocking and horizontal steel braces under the car and counterweight.
- 2. Oil buffer shall bring the car and counterweight to rest from governor tripping speed at an average rate of retardation not exceeding gravity (32 ft/s²).
- 3. Oil buffer shall be of the spring return type and shall have means of checking oil supply level.
- 4. The buffer shall be tested by a qualified testing laboratory and approved as complying with the ASME Code.
- 5. Provide a permanent buffer marking plate which indicates the manufacturer's name, identification number, rated impact speed and stroke.
- 6. Provide a permanent data plate in the vicinity of the counterweight buffer indicating the maximum designed counterweight runby in accordance with ASME A17.1 as may be modified by, and/or in addition to codes and standards accepted by the Authority Having Jurisdiction.

N. Inspection Platforms and Ladders

- 1. As mandated by the Code, provide a steel buffer inspection platform and ladder for each car including all handrails, toe guards and accessories required.
- 2. Provide service platforms, grating, handrails, ladders and required accessories to service and maintain the hoisting machines.
- 3. The design, fabrication and installation shall be by the Elevator Contractor and shall be in compliance with all applicable Codes.
- 4. Submit drawings showing details for the assembly for approval by DDC and structural engineer.
- 5. Apply two (2) coats of rust inhibiting paint to exposed ferrous metal surfaces.

O. Counterweight Assembly (Reuse)

- The existing counterweight assembly shall be refurbished to as new condition and reused.
- 2. Individual counterweight frame members shall be inspected for any indication of damage and to determine if the overall assembly is twisted, racked, or otherwise distorted.
 - a. All fastenings between counterweight frame members shall be individually examined, tightened and if necessary renewed.
 - b. In case any of these conditions are found to exist, the Contractor shall immediately inform the Consultant about the exact nature of the problem and undertake whatever corrective action the Consultant may deem appropriate to remedy the situation.
- 3. The amount of filler weight placed within the counterweight frame shall be adjusted so the weight of the entire counterweight assembly is equal to that of the renovated elevator car, plus 40-42% of its rated loading capacity.
 - a. Filler weights shall be held securely in place at all times with tie rods passing through holes in both the weights and the counterweight frame with tie rods secured on each end with double lock nut and a cotter pin arrangement.
- 4. The 2:1 rope sheaves shall be replaced.
- P. Compensating Sheave Assembly (Reuse)- Elevators No. 1-6
 - The compensating sheave assembly shall be removed to the shop and washed clean of accumulated grease and oil, then examined for any indication of defects.
 - 2. Replace all bearings. The bearings shall be provided with grease fittings. All grease retention seals shall be replaced.
 - 3. Compensating sheave guide rails, supports and fastenings shall be inspected for damage and to determine if the structural integrity of any component is diminished by the affects of rust or other unfavorable conditions.
 - a. Where necessary, the Contractor shall undertake whatever repairs and/or replacements are necessary to remedy the situation.
 - 4. Surface rust shall be removed from all reused components of the compensating sheave assembly prior to repainting.
 - 5. The compensating sheave assembly shall be provided with manually reset electrical safety switches to trip prior to the sheave reaching the normal limit of its travel in either vertical direction.
 - a. When in the tripped position, the electrical safety switch shall remove power from the hoist motor and machine brake.
 - b. An existing electrical safety switch that meets the requirement set forth herein may be refurbished to as new condition and reused.
- Q. Hoist Ropes

- 1. New pre-formed traction steel wire rope, specifically constructed for elevator applications, shall be provided for suspension of the elevator car and counterweight assembly.
 - a. Fastenings shall be accomplished by use of individual tapered rope sockets with adjustable shackles.
 - b. General design requirements for rope shackles and the method of securing wire rope shall conform with ASME A17.1 elevator safety code as modified by, and/or in addition to codes and standards accepted by the Authority Having Jurisdiction.

R. Compensating Ropes

- 1. New pre-formed traction steel wire ropes, specifically constructed for elevator applications, shall be provided for compensating ropes.
- 2. Compensating ropes shall be of sufficient diameter and number so as to offset the unbalanced weight of hoist ropes and traveling cables.
- 3. Fastenings shall be accomplished by use of individual tapered rope sockets with adjustable shackles.
 - a. General design requirements for rope shackles and the method of securing wire rope shall conform with ASME A17.1 Safety Code as adopted and/or in otherwise modified by the AHJ.
 - b. Variations in fastenings may apply based on O.E.M design and duplication of existing fastening practices is required where necessary.
- 4. Provide anti-spinout as required by applicable code at all shackles.

S. Governor Rope

- 1. New pre-formed wire rope specifically constructed for elevator applications, shall be provided for governor ropes.
- 2. Rope shall be traction steel or iron in accordance with OEM design requirements.
- 3. Rope diameter and method of fastening shall be in accordance with ASME A17.1 Safety Code as adopted and/or otherwise modified by the AHJ.

T. Guide Rails (Reuse)

- 1. Car and counterweight guide rails, fish plates, rail brackets, backing support and related attachments shall be inspected to determine if unfavorable conditions exist that diminish the structural integrity of any component.
 - a. In the event substandard conditions are disclosed by means of this inspection, the Contractor shall immediately inform the Consultant as to the exact nature of said problems and then undertake whatever repairs and/or replacements the Consultant may deem appropriate to remedy the situation.
- 2. Each stack of guide rails shall be individually examined to determine if excessive compression has occurred from building settlement.

- a. In the event such conditions are found to exist, each affected stack shall be cut off enough to relieve pressure.
- b. Jacking bolts shall be provided underneath each stack of both car and counterweight guide rails.
- 3. Each stack of guide rails shall be realigned so that total deviation from plumb in any direction does not exceed 1/8" over the entire length of the hoistway and that DBG measurements never vary more than .030".
- 4. As required, car guide rails joints shall be individually filled, filed and sanded in order to eliminate minor variations in adjoining machined surfaces.

U. Roller Guides

- 1. Provide roller guide shoes with adjustable mounting base, rigidly bolted to the top and bottom of each side of the car and counterweight frame.
 - a. Roller guides shall consist of a set of sound reducing neoprene wheels in precision bearings held in contact with the three finished rail surfaces by adjustable stabilizing springs.
 - b. The bearings shall be provided with grease fittings for lubrication.
 - c. Equip roller guides with adjustable stops to control postwise float.
 - d. Fit the top car roller guides with galvanized, 16 gauge steel guards.

2. Approved applications and manufacturers:

- a. Geared traction elevators: ELSCO Model B for car roller guides and ELSCO Model D for counterweight guides, or approved equal.
- b. Gearless traction elevators with speeds below 1000 fpm: ELSCO Model A for car roller guides and ELSCO Model C for counterweight guides, or approved equal.
- c. Gearless traction elevators with speeds 1000 fpm and 1200 fpm: ELSCO Model Express High Speed Roller guides for car guides, ELSCO Model A for counterweight guides, or approved equal.
- d. Gearless traction elevators with speeds greater than 1200 fpm: Use 12" diameter wheels on the car roller guides and ELSCO Model A for counterweight guides, or approved equal.

V. Car Frame and/or Platform

- 1. The car frame shall be made of steel members, with a factor of safety as required by the ASME Code.
- 2. The car platform shall consist of a steel frame with necessary steel stringers, all securely welded together.
- 3. The frame and platform shall be so braced and reinforced that no strain will be transmitted to the elevator car.
 - a. Provide platform with two (2) layers of 3/4" thick marine grade plywood. Cover the underside of the car platform with sheet steel.

- 4. The support frame shall carry rubber pads on which the platform shall rest without any connection to the steel frame for sound and vibration isolation.
- 5. Provide extruded bronze thresholds having non-slip surface, guide grooves.
- 6. Sound isolate all passenger elevator platforms with vibration isolation pads. The support frame shall carry rubber pads on which the platform shall rest without any connection to the steel frame.
- 7. Recess the passenger elevator platforms to receive finished flooring.
- 8. Design the elevator frames and platforms for all elevators for a Class A freight loading.
- 9. The car frame shall be made of steel members, with a factor of safety as required by ASME A17.1 standards.
- 10. The car platform shall consist of a steel frame with necessary steel stringers, securely welded, with a factor of safety as required by ASME A17.1 standards.
 - a. Provide the platform with two (2) layers of marine grade plywood. Cover the underside of the car platform with sheet steel or other approved fire protection.

W. Safety

- 1. Provide a new governor actuated mechanical safety device mounted under the car platform and securely bolted to the car sling. Assure for compatibility with Governor.
- 2. The car safety shall be sized for the capacity and speed noted herein.
 - a. When tripped, the safety mechanism shall engage the rails with sufficient force to stop a fully loaded car with an average rate of retardation within the limits given in A17.1 Safety Code as adopted and/or otherwise modified by the AHJ.
- 3. Install a car safety marking plate of corrosion resistant metal and, in addition to the data required by Code, indicate the manufacturer's name and manufacturer's catalog designation number for safety.
- 4. Make provisions to release the car safety. In no event shall the safety be released by downward motion of the car. Raising the car to reset the safety shall be allowed.
- 5. Provide an electrical safety plank switch that will interrupt the power to the hoist machine when the safety is set.

X. Equipment Isolation

- 1. Provide sound reducing vibration isolation elements at all support points of elevator controller, solid-state motor drives, isolation transformers, reactance units, hoisting motors and machines.
- 2. The elements for controllers, solid-state motor drives and isolation transformers shall be similar to double deflection neoprene-in-shear mounts, as manufactured by Mason Industries, Type ND, with 0.35" static deflection under design load ratings.
- 3. Elements between the hoisting machine unitized base and machine support beams shall be similar to triple layer ribbed neoprene pads, separated by appropriate steel shims as manufactured by Mason Industries, Type W pads, at 50 durometer, loaded for 40 psi or approved equal.

washers and bushings.

Y. Top-of-Car Operating Station

4.

- 1. An inspection operating station shall be provided on top of the elevator car.
- 2. This station shall be installed so that the controls are plainly visible and readily accessible from the hoistway entrance without stepping on the car.

All bolts through isolation elements, where necessary, are to incorporate resilient

- 3. When the station is operational, all operating devices in the car shall be inoperative.
- 4. Provide the following control devices and features:
 - a. A push/pull or toggle switch designated "EMERGENCY STOP" shall be arranged so as to prevent the application of power to the hoist motor or machine brake when in the "off" position.
 - b. A toggle switch designated "INSPECTION" and "NORMAL" to activate the top of car Inspection Service Operation.
 - c. Push button designated "Up", "Down" and "Enable" to operate the elevator on Inspection Service (the "Enable" button shall be arranged to operate in conjunction with either the "Up" or "Down" button).
 - d. An indicator light and warning buzzer that are subject to activation under Phase I Fire Emergency Recall Operation.
- 5. The unit may contain the following additional devices:
 - a. Approved car top lighting fixture with service guard and local control switch.
 - b. Approved 120 Volt grounded convenience receptacle.

Z. Emergency Exits (Top)

- 1. Ensure they operate as per code and have proper electrical contacts and mechanical locks on the exterior of the cab enclosure.
- 2. No other key to the building shall unlock the emergency exit lock except access switch keys which may be keyed alike.
 - a. Keys shall be assigned in accordance with ASME A17.1 Group 1 Security requirements.

AA. Designation and Data Plates, Labeling and Signage.

- 1. Provide floor designation plates at each elevator entrance, on both sides of the jamb at a height of 60 inches to center line of plate.
 - a. Designations shall be 2" high, 0.03" raised and stud mounted.
 - b. Type shall be as selected by the Architect from premium line of plates.
- 2. Identify the designated medical emergency services elevator with 3" high international symbol at each elevator entrance on both sides of the jamb.
 - a. Type shall be as selected by the Architect from premium line of plates.

3. Provide elevators with data and marking plates, labels, signage and refuge space markings complying with A17.1 Elevator Safety Code as may be adopted and/or otherwise modified by the AHJ.

BB. Electrical Conduit, Wiring and Traveling Cable

- 1. Electrical wiring shall be provided.
 - a. All wiring shall be stranded copper conductors, manufactured in compliance with ANSI/ASTM B174-71 and UL 62 requirements, and polyvinyl chloride insulation complying with ETT requirements of UL 62 and Article 400 of the National Electric Code.
 - b. Electrical wiring provided for hoistway interlock shall be of a flame retardant type, capable of withstanding temperatures of at least 392 degrees Fahrenheit. Conductors shall be Type SF or the equivalent thereof.
 - c. Each run of electrical conduit or duct shall contain no less than 10% spare wires and, in any case, no fewer than two (2) spare wires.
 - d. Crimp-on type wire terminals shall be used where possible.
- 2. Traveling cable shall be provided.
 - a. Each traveling cable shall be provided with a flame and water resistant polyvinyl chloride jacket.
 - b. Electrical wiring shall consist of stranded copper conductors, manufactured in compliance with ANSI/ASTM B174-71 and UL 62 requirements, and polyvinyl chloride insulation complying with ETT requirements of UL 62 and Article 400 of the National Electric Code.
 - c. Each traveling cable shall contain no less than 10% spare wires.
 - d. Traveling cable exceeding 100' in length shall be provided with a steel wire rope support strand from which the cable shall be suspended.
 - e. Traveling cable must be contained within an approved electrical conduit to within 6' of the final suspension point in the hoistway.
 - f. Each traveling cable shall be arranged to provide no fewer than six (6) individually shielded pairs of 20 gauge wire and arranged to contain no less than one (1) coaxial cable for CCTV remote monitoring.
 - g. All traveling cable conductors shall terminate at a hoistway center box and shall be connected to stud block provided for that purpose.
 - 1) Each wiring terminal shall be clearly identified by its nomenclature as shown on the "as built" wiring diagrams and solderless, crimp-on type wire terminals shall be used where possible.
 - h. The attachment of a traveling cable to the underside of the elevator car shall be performed so that a minimum loop diameter of 30x the cable diameter is provided.
 - i. Pre-hang the cables for at least 24 hours with ends suitably weighted to eliminate twisting during operation.

- j. Provide CCTV conductors for future camera system. CCTV conductors shall be terminated in a suitable junction box to be located on the top of the car.
- 3. Rigidly supported EMT conduit, flexible metal conduit and galvanized steel trough shall be utilized throughout the hoistway.
 - a. Both EMT and flexible conduit shall be connected on either end by use of compression fittings and secured in place with metal clamps sized in accordance with the diameter of conduit utilized.
 - 1) Wire or plastic wire ty-raps shall not constitute an acceptable means of fastening.
 - b. The use of flexible metal conduit shall be limited to runs not greater than 3' in length.
 - c. All abandoned or unused electrical conduit shall be removed from the hoistway.
 - d. Existing conduit and wiring duct may be reused if suitable for the application.
 - 1) Reuse of existing conduit/duct shall be at the discretion of the Consultant.

CC. Normal and Final Terminal Stopping Devices

- 1. Provide normal terminal stopping devices to stop the car automatically from any speed obtained under normal operation within the top and bottom overtravel, independent of the operating devices, final terminal stopping device and the buffers.
- 2. Provide final terminal stopping devices to stop the car and counterweight automatically from the speed specified within the top clearance and bottom overtravel.
- 3. The terminal stopping devices shall have rollers with rubber or other approved composition tread to provide silent operation when actuated by the fixed cam in the hoistway.
 - a. Terminal stopping devices that are not mechanically operated (i.e.: magnetic proximity) shall be provided by the manufacturer of the control equipment, intended for use as a terminal limit, and designed for reliable operation in the hoistway environment.
- 4. Final terminal limits shall be pinned so as to prevent movement after final adjustment where required by the AHJ.

DD. Pit Stop Switch

- 1. Where pit depth does not exceed 67", each elevator pit shall be provided with a push/pull or toggle switch that is conspicuously designated "EMERGENCY STOP" and located so as to be readily accessible from the hoistway entrance on the lowest landing served at a height of approximately 18" above the floor.
 - a. This switch shall be arranged to prevent the application of power to the hoist motor and machine brake when placed in the "OFF" position.

- 2. Where climb-in pit depth exceeds 67", each pit shall be provided with two (2) push/pull or toggle switches conspicuously designated "EMERGENCY STOP".
 - a. Both of these stop switches, shall be located immediately adjacent to the pit access ladder.

1) Place one stop switch approximately 47" above the pit floor.

2) Place the second stop switch 18" above the hoistway entrance sill on the lowest landing served.

These switches shall be arranged so as to prevent the application of power to the hoist motor or machine brake when either one is placed in the "OFF" position.

- 3. Where a walk-in pit exists, each elevator shall be provided with a push/pull or toggle switch that is conspicuously numbered and designated "EMERGENCY STOP".
 - a. The location of this stop switch shall be approximately 47" above the pit floor at the nearest point of pit entry from the access door.
 - b. This switch shall be arranged so as to prevent the application of power to the hoist motor and machine brake when placed in the "OFF" position.
- 4. Provide an electric contact safety switch for the pit access door if any equipment attached to the car extends within the space of the hoistway pit at any point of travel including the car under full compressed buffer.
 - a. Opening the pit access door shall cause the electric contact switch stop the elevator by interrupting electric power to the driving machine and brake.
 - b. Provide a sign on the pit door "WARNING OPENING OF PIT DOOR WILL STOP ELEVATOR" using lettering a minimum of 2 inches high.
- 5. Existing stop and/or pit door switch conforming to the requirements set forth herein may be refurbished to as new condition and reused subject to approval of the Consultant.

EE. Overhead / Secondary Level Stop Switch

- 1. Provide a positive action stop switch in the overhead sheave and/or secondary level as required by applicable code.
 - a. This switch shall be arranged to prevent the application of power to the hoist motor and machine brake when placed in the "OFF" position.
 - b. Clearly identify the switch with permanent marking on the switch cover that indicates "RUN" and "STOP" positions.

FF. Cross Cancellation

1. A temporary dispatch signal control interface shall be provided during the interim modernization period between the existing dispatching control panel and the new

microprocessor supervisory control system.

2. The overlay interface shall allow either system to cross cancel corridor calls registered in both systems and maintain an acceptable level of group dispatching operations.

3. The existing apparatus that is retained on a temporary basis shall undergo a complete preventive maintenance restoration to ensure new dispatching controls increase efficiency levels and reduce passenger waiting times with improved reliability and performance during the primary work implementation period.

GG. Simplex Selective Collective Operation

- 1. Provide simplex selective collective operation from a riser of hall push button stations.
- 2. The registration of one or more car calls shall dispatch the car to the designated floors in the order in which the floors are reached by the car, irrespective of the sequence in which the calls were registered. The car shall also respond to registered hall calls in the same direction of travel. Car and hall calls shall be canceled when answered.
- 3. Stops in response to calls that are registered in either the car or corridor pushbutton stations shall occur in the natural order of progression in which the floors are encountered, depending on the direction of car travel, and irrespective of the order in which calls are registered.
- 4. When the car has responded to the highest or lowest call, and calls are registered for the opposite direction, the car shall reverse direction automatically and respond to those registered calls.
- 5. When the car arrives at its last stop and reverses direction of travel, all previously registered car calls shall be automatically cancelled.
- 6. When the car has responded to the highest or lowest call, and the hall calls are registered for the opposite direction, the car shall reverse direction automatically and respond to those registered calls.
- 7. When the car arrives at a landing where both up and down hall calls are registered, it will answer the call in the direction of travel.
 - a. If no car call is registered, the car shall be assigned to respond to call registered for opposite directions; car doors shall close immediately, re-open and respond to the call.
 - b. Hall lantern operation shall always correspond to direction of service.
- 8. When an empty car reverses direction at a landing with no hall calls, doors shall not open and hall lantern shall not operate.
- 9. If the car has no car calls registered and arrives at a floor where both up and down hall calls have been registered, the car shall respond to the hall call corresponding to the direction of car travel. If, after making its stop, a car call is not registered and no other hall calls exist ahead of the car corresponding to its original direction of travel, the doors shall close and immediately reopen in response to the hall call for the opposite direction.
- 10. The car shall maintain its original direction at each stop until the doors are fully closed to permit a passenger to register a car call before the car reverses its direction of travel.

HH. Automatic Group Operation (ETA)

- 1. A microprocessor based group supervisory control system with the following features shall control the operation of the elevators:
 - a. Neuron network system with high speed data transmission via serial communications.
- 2. Elevators shall be arranged to operate with or without attendants as an automatic group.
 - a. The group shall remain capable of sustaining balanced service and continuing operation with one or more cars removed from the system.
 - b. Elevators shall operate from pushbutton panels located inside each car and from a riser of corridor pushbutton fixtures located on each landing served.
- 3. Elevators shall automatically travel to landings for which a call demand exists.
 - a. Stops in response to calls that are registered at either the car or corridor push button stations shall occur in the natural order of progression in which the floors are encountered, depending on the direction of car travel, and irrespective of the order in which calls are registered.
- 4. Call acknowledgment lights provided in both the car and corridor push button fixtures shall become extinguished as the car responding to a particular call begins its slowdown approach to the corresponding landing.
- 5. In the event no demand for elevator service exists, the first car to satisfy its assigned calls shall be dispatched to park at the main landing.
 - In the event additional cars should also complete their call assignments, those cars shall be individually dispatched to previously designated parking floors.
 - b. Parking assignments shall be accomplished without door operation.
 - c. Should the elevator parked at the main landing receive a call assignment, another free car in the group shall immediately assume that parking assignment.
 - d. The number of elevators assigned to park at any particular landing shall be programmable.
- 6. The group supervisory controller shall, through a dispatching algorithm along with artificial intelligence parameters, continuously scan the system in order to determine the load each car is transporting and to monitor the number of corridor calls registered, the duration of each call, and the intended direction of travel, the number of loaded lifts, etc.
 - a. Based upon that data, the supervisory system shall automatically devise a strategy for call assignment with preference given to calls registered in the following order:
 - 1) Lobby demand
 - 2) Long waiting times down

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- 3) Long waiting times up
- 4) Up calls
- b. Long wait calls shall be considered those which have remained unanswered for at least forty (40) seconds. The long wait call threshold time shall be programmable.
- 7. If a car with no car calls arrives at a landing where both up and down hall calls are registered, it will answer the call in the direction of travel.
 - a. If no car call is registered, the car shall be assigned to respond to the call registered for opposite direction.
 - b. The doors shall close and immediately re-open when responding to this call.
 - c. Hall lantern operation shall always correspond to direction of service.
- 8. In the event that any car is delayed for more than a predetermined time interval after it received a start signal, the system shall automatically permit the remaining cars in the group to respond to signals and be dispatched in the specified manner.
- 9. In the event the group dispatching or supervisory system should malfunction so that elevators are not assigned to calls within a predetermined interval and in accordance with the conditions of the operating strategy in effect, the system shall automatically assume a back-up mode of operation whereby the elevators shall be arranged to provide continuous service to each landing in a predetermined pattern without regard to actual corridor demand.
 - a. Failure of the automatic dispatching system will be indicated by an illuminated signal in the Lobby Elevator Control Panel where applicable.
- 10. In the event of failure of the landing call button circuit, provide a means to enable the elevators to service each floor without registration of a call within the elevators.
 - a. Provide an illuminated signal in the lobby Elevator Control Panel to indicate that this emergency operation is in effect.
- 11. When a car arrives at its last stop and reverses direction of travel, all previously registered cal calls shall be automatically cancelled.
- 12. When a car has responded to the highest or lowest call, and hall calls are registered for the opposite direction, the car shall reverse direction automatically and respond to those registered calls.
- 13. When an empty car reverses direction at a landing with no hall calls, doors shall not open and the hall lantern shall not operate.
- 14. Main Lobby Operation:
 - a. Only the "Next" designated car shall have its hall lantern illuminated and its doors open.
 - b. When a "down" traveling car which is not designated "Next" arrives at the main lobby with a lobby car call registered, it will open its door to discharge the passengers but shall not illuminate its lantern.

1) The doors shall close one (1) second after the door protection is re-established.

c. When a "down" traveling car with no car calls arrives at the main lobby and is not designated "Next", it shall park without opening its doors.

15. Coincident Calls:

a. The dispatching system shall be designed with a 20 second parameter whereby an elevator with a car call will receive priority to answer a corresponding corridor call if it can do so within 20 seconds.

b. If the elevator cannot answer the call within the prescribed time, the first available car shall be assigned.

c. A continuous reassessment of calls shall be made.

16. The system described is intended to provide the basic requirements. The acceptable systems are:

a. GAL Galaxy (500 fpm and below)

b. CEC Swift Futura (above 500 fpm) CEC Swift Meridian (500 fpm and below)

MCE i Control (up to 1800 fpm)
 Motion 4000 (up to 400 fpm)
 PTC: Programmable Traction Control (up to 350 fpm, simplex and duplex)

II. Motion Control

1. Smooth stepless acceleration and deceleration of the elevator car shall be provided in either direction of travel during both single and multiple floor runs.

2. Use digital logic to calculate optimum acceleration and deceleration patterns during each run.

a. The amplitude of acceleration and deceleration shall not exceed 4 ft/sec2.

b. The maximum jerk rate shall not exceed 8 ft/sec³.

- c. The maximum velocity which the elevator achieves in either direction of travel while operating under load conditions that vary between empty car and full rated load shall be within \pm 2% of the rated speed.
- 3. Floor leveling accuracy of $\pm 1/4$ " as measured between the car entrance threshold and the landing sill on any given floor shall be provided.
 - a. This accuracy standard shall be maintained under varying load conditions and without need for releveling corrections caused by overshooting or stopping short of the floor (spotting).
- 4. Brake-to-brake elapsed time during a typical elevator one floor run shall not exceed values as further specified in this document.

- a. Timing, as measured between initial brake lift and the moment the brake sets with the car position level at the next adjacent floor, shall remain consistent under varying load conditions in either direction of travel.
- 5. Elapsed flight time during a typical elevator one floor run shall not exceed values as further specified in this document.
 - a. Timing, as measured between the moment door closing operations begin and when the doors are 3/4 open at the next adjacent floor, shall remain consistent under varying load conditions in either direction of travel.

JJ. Attendant Service Operation

- 1. Arrange the elevator for operation with or without an attendant.
- 2. The transfer from automatic to attendant operation shall be by means of a key operated switch in the car station.
 - a. Locate this switch behind a locked cover in the car station, which shall also contain an "up" and a "down" direction button and a "Pass" button.
 - b. A service demand buzzer and up and down signal lights shall also be included in the car station.
- 3. When the transfer switch is in the attendant position, the car shall answer calls normally except, the attendant, operating either the "Up" or the "Down" button, shall establish the direction of travel, close the doors and start the car after each stop.
- 4. The car landing and door opening shall be completely automatic.
 - a. The doors shall remain open until a direction is initiated by the attendant.
 - b. If the button is released before the doors are fully closed and interlocked the doors shall reopen.
 - c. Continuous pressure on one of these buttons or the "Pass" button shall cause the car to by-pass corridor calls and respond only to pre-registered calls in the direction of travel.
 - d. The by-passed calls shall remain registered to be answered by another car or another trip.
- 5. The up and down signal lights indicate that an unanswered corridor call is above or below the car and shall remain illuminated until all calls for that direction are answered.
- 6. Operation of an "Up" or "Down" corridor push button shall momentarily sound the service demand buzzer in the car if it is stopped at a floor with its doors open.
- 7. Announced calls by entering passengers shall be registered by the attendant.
- 8. Load weighing devices shall be inoperative when on attendant operation.

KK. Independent Service Operation

1. The car operating station shall be equipped with a key-operated switch labeled "IND SER", which shall be located in the exposed top area of the car operating stations.

- 2. When placed in the "on" position, this switch shall cause the elevator to bypass corridor calls and to travel directly to any floor chosen by registration of a car call.
- 3. During Independent Service Operation, the elevator doors shall remain open at any landing until the door close or car call registration pushbutton, is pressed and maintained until the doors are fully closed.
- 4. In case an elevator is operating on the Independent Service mode and the Fire Emergency Recall system becomes activated, the elevator shall automatically override Independent Service Operation and engage Phase I Fire Emergency Recall Operation following a period of approximately forty-five (45) seconds.

5. If more than one (1) car call is registered, all registered car calls shall extinguish when the elevator stops in response to the first call.

6. The "Car Cancel" shall be operative with the Independent Service Mode.

LL. Inspection Service Operation

1. Provide a key operated switch in the main car operating panel that, when turned to the 'ON' position, shall cause the elevator to be removed from service and placed in Inspection Service Operation.

2. Limited operation of the car shall be provided through pressing the Attendant Service up and down momentary push buttons (if provided) or the highest or lowest car call push buttons (if up and down buttons are not provided) in the main car operating panel only.

3. The car shall move at a speed not to exceed 150 feet per minute as per code with both the hall and car door panels in the closed and locked position.

4. The Inspection Service switch shall be keyed differently than other typical keys used in the operation of the elevator. Keying shall be in accordance with Security Group Classifications as required by applicable code.

5. The top of the elevator car shall be equipped with a control for limited operation of the car during repairs, maintenance and inspection conducted in the hoistway. The transfer of control to the top of car operating device shall cause that device to be the sole means of control for the elevator.

6. Power door operating equipment shall be rendered inoperative while the car is being operated in the Inspection Service mode with the exception of power closing of the door. The control system shall maintain closing power on the door while the elevator is moving under Inspection Service Operation.

7. The in-car Inspection Service switch shall be rendered ineffective when the top of car inspection control is activated.

8. Machine Room Inspection Operation and Inspection Operation with open door circuits shall be provided in accordance with A17.1 Safety Code where required or allowed by the AHJ.

MM. Hoistway Access Operation

- 1. Provisions shall be made to allow access to the hoistway through the use of hoistway access switches.
- 2. Operating the access switch shall permit the car to be moved at slow speed (inspection speed) with the doors open to allow authorized persons to obtain access to the top of the car.

NN. Emergency Power Operation

- 1. Upon loss of normal power, and establishing of emergency power, all elevators shall automatically resume normal operation.
 - a. Elevators shall start sequentially so as to prevent overloading of the emergency power system.
- 2. Provisions shall be included in the elevator control system whereby all affected elevators shall automatically return to the main fire recall landing in progressive numerical sequence at normal speed immediately after transferring to the emergency power system.
 - a. Car and corridor calls shall become inoperative and all previously registered calls shall be canceled.
 - b. As each car arrives at the designated landing, it shall park out of service with its door in the open position.
- 3. In the event an elevator fails to respond to a recall command within forty-five (45) seconds under Emergency Power Operation, that car shall be bypassed and the next car in the sequence shall be recalled.
- 4. Upon completion of the recall process, one or more elevators shall be automatically selected to run on the emergency power source. Where more than one (1) elevator can operate on emergency power simultaneously, the Contractor shall coordinate the maximum number of elevators with DDC.
- 5. Coordinate the automatic sequential operation of the elevators with DDC.
- 6. Interlock all elevators to allow to operate the maximum number of elevators at a time.
- 7. An emergency power control panel for all elevators shall be provided at the fire command station containing an indicator light per elevator that becomes illuminated whenever a transfer to emergency power takes place.
- 8. A key-operated override switch and a manual selector switch with a position indicator for each elevator shall be provided in the emergency control panel.
 - a. Activating the key-operated override switch while on emergency power shall cancel the previously mentioned automatic recall sequence and allow positioning of the manual selector switch to select a car for operation.
- 9. Prior to return to normal power, the building ATS shall provide a "pre-transfer" signal to the elevator equipment that will initiate the landing of elevators prior to transfer from emergency power to normal power.
 - a. Timer of the pre-transfer signal shall be adjustable from 15 to 30 seconds.
- 10. The following additional requirements apply:
 - a. Firemen's Service Operation will remain active at all times during emergency power operation but limited to the elevator selected to be in operation.
 - b. All car lighting will remain active with car lighting on separate "emergency power feeders" and additional battery back-up.

- c. Communications will remain active all times via emergency power source feeder and additional battery back-up.
- d. Remote monitoring will be active from each group dispatcher for selected elevators using an uninterrupted power supply (UPS) to maintain the central processing unit during power transfers.
- e. Position indicator for each elevator will be active in the selected elevator and security room (where applicable), as well as Lobby display panels.
- 11. Testing of elevators under emergency power shall be accomplished with the building ATS providing a "pre-test" signal to the elevator control apparatus.
 - a. The pre-test signal shall initiate the landing of the elevators prior to the transfer from normal to emergency power.
 - b. After testing, the building ATS shall provide a "pre-transfer" signal to land the elevators prior to the transfer from emergency to normal power.
- OO. Emergency Power Operation (Duplicate Existing New Sequential Control)
 - 1. Existing provisions shall be duplicated and upgraded for automatic sequential operation.
 - 2. Provisions shall be included in the new elevator control system whereby, immediately after transferring to the building emergency power system, all affected elevators shall automatically return the main fire recall landing in progressive numerical sequence at normal operating speed.
 - a. Car and corridor calls shall become inoperative and all previously registered calls shall be canceled.
 - b. As each car arrives at the designated landing, it shall park out of service with its door in the open position.
 - 3. In the event an elevator fails to respond to a recall command within forty-five (45) seconds under Emergency Power Operation, that car shall be bypassed and the next car in the sequence shall be recalled.
 - 4. Upon completion of the recall process, one or more elevators shall be automatically selected to run on the emergency power source (duty car(s)).
 - 5. Interlock all elevators to allow to operate the maximum number of elevators at a time.
 - 6. An emergency power control panel shall be provided at the main landing containing an indicator light per elevator that becomes illuminated whenever a transfer to emergency power takes place.
 - a. Provide a key-operated override switch and a manual selector switch with a position indicator for each elevator.
 - b. Activating the key-operated override switch while on emergency power shall cancel the automatic recall sequence and allow positioning of the manual selector switch to select a car for operation.
- PP. Fire Emergency Operation (City of New York)

- 1. Phase I Emergency Recall Operation shall be provided in accordance with the applicable ASME A17.1 code as modified under New York City local law.
- 2. The car operating station shall be provided with an indicator light and audible signal, each of which shall become activated when Phase I Operation is engaged.
 - a. The warning buzzer shall cease to function once the car has completed the recall sequence and is positioned at the designated recall landing.
 - b. The indicator light shall remain illuminated as long as Phase I Operation is activated.
- 3. A two-position key-operated switch shall be provided on the designated recall landing per local law to manually activate Phase I Operation.
 - a. When activated, Phase I Operation shall be arranged so that in order to restore normal service, the car must first be returned to the designated recall landing, after which the Phase I key-switch must be turned to the 'OFF' position.
- 4. Phase II Emergency Recall In-Car Operation shall be provided in accordance with applicable ASME A17.1 code as modified under New York City local law.
- 5. The car operating panel shall be modified or equipped with a three-position, keyoperated switch to engage Phase II Operation subsequent to completing the Phase I recall sequence and parking at the designated recall landing.
- 6. The car operating panel shall be provided with a 'CALL CANCEL' push button that functions only under Phase II Operating mode.
 - a. When operated, the button shall cause any previously registered car calls to cancel.
- 7. The car operating panel shall be engraved with required fire control identifications per New York City local law.
- 8. A "Standardized Fire Recall Key" shall be used in accordance with the applicable Codes. This key shall be a Yale #2642.

QQ. Car to Lobby Operation

- 1. A control panel shall be provided in the lobby with a separate key-operated switch for each elevator to activate the Car-to-Lobby operating feature.
 - a. When engaged, this feature shall cause the affected elevator to return non-stop to the lobby after it has discharged all registered car calls.
- 2. Upon arriving at the lobby, the door shall open for approximately ten (10) seconds, after which the elevator shall park out of service with its door closed.
- 3. During the interval in which the car is out of service, the "door open" push button located in the car operating station shall continue to function.
- 4. Returning the key-operated switch in the lobby panel to the "off" position shall restore the car to normal operation.
- 5. The Car-to-Lobby operating feature shall be overridden by Phase I Fire Emergency Operation and inoperative during Phase II Fire Emergency Operation.

RR. Card Reader Control Provisions- Elevators No. 7, 8, 9, and 10

- 1. Wiring: Provide six (6) pair of 20 gauge two (2) flexible conductor low voltage cables with an overall braided shield in the traveling cable of all elevators for card reader interface.
 - a. The cables shall extend from the security interface terminal cabinet in the elevator machine room to behind the elevator return panel above the space allotted for the card reader.
 - b. Terminate the cable to dual screw barrier terminal strips on each end.
- 2. Card Reader Space: Allocate card reader space in each main car station.
- 3. Interface: For floor programmable card access control in all elevators, provide a pair of terminals for all floors such that application of a momentary dry (no voltage present) contact closure across those terminals by the security system shall enable the selection of the corresponding floor from the floor selector button in the elevator cab.
 - a. Locate the terminals inside an interface terminal cabinet in the elevator machine room.
 - b. Provide any relays that are required to interface the elevator control system to the momentary dry contact closures provided for under another section of these specifications.
 - c. If applicable, the card reader shall be operable and compatible with the issued card keys used building wide.
 - d. Coordinate system requirements with the manufacturer of the issued card key system.
- 4. Card Reader "Secure/Bypass" Switch: Provide separate card reader control bypass key switches for each elevator.
 - a. The bypass key switches shall be located in the elevator car operating panels.
 - b. The bypass key switches shall be a maintained contact type key switch with the key removable in the secure or bypass position.
 - 1) When the key switch is in the secure position, the card reader control mode shall be initiated.
 - When in the bypass position, the card reader control mode shall be bypassed and the elevator shall return to normal operation, permitting free access to any floor.
- 5. The card reader operation shall bypass floor cut-out switches.
- 6. Firefighter controls shall override all security operations.
- 7. Car reader shall be manufactured by DSX Access System, model No. 1040

SS. Load Weighing

1. A positive means shall be provided to continuously monitor the amount of load being transported by the elevator car.

- 2. The system shall be used to preload static motor drives, activate control features that include anti-nuisance operation, load dispatch operation, and load non-stop operation where applicable.
- 3. The anti-nuisance feature shall operate at loads not exceeding 200 lbs., whereas load dispatch and load non-stop shall be set to function at 65% of the rated loading capacity for the initial set up and adjustment procedure.

2.5 DOOR DEVICES AND OPERATION

A. Car/Hoistway Door Operation

- 1. Car and hoistway doors shall be arranged to operate in unison without excessive noise or slamming in either direction of travel.
 - a. Door opening speeds of two (2) feet per second shall be provided in conjunction with closing speeds of 1.0 feet per second in accordance with governing code.
 - b. Door operation shall be arranged to commence as the car enters its final leveling approach to a landing. In no case shall the door opening cycle conclude before the car comes to a complete stop at floor level.
 - c. Door operation shall commence as the car stops level at the floor and the machine brake is applied. Pre-door opening shall not be permitted.
- 2. Door open and door close time shall be measured between the moment car door operation in either direction begins and the instant at which that cycle is completed.
- 3. When responding to either a car or corridor call, the amount of time that the elevator door remains stationary in the open position shall be adjustable up to sixty (60) seconds.
 - a. Door open dwell time for a corridor call shall be separate of that for a car call, and in both cases, dwell time shall be canceled whenever the car door protection device is momentarily interrupted by passenger transfers, followed by a reduced door open dwell time of approximately one (1) second (adjustable) after the door protection device is cleared of obstructions.
- 4. The operation of the door protective device by physical contact (mechanical safety-edge) or the interruption of one or more infrared light beams (dual or multi-beam non-contact) during the close cycle shall cause the immediate reversing of the doors to the full open position.
- 5. The door closing cycle shall be arranged so that, in the event the door protective devices become continually obstructed after the normal door open dwell time has expired, and following a time interval of approximately thirty (30) seconds (adjustable), a warning tone shall sound and the door closing cycle shall commence at reduced speed and torque per applicable Code requirements.
- 6. Each car operating station shall be provided with a "door open" and "door close" push button.
 - a. Pressure on the "door open" button shall cause doors in the full open position to remain so and doors engaged in the close cycle to reverse direction and assume the full open position so long as pressure remains applied to the button.

- b. The "door open" buttons shall also control the open cycle during Phase II Emergency In-car Operation.
- c. The "door close" push button shall function on Independent Service, Attendant Service or Phase II Emergency In-car Operation as well as during normal automatic operations.
- 7. Repeated attempts by the power door operator mechanisms to open or close the door at any landing shall be monitored by the microprocessor-control system.
 - a. In the event the door should fail to cycle properly after a preset (adjustable) number of attempts, the car shall either travel to the next stop or remove itself from service, depending upon whether the malfunction is in the open or close cycle.
- 8. Each hoistway door shall be provided with an automatic self-closing mechanism arranged so that if the car should leave the landing while the hoistway door is unlocked, the closing device shall immediately close and lock the door.
- 9. Car door shall be arranged so as to prevent their being manually opened from inside the car unless the elevator is positioned within a floor landing zone.
- B. Master Door Power Operator System VVVF/AC
 - 1. Provide a heavy-duty master door operator on top of the elevator car enclosure for power opening and closing of the cab and hoistway entrance door panels.
 - 2. Operator shall utilize an alternating current motor, controlled by a variable voltage, variable frequency (VVVF) drive and a closed-loop control with programmable operating parameters.
 - a. System may incorporate an encoder feedback to monitor positions with a separate speed sensing rotating device or an encoderless closed-loop VVVF-AC control to monitor motor parameters and vary power applied to compensate for load changes.
 - 3. The type of system shall be designated as a high speed operator, designed for door panel opening at an average speed of 2.0 feet per second and closing at approximately 1.0 foot per second.
 - a. Reduce the closing speed as required to limit kinetic energy of closing doors to within values permitted by ASME A17.1 as may be adopted and/or otherwise modified by the AHJ.
 - 4. The door shall operate smoothly without a slam or abrupt motion in both the opening and closing cycle directions.
 - a. Provide controls to automatically compensate for load changes such as:
 - 1) Wind conditions (stack effect)
 - 2) Use of different weight door panels on multiple landings
 - 3) Other unique prevailing conditions that could cause variations in operational speeds.

- b. Provide nudging to limit speed and torque in conjunction with door close signaling/closing and timing devices as permitted by ASME A17.1 as may be adopted and/or otherwise modified by the AHJ. Nudging shall be initiated by the signal control system and not from the door protective device.
- 5. In case of interruption or failure of electric power from any cause, the door operating mechanism shall be so designed that it shall permit emergency manual operation of both the car and corridor doors only when the elevator is located in the floor landing unlocking zone.
 - a. The hoistway door shall continue to be self-locking and self-closing during emergency operation.
 - b. The door operator and/or car door panel shall be equipped with safety switches and electrical controls to prevent operation of the elevator with the door in the open position as per ASME A17.1 Code Standards.
 - c. Provide zone-lock devices as required by ASME A17.1 as may be adopted and/or otherwise modified by the AHJ.
- 6. Construct all door operating levers of heavy steel or reinforced extruded aluminum members, designed for stress and forces imposed on the related parts, linkages and fixed components during normal and emergency operation functions.
 - a. All pivot points shall have either ball or roller-type bearings, oilite bronze bushings or other non-metallic bushings of ample size.

C. Car Door Zone Lock Restrictor

- 1. Provide a car door zone lock restrictor.
- 2. In case of interruption or failure of electric power from any cause, the door operating mechanism shall permit emergency manual operation of both the car door and the hoistway door within the floor landing zone.
 - a. The hoistway door shall continue to be self-locking and self-closing.
 - b. The door operator shall operate in conjunction with or be equipped with all gate switches and safety contacts required by ASME A17.1 Code.
 - c. Provide zone-lock devices as required by applicable local codes and ASME A17.1 standards.

D. Car Door Hangers, Sheaves, Tracks and Gate Switch

- 1. Provide a sheave type two-point suspension hanger and track for each car door.
 - a. Sheaves shall be hardened steel, not less than 3-1/4 inches in diameter with sealed grease packed precision ball bearings.
 - b. The upthrust shall be taken by a roller mounted on the hanger and arranged to ride on the underside of the track.
- 2. The track shall be of formed cold rolled steel or cold drawn steel and shall be rounded on the track surface to receive the hanger sheaves.

- a. The track shall be removable and shall not be integral with the header.
- 3. Provide a gate switch that mounts directly to the car door track.
 - a. The gate switch shall prevent movement of the elevator until such time as it signals the control equipment that the car door has physically closed.

E. Door Reopening Device

- 1. Provide an infrared curtain door protection system.
- 2. The door shall be prevented from closing and reopen when closing if a person interrupts any one of the light rays.
- 3. The door shall start to close when the protection system is free of any obstruction.
- 4. The infrared curtain protective system shall provide:
 - a. Protective field not less than 71" above the sill.
 - b. Where a horizontal infrared light beam system is used:
 - 1) A minimum of 47 light beams.
 - 2) Accurately positioned infrared lights to conform to the requirements of the applicable handicapped code.
 - c. Modular design to permit on board test operation and replacement of all circuit boards without removing the complete unit.
 - d. Controls to shut down the elevator when the unit fails to operate properly.

2.6 FINISH AND MATERIALS

A. Finish and Design

1. Refer to specifications for other design requirements.

2.7 CAR ENCLOSURES AND ACCESSORIES (See Specification 14 20 05–ELEVATOR CAB)

A. Elevator Cab Enclosure Fan

- 1. Provide an exhaust type two-speed fan unit with cover grill, mounting accessories and necessary cab enclosure modifications.
 - a. Fan unit shall include self-lubricating motor with housing rubber mounted for sound vibration isolation.
- 2. Provide a key switch in the elevator cab enclosure for control of fan unit.
- 3. Provide necessary wiring and approved conduit to properly connect fan unit with power source and control key switch.
- B. Elevator Cab Emergency Lighting and Alarm Bell

- 1. Provide a self-powered emergency lighting system in the elevator car, consisting of alarm bell and a power pack unit.
- 2. Arrange two of the cab light fixtures to operate as the emergency light system.
- 3. Provide nickel cadmium batteries and a charger and mount the power pack on top of car.
- 4. Arrange for completely automatic operation when normal power is interrupted.
- 5. Provide a test button and indicator light in the car station service cabinet.
- 6. Unit shall provide continuous illumination and mechanical ventilation for at least four (4) hours and one (1) hour alarm bell operation.
- 7. The operation shall be completely automatic upon failure of normal power supply. Unit shall be connected to normal power supply for car lights and arranged to be energized at all times. It automatically recharges battery after use.
- 8. A 6" diameter alarm bell with a sound output of between 80-90 dBa (measured from a distance of 10") shall be mounted on top of the elevator car. Activation of this bell shall be controlled by the ALARM button in the car operating station which shall illuminate when pressed.

C. Car Enclosure Work Light and Receptacle

- 1. The top and bottom of each car shall be provided with a permanent lighting fixture and 110 volt receptacle.
- 2. Light control switches shall be located for easy accessibility from the hoistway entrance.
- 3. Where sufficient overhead clearance exists, the car top lighting fixture shall be extended no less than 24" above the crosshead member of the car frame.
- 4. Light bulbs shall be guarded so as to prevent breakage or accidental contact.

2.8 HOISTWAY ENTRANCES

A. Hoistway Entrances

- 1. Hoistway entrance sills, sill supports, entrance frames, headers and header supports shall be reused and refurbished.
 - a. Hoistway entrances that have become distorted or bent shall be straightened, plumbed, reset to the proper width dimension and reinforced as necessary.
 - b. Provide 14 gauge steel fascia plates that extend at least the full width of the door and be secured at hanger support and sill with oval head machine screws.
 - 1) Reinforce fascia to allow not more than ½" of deflection.
 - 2) Provide fascia plates where the clearance between the edge of the loading side of the platform and the inside face of the hoistway enclosure exceeds the code allowed clearance.
 - c. Provide 14 gauge steel toe guards that extend 12" below any sill not protected by fascia.

- 1) The toe guards shall extend the full width of the door and shall return to the hoistway wall at a 15 degree angle and be firmly fastened.
- d. Remove oil, dirt and impurities on new and existing apparatus and give a factory coat of rust inhibitive paint to all exposed surfaces of struts, hanger supports, covers, fascias, toe guards, dust covers and other ferrous metal.
- B. Tracks, Hangers, Closers and Related Equipment
 - 1. Formed or extruded steel landing door hanger tracks shall be provided.
 - 2. Each landing door panel shall be suspended from a pair of door hanger assemblies that are compatible with the hanger tracks.
 - a. Hanger assemblies shall be directly mounted to the door panel using 3/8" diameter or better hardware.
 - b. Solid steel blocks shall be used where job-site conditions dictate the use of spacers between hanger assemblies and the landing door panel.
 - 1) Jacking bolts or "U" shaped spacers are not acceptable for this application.
 - c. Hanger assemblies shall be adjusted or shimmed so that door panels are suspended in a plumb manner with no more than 3/8" vertical clearance to the cab entrance threshold.
 - d. Upthrust rollers shall be adjusted for minimal operating clearance against the bottom edge of the hanger track.
 - 3. Each set of center opening landing doors shall be provided with a cable driven relating mechanism which is compatible for use with the door hanger assemblies.
 - a. The relating mechanism shall be properly tensioned and adjusted so as to equalize the relationship between the door panels and the hoistway entrance.
 - 4. Each set of multi-speed center opening or side slide landing doors shall be provided with a sill-mounted spring closing mechanism.
 - 5. Each set of single speed side slide landing doors shall be provided with a sill-mounted spring closing mechanism.
 - a. Spirator-type spring closers shall be acceptable should prevailing sill depth or runby clearance conditions require their use.
 - 6. Where applicable, each hoistway door interlock assembly shall be provided with an emergency release mechanism utilizing manufacturers' standard type access key at all landings served.
 - a. Drill each hoistway door to accommodate manufacturers standard lock release key and install escutcheon. Escutcheon shall be brushed stainless steel to match door panels where required. Aluminum shall be provided at all other typical floors.

C. Interlocks and Unlocking Devices

- 1. Each set of landing doors shall be provided with a complete electromechanical interlock assembly.
 - a. Each interlock assembly shall consist of:
 - 1) A switch housing with contacts
 - 2) Lock keeper
 - 3) Clutch engagement/release subassembly
 - 4) Associated linkages
 - b. Arrange the lock so that individual leading door panels (side slide or center opening) are locked when in the closed position.
- 2. Non-typical mounting arrangements for interlocks and/or related mechanisms must receive prior approval from the Consultant.
- 3. Each hoistway door interlock assembly shall be provided with an emergency release mechanism utilizing a drop-leaf type access key at all landings served.
 - a. Drill each hoistway door to accommodate manufacturers standard lock release key and install escutcheon. Escutcheon shall be brushed stainless steel to match door panels where required. Aluminum shall be provided at all other typical floors.

D. Bottom Guides and Safety Retainers

- 1. The bottom of each side sliding type hoistway door panel shall be equipped with a minimum of two (2) guiding members.
 - a. Metal mounting angles shall be secured to the integral panel frame structure; and when conditions warrant, additional external metal support plates or angles shall be installed to ensure the integrity of the panel frame is not compromised.
 - b. Guides shall be manufactured of low friction non-metal material with sufficient strength to withstand forces placed on door panels per ASME A17.1 Standards.
 - c. Each guide assembly shall incorporate a steel fire stop and be so designed to permit sliding member replacements without removal of door panel(s) from top hanger devices.
 - d. Panels shall be hung with a maximum vertical clearance of 3/8 inch between top of sill and bottom of panel and the guide shall engage the sill groove by not less than 1/4 inch.
- 2. The bottom of each side sliding type hoistway door panel shall be equipped with a guiding member safety retainer and stationary sill block to prevent displacement in the event of primary guide means failure.
 - a. A metal reinforcement (12 gauge stainless or galvanized steel) shall be installed between the two (2) primary guiding members (a.k.a. "Z" bracket).

- b. The reinforcement shall be designed with a minimum length of 8 inches or the maximum possible length that will fit between the primary members and a minimum overall height of 2.5 inches secured on the internal face of the door panel. (Hoistway side)
- c. The retainer shall be set with the supplemental safety angle 3/8 inch into the corresponding sill groove; and be capable of preventing displacement of the panel no more than 3/4 inch with an applied force of 1125 lbf at right angles over an area 12 inches x 12 inches at the approximate center of the door panel.
- 3. For combination slide/swing hoistway entrances, and where required by the AHJ based on building classification, provide necessary bottom door retainer device.
 - a. Provide sill-block at the return side of the opening (at the swing panel) to prevent the panel from entering into the hoistway.
 - b. Provide a strike receiving "U" shoe, on the strike side of the entrance frame, which will capture the slide panel when in the closed position and prevent the panel from entering the hoistway.
 - 1) The sill-block and "U" shoe shall be submitted in a drawing with necessary PE stamp in conjunction with filing for necessary variance as may be required by the AHJ.

2.9 SIGNAL EQUIPMENT

A. General

- 1. The design and location of the hall and car operating and signaling fixtures shall comply with the ADAAG.
- 2. The operating fixtures shall be selected from the manufacturer's premium line of fixtures.
- 3. The layout of the fixtures including all associated signage and engraving shall be as approved by the Consultant.
- 4. Faceplates shall be as follows:
 - a. Passenger Elevators
 - 1) Typical Floors: 1/8" thick bronze faceplate with No. 4 finish.
 - 2) Ground Floor: Custom designed steel/bronze faceplate with No. 4 finish.
- 5. Mount passenger elevator fixtures with tamperproof fasteners. The screw and key switch cylinder finishes shall match faceplate finish.
- 6. Where key-operated switch and or key operated cylinder locks are furnished in conjunction with any component of the installation, four keys for each individual switch or lock shall be furnished, stamped or permanently tagged to indicate function.
- 7. All caution signs, code mandated instructions and directives shall be engraved and filled with epoxy.
- B. Main Car Operating Panel

- 1. Provide a main car operating push button panel on the inside front return panel of the car.
- 2. The push buttons shall become individually illuminated as they are pressed and shall extinguish as the calls are answered.
- 3. Provide LED call registration lights.
- 4. The operating panel shall include:
 - a. A call button for each floor served.
 - b. "Door open" / "Door close" / buttons.
 - c. "Alarm" button (Interfaced with emergency alarm).
 - d. "Emergency Stop" switch per local law.
 - e. Self-dialing, hands-free telephone and/or intercom with call acknowledging feature and A.D.A. design provisions. (See individual unit clarifications)
 - f. Three (3) position firefighter key operated switch, call cancel button and illuminated visual/audible signal system with mandated signage engraved per ASME A 17.1 Standards as modified by the AHJ.
 - g. "Independent Keyswitch" located at the top of the panel.
 - h. Provide a locked (keyed different from "Independent Keyswitch") service cabinet flush mounted and containing the key switches required to operate and maintain the elevator, including, but not limited to:
 - 1) Attendant service switch with associated operating buttons and signal indicators.
 - 2) Light switch.
 - 3) Fan switch.
 - 4) G. F. I. duplex receptacle.
 - 5) Emergency light test button and indicator.
 - 6) Inspection Service Operation key switch.
 - 7) Port for hand-held service tool where applicable.
 - 8) Car Reader "Secure/Bypass" switch (elevators No. 7-10)
- 5. Car operating panel shall be flush mounted with swing type, one-piece faceplate with heavy-duty concealed hinges.
 - a. Mount all key switches that are required to operate and maintain the elevators exposed on the car station except those specified within a locked service cabinet.
- 6. Car operating panel shall incorporate a digital L.E.D. position indicator black-filled engraved unit I.D. number or other nomenclature, as approved by DDC, with a "No Smoking" advisory and the rated passenger load capacity
- 7. Equip the car operating panel for Elevators No. 7-10 with proximity card reader to disconnect the corresponding floor push button.
 - a. Security system shall be overridden by Phase II Firefighter's Emergency Operations in accordance with code.

- 8. Where posting of an advisory is permitted by the Governing Authority in lieu of the inspection certificate, engrave the following advisory on the hinged cover of the service cabinet, or where otherwise directed by DDC.
 - a. Inspection Certificate is On File in the Engineer's Office Located in the Basement.
- C. Auxiliary Car Operating Panel- (Elevators No. 1-6)
 - 1. Provide an auxiliary car operating panel that contains the following:
 - a. Car call registration buttons.
 - b. Door open and close buttons.
 - c. Illuminated alarm button.
 - 2. Operating devices shall be of the same design, material and finish as the main operating panel.
 - 3. Design this station so as to duplicate the layout of the main operating panel.
 - 4. Provide a digital position indicator, ID engraving to match the main car operating panel.
- D. Emergency Lighting Fixture and Battery Powered Alarm
 - 1. Provide a self-powered emergency light unit in the elevator car operating panel, consisting of a light fixture, alarm bell and a power pack unit.
 - a. Arrange two (2) of the cab light fixtures to operate as the emergency light system.
 - b. The power pack shall contain a nickel cadmium battery and a charger.
 - c. Unit shall provide continuous illumination for at least four (4) hours and one (1) hour alarm bell operation.
 - 2. The operation shall be completely automatic upon failure of normal power supply.
 - 3. Unit shall be connected to normal power supply for car lights and arranged to be energized at all times so it automatically recharges battery after use.
 - 4. Provide a 6" diameter alarm bell with a sound output of between 80-90 dBa (measured from a distance of 10') mounted on top of the elevator car.
 - a. Activation of this bell shall be controlled by the ALARM button in the car operating station which shall illuminate when pressed.
- E. Central Exchange Communication System
 - 1. Provide a new automatic Central Exchange Intercommunication system to incorporate the modernized elevators and related areas.
 - a. Each car station shall be equipped with a four (4) inch speaker and separate microphone plus LED to indicate activation of the microphone, and input for the elevator alarm and/or stop button. Additionally, car station operations shall be in conformance with ADA Applications by allowing for audio and visual

- communications. Mount car station directly to car operating panel utilizing isolation foam supplied by the manufacturer.
- b. Master Stations shall be equipped with labeled, LED-equipped push buttons to enable communications with other stations, and to perform system operating functions. Each unit shall include a three (3) inch speaker, external volume control, and microphone with pre-amplifier.
- c. Calls from the elevator car shall automatically, slowly flash the car station LED. At all designated master stations, the calling car LED will flash and the master will sound an alarm tone until the calling car's button is depressed. Calls may be answered at any of the designated master stations by depressing the calling station's button or by pressing the "ENTER" button. Calls in the elevator car shall be hands-free while the master may respond either by using the "PUSH-TO-TALK/RELEASE TO LISTEN" button mode or HANDS-FREE. When a call is answered at a master station, the flashing LED shall go to steady condition and all designated masters indicating that the call has been answered. Additionally, all other designated masters LED's shall show the calling and called station after connection is made by master. Master stations shall have the ability to call individual stations, groups of stations or all stations at once, as specified, by depressing one button.
 - 1) Controlling masters shall have the ability to connect to a busy master via the Priority feature.
 - Any master in the system shall have the ability to test other stations for shorts, opens, or grounds that may be detrimental to the system's operation. Also, masters shall automatically self test to the Central Exchange approximately every TWENTY (20) minutes. Visual LED indication shall be shown on the testing master if a fault is detected.
 - All master stations shall be designed to include a handset with a 25-foot coiled chord. Masters shall be housed in a metal enclosure with a baked enamel finish. Flush mount masters are designed to mount behind a finished face plate. All master and car stations shall operate without degradation on twisted pairs using 20 or 24 AWG, copper wire, with an outer bundle shield.
 - 4) Master stations shall be equipped with attached visual (lights or strobes) and audio sounding (bells, warblers, or horns) devices as specified.
- 2. The Central Exchange cabinet (metal with baked enamel finish) shall contain line connection, voice amplifiers, microprocessor controls, optional interfaces, and input terminal connection printed circuit boards. An externally mounted UL recognized, CSA certified, DC power supply shall be housed in a metal cabinet with baked enamel finish.
 - a. Screw type plugs shall be provided in the Central Exchange for all external station wires.
 - b. The Central Exchange cabinet shall be shipped completely assembled in accordance with the project specifications.
 - c. The entire system shall operate from a separately mounted 48 VDC power supply. The power supply operates at 120 VAC at 50-60 Hz input.

- 3. An autodialing Telephone System shall be added to the Central Exchange and provide the facilities to connect car station alarm calls to the telephone network with a voice synthesized message, for purposes of obtaining assistance during an emergency as well as allowing incoming calls from remote telephones to any station in the system. DDC will provide the phone numbers to be programmed in the system to be called in case of an alarm.
- 4. The Line interactive, computer grade un-interruptible power system (Ferrups), shall have audible alarm sounds, LED indicators for the AC line, ready, charging and battery power and shall ensure uninterrupted operation of the communications system in the event of main power failure or momentary interruptions. The system shall provide at least four (4) hours of back up and be rechargeable. The batteries shall be maintenance free and sealed. The system shall provide fused or overload input and output protection, on-off and alarm silence switches.
- 5. A new intercommunication elevator traveling cable shall be installed. It shall be wired at the halfway shaft junction box and extend to and be wired at the elevator car junction box. It shall have enough shielded pairs to provide for 50% spares and have a steel core built in for hanging purpose. The cable shall be of the design and construction to meet the needs of the elevator intercom installation.
- 6. System Station Requirements:

Master Station

	Location	<u>Type</u>	Communication Points
a.	Machine Rooms	Contolling, Surface Mount Direct In, 25 ft. Cord, Horn and Strobe (5 units)	All Units
b. c. d.	Custodian's Office Engineer's Office Lobby TDS Panel	Controlling, Surface Mount Controlling, Surface Mount Controlling, Fixture Mount	All Units All Units All Units

7. Operation of Intercom Units:

- a. A call is placed from the elevator car station to its designated master station by pressing the "Alarm and/or Stop" button.
 - *(Call Request). This will cause the LED in the car station to slowly flash and the corresponding button of all the designated master stations to flash and an intermittent tone to be heard. When the incoming call is answered by depressing the calling button, the flashing LED will go to steady illumination.
 - 2) NOTE: The "Alarm" and momentary "Stop" button contact, normally open, must be provided by the intercom installer. Supplied contact must be a dry contact, i.e., no voltage present.
 - If a call request is made from a car station to a master station that is busy, the master station operator will hear a short tone and be alerted by a flashing LED on the panel button assigned for that car.
 - 4) These signals will also occur at all other designated master stations whose operators will be able to respond to the incoming call.

- When the master station answers the incoming call request, an audible tone an LED will be activated in the car station indicating that the car is monitored (microphone turned on). A call is disconnected by the master station operator by simply depressing the designated car button a second time, thereby extinguishing the LED and releasing the circuit.
- Due to compliance with the Americans with Disabilities Act, the car station LED or auxillary light will continue to flash after the master releases the circuit which will indicate that the message was received by the master station. The master station LED for that car will blink twice and beep every 30 seconds indicating to the master station operator that the car emergency light has not been released. To release the flashing light in the car, the master must call the car, after connection, press "Test/Release".

b. Master Station to Car Station:

- 1) A master station can be connected to the designated car station by depressing the corresponding call button.
- 2) The LED in the button will be illuminated
- In the car station an audible tone will be emitted, the LED will light and immediate voice communication will be established.
- 4) The call is ended by the master station operator depressing the button a second time, disconnecting the circuit.
- On all other designated master stations during such an exchange, the LED's corresponding to the calling and called stations will be illuminated as an indication that those stations are busy.

c. Master Station to Master Station

- 1) Any master station can call any other designated master station in the system by depressing the desired station's call button.
- 2) If the master station being called is in the Direct-In mode, the called operator will hear a short tone and see a lighted LED indicating that the hands-free conversation may commence. Direct-In mode is typically used in machine rooms.
- For calls to a master station in Non-Direct-In mode, the called operator will receive the same signals as described above, and must depress the calling station's button or depress "Enter to receive the call. The Non-Direct-In mode is typically used by controlling masters such as security and lobby stations.
- 4) Auxillary signaling devices such as electronic warblers, bells and strobes can be added to any master station as specified.

d. Functions of the Master Station

1) Communications in the system are handled by a number of easily operated buttons on the master station panels. These buttons are each provided with an LED indicator, which lights when the button is in use. Function buttons are identified to indicate the operation they perform and call buttons are

- identified to designate car stations and master stations to which they are assigned.
- All conversations in the system are of the simplex type. That is, the voice transmission is open in only one direction at a time. The direction is controlled by the calling master station operator who may depress the Push-To-Talk button to speak with another station, and release it to listen (see Push-To-Talk Button).

3) An incoming call to a master station is signaled by a tone and flashing LED on the panel at the button designated for the calling station.

The called party at a master station or a car station answers an incoming call "hands-free". The exception to this is an incoming call to a controlling master station, in which case the responding operator must depress the lighting call button assigned to the caller's station before the conversation can take place. Master Stations can be programmed either in "Direct-In" or "Non-Direct-In" as required.

e. Placing a Call

1) A call to a station is made by depressing the call button for that station. When the called station responds, the calling operator may respond hands free (see Push-To-Talk Button). The call is terminated by depressing the called stations button a second time. For handset-equipped stations, a button for this function is in the handset.

f. Receiving a Call

An incoming call to a master station is signaled by a tone and flashing LED on the call button designating the caller's station. The only action required to respond is depressing the button at which the flashing LED appears, or lifting the handset if so supplied. Calls to car stations do not require any action to be received.

g. Push-To-Talk Button (Talk)

1) The originator of the call, after depressing the called stations call button, holds down the TALK button while speaking and releases it to listen.

h. Night Button (Night)

1) Activating the Night button sets the system into an auxiliary operating mode, allowing external devices to be used to call or signal a distant station.

i. Test Release Button (Test/Rel)

1) The Test Release button allows an operator to test the circuit between the station and another station in the system for shorts, opens or grounds that may be detrimental to the system operation. Additionally, it is used to release the flashing ADA light in the car.

- 2) To test a station, press the "Test" button and call the station. A tone is sent to the distant station where it is detected and sent back to the testing station. Hearing the tone response, the testing operator is assured that the circuit is satisfactory between the two stations. If the called station is a master, it must be in "Direct-In" mode.
- Master stations will automatically self-test to the Central Exchange approximately every 20 minutes. If the master fails to receive an acknowledgement from the Central Exchange, the testing master will turn on the Prior LED indicating that connection cannot be completed.

j. Direct-In Button (Dir-In)

1) The Dir-In button allows the station operator to switch the master to hands-free answering.

k. Priority Button (Prior)

- 1) If for emergency purposes, a master station must call a busy station, the operator may do by using the priority feature. The master station operator calls the busy station then depresses the PRIOR button, which allows the operator to override a call in progress. This action will allow the calling station to connect to the busy called station.
- A priority call is terminated by depressing the called station button a second time. Call requests from other masters to either station on priority status will not be canceled.
- 3) The PRIOR LED is also used to indicate that the master failed self-test.

1. Enter Button (Enter)

- 1) The Enter button is used when a number of incoming calls from car stations arrive within a short period of each other, preventing the operator from responding to more than one at a time. The programming will automatically place the waiting calls in sequence and store them.
- The operator can respond to the calls in the order that they arrived by pressing the Enter button then the Talk button until no more lighted LED's remain on the panel.
- 3) This feature reduces operator response time when a number of calls are waiting and also provides callers with "first come first served" service.

m. All Call Button (All Call)

1) To broadcast a message simultaneously to all stations, the operator must depress the All Call button. Warning chime tones will be emitted at the calling master as well as all stations. After the warning chime tones, the operator depresses the Talk button to announce. The All Call is terminated by releasing the Talk button and pressing the All Call button a second time. An All Call will override all calls in progress in the system and re-establish them when terminated. This feature should be used only when required by

special circumstances. Optionally, masters can be restricted from using "All Call". Also, selected stations can be restricted from receiving "All Call".

n. Group Call

The Group Call function allows a designated master station operator to call pre-established groups of stations simultaneously. Groups are constituted in accordance with system operating requirements. To broadcast a message to a group, the operator must depress the Group Call button (example: GCI). Warning chime tones will be emitted at the calling master as well as all stations. After the warning chime tones, the operator depresses the Talk button to announce. The Group Call is terminated by releasing the Talk button and pressing the Group Call button a second time.

2) A Group Call will override all calls in progress in the system and reestablish them, when terminated. Optionally, masters can be restricted from using "Group Call" Also, selected stations can be restricted from receiving

"Group Call".

8. Operation of the Auto-dialing Telephone System (ADTS)

a. Car to Remote Telephone

When the alarm button is pressed in the elevator car, the system will automatically connect the alarm call to all designated masters. If the call is not answered by a master, after a predetermined amount of time (programmable in software from 1 to 255 minutes), the ADTS shall connect to the telephone network and dial the predetermined telephone numbers. The Department of Citywide Administrative Services will provide the information of the time dial out delay that is required.

2) When the ADTS activates it will automatically dial the first preprogrammed remote telephone number. If there is no answer within 30 seconds, the second number will be dialed and so on. The process will

continue until al remote telephone answers.

When the remote telephone is answered, the ADTS Speech Synthesizer will turn on activating pre-recorded audio message.

Example: You have an emergency elevator call from the number of the elevator. Press the "*" button to answer the call. Press the "#" button to release the call.

- 4) When the remote telephone operator presses the "*" button, the LED in the elevator intercom car station, or the separate ADA light (if used), as well as the microphone turns on. Conversation between the car station and the remote telephone can now commence.
- To release the call, the "#" button on the remote telephone is pressed and the call disconnects. (See ADA Remote Reset.)

b. Remote Telephone to Stations

1) To call any station in the system, the operator at the remote telephone dials (touch tone only) the ADTS telephone line number. After 1-4 rings (pre-

- selectable), the ADTS answers. System dial tone will be heard. Enter the 2 or 3 digit intercom extension number within 8 seconds. If the remote telephone dials a non-assigned intercom extension number, the ADTS will disconnect.
- When connection is made to the car, the car station LED and or the separate ADA light (if used), will turn on steady indicating that connection is made or, in the case of ADA, Steady Light Speak. To release the call, the remote telephone presses the "#" button and the ADTS disconnects the line (See ADA Remote Reset). If the operator fails to disconnect the call, the ADTS will disconnect in 10 minutes.
- 3) If the remote telephone user wishes to call another intercom extension without disconnecting the line, "O" is pressed to release the first call, wait for dial tone, and after the dial tone is heard, the new intercom extension number is entered.
- 4) If a new car alarm is entered prior to the remote telephone disconnecting, the alarm calling tone will be heard. Press the "#" button to disconnect the first call. Press the "*" button to connect to the new calling car station.

c. Master To Remote Telephone

Press the master station dedicated to the ADTS. The ADTS will immediately dial the remote telephone. When answered, normal conversation can commence.

9. Functions of the Auto-Dialing Telephone System (ADTS)

a. Communication Test

1) The remote telephone can be used to test any car station by pressing the "*" button in any of the above mentioned conversation modes. A tone will be sent from the Central Exchange to the car, and picked up by the car's microphone and heard by the remote telephone. This will assure the remote caller that the circuit is working correctly.

b. ADA Remote Test

1) The elevator car station ADA light will flash when the remote telephone releases. Signage near the ADA light should read, "Flashing Light Message Received." The flashing "message received" light will continue to flash and can only be released by calling the ADTS, connecting to the car, then pressing the "*" button. See ADA Technical Specifications.

c. Self Test

- 1) Approximately every 20 minutes, the ADTS will self test itself to the Central Exchange and advise if an error was detected by turning on the "OPR" LED.
- d. Operation LED's and Reset (ADTS Front Panel)

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LED	LED Condition	Results
OPR	Slow flash	Normal Operation
	No light or steady light	Internal error, press
		ADTS "Reset"
CON	Steady light	Switch Station connection from
COIV	Steady light	a master to ADTS or
		from car to ADTS
STA	Fast flash Steady	Alarm from car
		Car connects via ADTS to remote telephone
LINE	Steady light	When ADTS connects
23112	212-278	to telephone line

^{**}Provide for AUTOMATIC or REMOTE RESET to restart the auto dialing telephone system in case of signal problems or if system locks up for a predetermined number attempts to dial out without a response**

10. Spare Parts (Intercom System)

Qty.	Description
1	Cabinet lock of each type used
1	Solid-state board of each type used
1	Power supply of each type used (Ferrups not included)
1	Master station of each type used
2	Button Boards of each type used
2	Electronic warblers, bells, horns and strobes of each type used
2	Car stations of each type used
5	Buttons and contacts of each type used
10	Fuses of each type used
10	Bulbs of each type used
10	Keys of each type used

11. Manufacturer

- a. The Intercommunication System shall be Teknicom ECS 300 with the Tele-Master TM400T or equivalent approved equal.
- F. Emergency Alarm/Battery Back-up and Common Alarm Bell
 - 1. Provide a new car-mounted battery unit including solid-state charger and testing means enclosed in common metal container.
 - a. The battery shall be rechargeable nickel cadmium with a 10-year minimum life expectancy.

- b. The alarm bell shall be mounted directly to the battery/charger unit and connected to sound when any alarm push button or stop switch in the car enclosure is operated.
- c. The bell shall be configured to operate from power supplied by the building emergency power generator.
- 2. Provide a new common alarm bell located in the elevator pit.
 - a. The bell shall be configured to operate when the alarm or stop switch of any elevator is activated, during both normal and battery back-up power conditions.
 - b. Existing common alarm bells may be rehabilitated and reused providing they meet the intent of this section and applicable codes.

G. Life Safety System- TBD

- 1. Install Life Safety System speaker in each elevator cab.
- 2. Provide all necessary wiring and interfacing between the elevator system and the Life Safety System as required.
- 3. The Life Safety System speaker shall be furnished under Division 16.

H. Car Position Indicator

- 1. The position of the car in the hoistway shall be indicated by the illumination of the position indicator numeral corresponding to the floor at which the car has stopped or is passing.
 - a. Provide 2" high, 10-segment LED type position indicator with direction arrows, integral with the car operating panel.
 - b. Provide Lexan cover lens with hidden support frame behind fixture plate to protect the indicator readout.
 - c. Provide audible floor passing signal per ADA standards where not provided by the elevator signal control.
 - d. Flush mount fixture with cover to match selected car front or car operating panel finish as directed by DDC.

I. Car Direction Lantern- Elevators No. 7-10

- 1. Provide a car riding lantern with visual and audible signal in the edge of the strike and/or return post.
- 2. The lens shall project a minimum of 1/4" and shall be of solid Plexiglas.
- 3. Use tamperproof screws.
- 4. Car lantern shall indicate the direction of travel when doors are 3/4 open.
- 5. The unit shall sound once for the "up" direction and twice for the "down" direction.
 - a. Provide an electronic chime with adjustable sound volume.

J. Corridor Push Button Station

1. A riser of push button signal fixtures shall be provided on all floors.

- 2. Each signal fixture shall consist of the following:
 - a. A flush-mounted faceplate.
 - b. Illuminating tamper-resistant push buttons measuring 3/4" at their smallest dimension as selected by DDC.
 - c. A recessed mounting box, electrical conduit and wiring.
- 3. Intermediate landings shall be provided with fixtures containing two (2) push buttons while terminal landings shall be provided with fixtures containing a single push button.
- 4. Include firefighter key switch in the main lobby level station or other designated recall landing.
- 5. Push button signal fixtures shall be installed at a centerline height of 42" above the floor and shall be installed both plumb and flush to the finished wall.
- 6. Fixture faceplates shall be installed in the original location.
- 7. Provide a digital floor position indicator with 1" high numerals at all landings served for Elevators No. 7-10.

K. Corridor Push Button Station

- 1. Push button signal fixtures shall be provided on each landing.
- 2. Each signal fixture shall consist of:
 - a. An oversized flush-mounted faceplate.
 - b. Up and down illuminating push buttons measuring 3/4" at their smallest dimension as selected by DDC.
 - c. A recessed mounting box, electrical conduit and wiring.
- 3. Intermediate landings shall be provided with fixtures containing two (2) push buttons while terminal landings shall be provided with fixtures containing a single push button.
- 4. Include firefighter key switch in the main lobby level station or other designated recall landing.
- 5. Push button signal fixtures shall be mounted directly below the existing corridor stations at a centerline height of 42" above the floor and shall be installed both plumb and flush to the finished wall.
 - a. Existing corridor push button fixtures shall be removed.
 - b. Existing back boxes shall be retained and used to attach the oversized fixture faceplate.
 - 1) The Contractor has the option of providing a single oversized back box in lieu of retaining existing for faceplate attachment.
- 6. All cutting, patching, grouting and/or plastering of masonry walls resulting from the removal or installation of corridor fixtures shall be performed by the Contractor so as to maintain the fire rating of the hoistway.
 - a. Finished painting or decorating of wall surfaces shall be by Others.

7. Provide card reader unit for Elevators No. 7-10.

L. Car and Hall Call Buttons

- 1. Provide stainless steel/bronze convex type button as selected by the Designer from the manufacturer's premium line of push buttons.
 - a. The button shall have a collar with LED call registered light.

M. Hoistway Access Switch

- Install a cylindrical type keyed switch at top terminal in order to permit the car to be moved at slow speed with the doors open to allow authorized persons to obtain access to the top of the car.
- 2. Where there is no separate pit access door, a similar switch shall be installed at the lowest landing in order to permit the car to be moved away from the landing with the doors open in order to gain access to the pit.
- 3. Locate the switch in the terminal floor entrance jambs without faceplate at a height of 78" above the finished floor.
- 4. This switch is to be of the continuous pressure spring-return type and shall be operated by a cylinder type lock having not less than a five (5) pin or five (5) disc combination with the key removable only in the "OFF" position.
 - a. The lock shall not be operable by any key which operates locks or devices used for other purposes in the building and shall be available to and used only by inspectors, maintenance men and repairmen in accordance with A17.1 applicable Security Group.
- 5. Existing provisions that meet the aforementioned criteria may be updated with keyed switches to match new apparatus provided for uniformity of systems within the building.

N. Hall Direction Lanterns- Elevators No. 1-6, Typical Floors

- 1. Provide a visual and audible signal at each entrance to indicate the direction of travel and where applicable which car shall stop in response to the hall call.
 - a. Design lantern with up and down indication at intermediate landings and a single indication at terminal landings.
 - b. Lanterns shall sound once for the up direction and twice for the down direction.
 - 1) Provide an electronic chime with adjustable sound volume.
 - c. Provide adjustable signal time (3 to 10 seconds, with 1 second increments) to notify passengers which car shall answer the hall call and preset per ADAAG distance standards.

- 2. Locate the lantern in existing location. Provide GAL horizontal type, DDC to make final selection.
- O. Hall Direction Lanterns (Reuse/Modify)- Elevators No. 1-6- Main Floor
 - 1. The existing hall lantern/gong fixtures shall be reused.
 - a. Intermediate floor fixtures shall have both "up" and "down" indicators.
 - b. The terminal floors shall have only one (1) indicator.
 - c. A new multi-stroke gong shall be incorporated in the existing lantern fixture.
 - d. New control apparatus may be utilized to modify existing audible signals for A.D.A. compliance.
 - e. Relamp each unit.
 - f. Clean each faceplate of rust or paint.
 - 2. New fixtures duplicating existing materials and finishes shall be provided where existing fixtures have been modified and/or damaged beyond repair.
- P. Lobby T.D.S. for Elevators No. 1-6
 - 1. Provide a new wall mounted lobby station with new control apparatus functions. Locate in original location between Elevators No. 1 and 2.
 - 2. Provide new controls and signals for all existing and new functions specified herein, including position indicators for Elevators No. 1-6, communications master station (located behind vandal resistant transparent cover with magnetic strip locking), special features including motor-drive keyswitches, independent operation keyswitches, and car to lobby toggle switches. Provide all special feature devices and indicators behind vandal resistant transparent cover door with J200 lock.
- Q. Auxillary TDS Panel for All Elevators
 - 1. Provide a new wall mounted lobby station with new control apparatus and functions. Locate adjacent to the Fire Command Station.
 - 2. Provide new controls and signals for all existing and new functions specified herein, including position indicators for all elevators, communications master station (located behind vandal resistant transparent cover with magnetic strip locking), special features including motor-drive keyswitches, independent operation keyswitches, and car to lobby toggle switches. Provide all special feature devices and indicators behind vandal resistant transparent cover door with J200 lock.
- R. Lift-Net Elevator Management Information System
 - 1. The data collection, data storage and real-time monitoring portion of the system shall be based on Microsoft Windows, and able to run on Windows NT 4.0, 2000, XP, Vista or later operating systems. Locate the system computer next to the dispatcher for Elevarors No. 1-6.
 - 2. The system shall:

- a. Be network-based and be capable of interfacing with all makes and types of elevator control systems.
- b. Collect data via either serial data link or hardwired interface connections.
- c. Be capable of operating on any TCPIP based network system including but not limited to Ethernet, Token Ring, Arc-net and Lift-Net.
- d. Allow the addition of unlimited monitoring terminals on the network.
- 3. Monitoring terminals shall operate "peer to peer" without a single server, and the failure of a single network device shall not affect the operation of the rest of the system.
- 4. The system shall provide multiple banks, including multiple buildings, on a single monitoring terminal screen.
- 5. All monitored banks shall be visible from any monitoring terminal on the network.
- 6. Entry into the network shall be multi-level password protected.
 - a. The system shall be capable of real time display of all monitored status points on all monitored equipment.
 - b. Fault and event notification screens and audible alarms shall be immediately displayed on selected monitoring stations.
 - c. Different fault and event tables shall be defined on a per-bank basis.
 - d. The system shall collect and store all status, fault and event information for later reporting and analysis.
 - e. The system shall provide statistical analysis of hall call response times, traffic patterns, fault conditions, service logs and security usage in graphical and tabular format.
 - f. The system shall maintain a record of every status point change occurring on the monitored equipment, and provide the ability to replay these events in a simulation at a later time in real time, slow speed, single step, reverse, or fast forward.
 - 1) This information shall be retained for a period of at least twenty-six weeks, and a mechanism shall be provided whereby this information may be archived.
 - g. The system shall store traffic, fault and statistical data for a period of at least three (3) years.
 - 1) The system shall log error type, car number, floor position and major system status points whenever a fault or logged event occurs.
 - h. The system shall provide interactive control of certain features provided in the elevator control system which may be revised as the requirements of the building change.
 - i. Interactive controls shall include but are not limited to:
 - 1) Security floor lockouts
 - 2) Entering car and hall calls
 - 3) Firefighter's return service
 - 4) Lobby recall

- 5) VIP service
- 6) Suspicious person / security return
- 7) Up/Down peak
- j. In the case of a power failure the system shall be capable of connecting to an emergency power back-up unit without the loss of any stored data.
- 7. The system will automatically re-boot the program and continue to operate after a power loss or other system malfunction.
- 8. The Elevator Monitoring Equipment shall have the following minimum characteristics:
 - a. Monitoring Station Hardware
 - 1) Central processing unit IBM compatible microcomputer desk top or minitower (multiple machine rooms or lobby displays)
 - 2) Type Pentium or most current high-performance processor
 - 3) Speed most currant high-performance
 - 4) Internal hard drive adequate storage for three years data for entire system
 - 5) Modem most current high-performance
 - 6) Display color, capable of simultaneous display of all monitored units
 - 7) Printer current HP Color Desk Jet Series
 - 8) Keyboard MS Windows compatible
 - 9) Mouse MS Windows compatible
 - 10) Power requirements 90 230 Volts AC 50 60Hz
 - b. Machine Room Hardware
 - 1) Controller interface panels with high quality printed circuit boards
 - 2) Input voltage range 5 250V AC/DC
 - 3) Compatible with all types and makes of controllers
 - 4) Operating temperature range 45 112 degrees Fahrenheit
 - 5) Humidity range 10% 85% non-condensing
 - 6) Modular design capable of future expansion
 - 7) Power requirements $-90 230 \text{ VAC } 50 60 \text{Hz} \ \text{@ } 3 \text{A}$
- 9. The system shall display and record the following information for each monitored unit: (The following is intended as a guideline connections to each status point mentioned on every control system may be impractical. Serial data links may include many more points.)
 - a. Group operational mode
 - b. Multiple groups or buildings on the same screen
 - c. In/out of service
 - d. In/out of group service
 - e. Emergency power
 - f. Supervisory failure
 - g. Location and direction of hall calls
 - h. Individual car status expandable menus

- i. Direction of travel
- j. Independent service
- k. Inspection service
- l. Fire service
- m. Position of elevator
- n. Door status (open, opening, closing, closed)
- o. Door dwell time
- p. Load by-pass
- q. Emergency power
- r. Power on/off
- s. Door detector
- t. Safety circuit
- u. Door zone
- v. Stop switch
- w. Alarm button
- x. Registered Car Calls
- 10. Keyboard, Mouse and time clock control capabilities
 - a. Floor lockouts (car or hall)
 - b. Lobby recall
 - c. VIP service
 - d. Firefighter's service
 - e. Up/Down Peak
 - f. User defined parameters (minimum eight (8) inputs)
- 11. Faults monitored with visual and audible alarm, triggered by combinations of any of the above status points
 - a. Safety circuit
 - b. Alarm bell
 - c. Door reversal devise
 - d. Earthquake
 - e. At least six user selectable faults or events
- S. Emergency Power Control Panel
 - 1. Provide the lobby console or other designated location with a control panel for emergency power operation as further specified.
 - a. An emergency power control panel provided at the designated location.
 - b. The panel shall contain:
 - 1) An indicator light that illuminates when a transfer to emergency power takes place.
 - 2) Indication that the elevators have arrived at the designated landing and have parked with the doors maintained in the open position.
 - 3) Key-operated override switch(es) and a manual selector switch(es) identified with positions for each elevator.

- 2. The control panel shall be engraved so as to identify the function of each control feature and device provided.
- 3. The Elevator Contractor shall provide all necessary electrical conduit and wiring between the elevator machine room(s), and the Emergency Power Control Panel.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Inspection

- 1. Study the Contract Documents with regard to the work as specified and required so as to ensure its completeness.
- 2. Examine surface and conditions to which this work is to be attached or applied and notify DDC in writing if conditions or surfaces are detrimental to the proper and expeditious installation of the work. Starting the work shall imply acceptance of the surfaces and conditions to perform the work as specified.
- 3. Verify, by measurements at the job site, dimensions affecting the work. Bring field dimensions which are at variance with those on the accepted shop drawings to the attention of DDC. Obtain the decision regarding corrective measures before the start of fabrication of items affected.
- 4. Cooperate in the coordination and scheduling of the work of this section with the work of other sections so as not to delay job progress.

3.2 INSTALLATION

A. Installation

- 1. Modernize the elevators, using skilled personnel in strict accordance with the final accepted shop drawings and other submittals.
- 2. Comply with the code, manufacturer's instructions and recommendations.
- 3. Coordinate work with the work of other building functions for proper time and sequence to avoid delays and to ensure right-of-way of system. Use lines and levels to ensure dimensional coordination of the work.
- 4. Accurately and rigidly secure supporting elements within the shaftways to the encountered construction within the tolerance established.
- 5. Provide and install motor, switch, control, safety and maintenance and operating devices in strict accordance with the submitted wiring diagrams and applicable codes and regulations having jurisdiction.
- 6. Arrange door tracks and sheaves so that no metal-to-metal contact exists.
- 7. Reinforce hoistway fascias to allow not more than 1/2" of deflection.
- 8. Install elevator cab enclosure on platform plumb and align cab entrance with hoistway entrances.
- 9. Sound isolate cab enclosure from car structure. Allow no direct rigid connections between enclosure and car structure and between platform and car structure.]
- 10. Isolate cab fan from canopy to minimize vibration and noise.

- 11. Remove oil, dirt and impurities and give a factory coat of rust inhibitive paint to all exposed surfaces of struts, hanger supports, covers, fascias, toe guards, dust covers and other ferrous metal.
- 12. Pre-hang traveling cables for at least 24 hours with ends suitably weighted to eliminate twisting after installation.
- 13. After installation, touch up in the field, surfaces of shop primed elements which have become scratched or damaged.
- 14. Lubricate operating parts of system as recommended by the manufacturer.

B. Removal of Elevators

- 1. If extenuating circumstances (i.e. separating controller interconnections, inspection, testing, etc.), require that multiple cars of a single elevator group be removed from service simultaneously, the work shall be performed outside of the normal business hours at a time mutually agreed to by DDC and Contractor.
- 2. A minimum of five (5) days advance written notice shall be given to DDC and Elevator Consultant by the Contractor detailing the reasons for the simultaneous removal of the elevators from service along with the estimated out-of-service time.
- 3. The request shall be subject to review by the Elevator Consultant and approved by DDC prior to the commencement of the work.
- 4. Costs for this work in addition to associated expenses shall be included as part of the Base Bid pricing.

3.3 FIELD QUALITY CONTROL

A. Inspection and Testing

1. Upon completion of each work phase or individual elevator specified herein, the Contractor shall, at its own expense, arrange and assist with inspection and testing as may be required by the State and municipal governing authorities in order to secure a Certificate of Operation.

B. Substantial Completion

- 1. The work shall be deemed "Substantially Complete" for an individual unit or group of units when, in the opinion of the Consultant, the unit is complete, such that there are no material and substantial variations from the Contract Documents, and the unit is fit for its intended purpose.
- 2. Governing authority testing shall be completed and approved in conjunction with inspection for operation of the unit; a certificate of operation or other required documentation issued; and remaining items mandated for final acceptance completion are limited to minor punch list work not incorporating any life safety deficiencies.
- 3. The issuance of a substantial completion notification shall not relieve the Contractor from its obligations hereunder to complete the work.
- 4. Final completion cannot be achieved until all deliverables, including but not limited to training, spare parts, manuals, and other documentation requirements, have been completed.

C. Contractor's Superintendent

1. The Contractor shall assign a competent project superintendent during the work progress and any necessary assistant, all satisfactory to DDC. The superintendent shall represent the Contractor and all instructions given to him shall be as binding as if given to the Contractor.

3.4 PROTECTION AND CLEANING

A. Protection and Cleaning

- 1. Adequately protect surfaces against accumulation of paint, mortar, mastic and disfiguration or discoloration and damage during shipment and installation.
- 2. Upon completion, remove protection from finished surfaces and thoroughly clean and polish surfaces with due regard to the type of material. Work shall be free from discoloration, scratches, dents and other surface defects.
- 3. The finished installation shall be free of defects.
- 4. Before final completion and acceptance, repair and/or replace defective work, to the satisfaction of DDC, at no additional cost.
- 5. Remove tools, equipment and surplus materials from the site.

B. Barricades and Hoistway Screening

- 1. The Contractor shall provide whatever barricades are necessary in order to maintain adequate protection of areas in which work specified by the Contract Documents is being performed, including open hoistway entrances. Fabrication and erection as all barricades shall be in compliance with applicable OSHA regulations.
- 2. As required, the Contractor shall provide temporary wire mesh screening in the hoistway and of any elevator undergoing work specified in the Contract Documents. This screening shall be installed in such a manner as to completely segregate the hoistway from that of adjacent elevators. Screening shall be constructed from .041" diameter wire in a pattern that rejects passage of a 1" diameter ball.

3.5 DEMONSTRATION

A. Adjustment / Balance

- 1. Passenger elevators shall be adjusted to meet the following performance requirements:
 - a. Speed: within 2% static drive of rated speed under any loading condition.
 - b. Leveling: within 1/4" under any loading condition.
 - Typical Floor-to-Floor Time: (Recorded from the doors start to close on one floor until they are 3/4 open at the next floor.)
 Group Passenger Elevators
 9.5 seconds.
 - d. Door Operating Times

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Door Type	Opening	Closing
Center opening	1.5 sec.	2.0 sec.
Side opening	2.0 sec.	2.5 sec.

e. Door dwell time for hall calls:
f. Door dwell time for hall calls:
g. Door dwell time for car calls:
3.0 sec with Advance lantern signals
3.0 seconds

h. Reduced non-interference dwell time: 1.0 seconds.

- 2. Maintain the following ride quality requirements for the passenger elevators:
 - a. Noise levels inside the car shall not exceed the following:
 - 1) Car at rest with doors closed and fan off 40 dba.
 - 2) Car at rest with doors closed, fan running 55 dba.
 - 3) Car running at high speed, fan off 50 dba.
 - 4) Door in operation 60 dba.
 - b. Vertical and horizontal accelerations shall not exceed 14 milli-g and horizontal accelerations shall not exceed 20 milli-g.
 - 1) The accelerometer used for this testing shall be capable of measuring and recording acceleration to nearest 0.01 m/s² (1 milli-g) in the range of 0-2 m/s² over a frequency range from 0-80 Hz with ISO 8041 filter weights applied. Accelerometer should provide contact with the floor similar to foot pressure, 60 kPA (8.7psi).
 - c. Amplitude of acceleration and deceleration shall not exceed 4.0 ft/sec².
 - d. A sustained jerk shall not be more than twice the acceleration.
 - e. The rate of change in the acceleration/deceleration rate shall not be greater than 8.0 ft/sec3.

B. Acceptance Testing

- 1. Comply with the requirements of Division 01.
- 2. The Contractor shall provide at least five (5) days prior written notice to DDC and Consultant regarding the exact date on which work specified in the Contract Documents will reach completion on any single unit of vertical transportation equipment.
- 3. In addition to conducting whatever testing procedures may be required by local inspecting authorities in order to gain approval of the completed work, and before seeking approval of said work by DDC, the Contractor shall perform certain other tests in the presence of the Consultant.
- 4. The Contractor shall provide test instruments, test weights, and qualified field labor as required to safely operate the elevator under load conditions that vary from empty to full rated load and, in so doing, to successfully demonstrate compliance with

applicable performance standards set forth in the project specifications with regard to:

a. Operation of safety devices.

- b. Sustained high-speed velocity of the elevator in either direction of travel.
- c. Brake-to-brake running time and floor-to-floor time between adjacent floors.

d. Floor leveling accuracy.

- e. Door opening/closing and dwell times.
- f. Ride quality inside the elevator car.

g. Communication system.

- h. Load settings at which anti-nuisance, load dispatch, and load non-stop features are activated.
- 5. Upon completion of work specified in the Contract Documents on the last car in any group of elevators, and in conjunction with the aforementioned testing procedures, the Contractor shall carry out additional testing of group dispatch/supervisory control features in the presence of the Owner, the Resident Engineer and the Consultant. The project shall be split into two (2) phases as shown on the contract drawings. Testing for acceptance and turnover to the Owner shall be performed after all elevators in a given phase have been completed. The Contractor shall be responsible for all maintenance and operation prior to acceptance and turnover. The warranty period shall be begin at acceptance and turnover.
- 6. The Contractor shall provide test instruments and qualified field labor as required to successfully demonstrate:
 - a. The back-up operating mode for group dispatch failure
 - b. Simulated and actual emergency power operation
 - c. Firefighter, attendant and independent service operations
 - d. Restricted access security features and card reader controls
 - e. Zoning operations and floor parking assignments
 - f. Up/down peak operation
 - g. Response to corridor calls that fall into the "Long Wait" category
 - h. Lobby dispatch operations
- 7. After hour performing acceptance tests and tests of systems such as emergency generators, fire service, and security systems shall be conducted at no extra cost to DDC.

END OF SPECIFICATION 14 21 23

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SECTION 22 05 13 - COMMON MOTOR REQUIREMENTS FOR PLUMBING EQUIPMENT

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. Section includes general requirements for single-phase and polyphase, general-purpose, horizontal, small and medium, squirrel-cage induction motors for use on ac power systems up to 600 V and installed at equipment manufacturer's factory or shipped separately by equipment manufacturer for field installation.

1.3 COORDINATION

- A. Coordinate features of motors, installed units, and accessory devices to be compatible with the following:
 - 1. Motor controllers.
 - 2. Torque, speed, and horsepower requirements of the load.
 - 3. Ratings and characteristics of supply circuit and required control sequence.
 - 4. Ambient and environmental conditions of installation location.

PART 2 - PRODUCTS

2.1 GENERAL MOTOR REQUIREMENTS

- A. Comply with NEMA MG 1 unless otherwise indicated.
- B. Comply with IEEE 841 for severe-duty motors.

2.2 MOTOR CHARACTERISTICS

A. Duty: Continuous duty at ambient temperature of 40 deg C and at altitude of 3300 feet above sea level.

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B. Capacity and Torque Characteristics: Sufficient to start, accelerate, and operate connected loads at designated speeds, at installed altitude and environment, with indicated operating sequence, and without exceeding nameplate ratings or considering service factor.

2.3 SINGLE-PHASE MOTORS

- A. Motors larger than 1/20 HP shall be one of the following, to suit starting torque and requirements of specific motor application:
 - 1. Permanent-split capacitor.
 - 2. Split phase.
 - 3. Capacitor start, inductor run.
 - 4. Capacitor start, capacitor run.
- B. Multispeed Motors: Variable-torque, permanent-split-capacitor type.
- C. Bearings: Prelubricated, antifriction ball bearings or sleeve bearings suitable for radial and thrust loading.
- D. Motors 1/20 HP and Smaller: Shaded-pole type.
- E. Thermal Protection: Internal protection to automatically open power supply circuit to motor when winding temperature exceeds a safe value calibrated to temperature rating of motor insulation. Thermal-protection device shall automatically reset when motor temperature returns to normal range.

PART 3 - EXECUTION (Not Applicable)

END OF SECTION 22 05 13

SECTION 22 05 17 - SLEEVES AND SLEEVE SEALS FOR PLUMBING PIPING

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. Section Includes:P
 - 1. Sleeves.
 - 2. Sleeve-seal systems.
 - 3. Grout.

1.3 ACTION SUBMITTALS

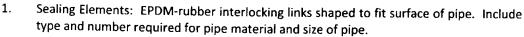
A. Product Data: For each type of product indicated.

PART 2 - PRODUCTS

2.1 SLEEVES

- A. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
- B. <u>Basis-of-Design Product</u>: Subject to compliance with requirements, provide product by one of the following:
 - 1. Advance Products & Systems, Inc.
 - 2. CALPICO, Inc.
 - Metraflex Company (The).
 - 4. Pipeline Seal and Insulator, Inc.
 - 5. <u>Proco Products, Inc.</u> or approved equal.
- C. Description: Modular sealing-element unit, designed for field assembly, for filling annular space between piping and sleeve.

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- 2. Pressure Plates: Carbon steel.
- Connecting Bolts and Nuts: Carbon steel, with corrosion-resistant coating of length required to secure pressure plates to sealing elements.

2.2 GROUT

- A. Standard: ASTM C 1107/C 1107M, Grade B, post-hardening and volume-adjusting, dry, hydraulic-cement grout.
- B. Characteristics: Nonshrink; recommended for interior and exterior applications.
- C. Design Mix: 5000-psi, 28-day compressive strength.
- D. Packaging: Premixed and factory packaged.

PART 3 - EXECUTION

3.1 SLEEVE INSTALLATION

- A. Install sleeves for piping passing through penetrations in floors, partitions, roofs, and walls.
- B. For sleeves that will have sleeve-seal system installed, select sleeves of size large enough to provide 1-inch annular clear space between piping and concrete slabs and walls.
 - 1. Sleeves are not required for core-drilled holes.
- C. Install sleeves in concrete floors, concrete roof slabs, and concrete walls as new slabs and walls are constructed.
 - Permanent sleeves are not required for holes in slabs formed by molded-PE or -PP sleeves.
 - Cut sleeves to length for mounting flush with both surfaces.
 - Exception: Extend sleeves installed in floors of mechanical equipment areas or other wet areas 2 inches above finished floor level.
 - 3. Using grout, seal the space outside of sleeves in slabs and walls without sleeve-seal system.
- D. Install sleeves for pipes passing through interior partitions.
 - Cut sleeves to length for mounting flush with both surfaces.
 - 2. Install sleeves that are large enough to provide 1/4-inch annular clear space between sleeve and pipe or pipe insulation.

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- Seal annular space between sleeve and piping or piping insulation; use joint sealants
 appropriate for size, depth, and location of joint. Revise paragraph below to suit Project
 and insert description of firestopping sealant.
- E. Fire-Barrier Penetrations: Maintain indicated fire rating of walls, partitions, ceilings, and floors at pipe penetrations. Seal pipe penetrations with firestop materials.

3.2 SLEEVE-SEAL-FITTING INSTALLATION

- A. Install sleeve-seal fittings in new walls and slabs as they are constructed.
- B. Assemble fitting components of length to be flush with both surfaces of concrete slabs and walls. Position waterstop flange to be centered in concrete slab or wall.
- C. Secure nailing flanges to concrete forms.
- D. Using grout, seal the space around outside of sleeve-seal fittings.

3.3 SLEEVE AND SLEEVE-SEAL SCHEDULE

- A. Use sleeves and sleeve seals for the following piping-penetration applications:
 - 1. Exterior Concrete Walls above Grade:
 - a. Piping Smaller than NPS 6 Galvanized-steel-pipe sleeves.

END OF SECTION 22 05 17

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SECTION 22 05 23 - GENERAL-DUTY VALVES FOR PLUMBING PIPING

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. Section Includes:
 - 1. Iron ball valves.
 - 2. Iron swing check valves.
 - 3. Iron gate valves.
 - 4. Iron globe valves.

1.3 DEFINITIONS

- A. CWP: Cold working pressure.
- B. EPDM: Ethylene propylene copolymer rubber.
- C. NBR: Acrylonitrile-butadiene, Buna-N, or nitrile rubber.
- D. NRS: Nonrising stem.
- E. OS&Y: Outside screw and yoke.
- F. RS: Rising stem.
- G. SWP: Steam working pressure.

1.4 ACTION SUBMITTALS

A. Product Data: For each type of valve indicated.

1.5 QUALITY ASSURANCE

A. Source Limitations for Valves: Obtain each type of valve from single source from single manufacturer.



B. ASME Compliance:

- 1. ASME B16.10 and ASME B16.34 for ferrous valve dimensions and design criteria.
- 2. ASME B31.1 for power piping valves.
- 3. ASME B31.9 for building services piping valves.
- C. NSF Compliance: NSF 61 for valve materials for potable-water service.

1.6 DELIVERY, STORAGE, AND HANDLING

- A. Prepare valves for shipping as follows:
 - 1. Protect internal parts against rust and corrosion.
 - 2. Protect threads, flange faces, grooves, and weld ends.
 - 3. Set angle, gate, and globe valves closed to prevent rattling.
 - 4. Set ball and plug valves open to minimize exposure of functional surfaces.
 - 5. Set butterfly valves closed or slightly open.
 - 6. Block check valves in either closed or open position.
- B. Use the following precautions during storage:
 - 1. Maintain valve end protection.
 - Store valves indoors and maintain at higher than ambient dew point temperature. If outdoor storage is necessary, store valves off the ground in watertight enclosures.
- C. Use sling to handle large valves; rig sling to avoid damage to exposed parts. Do not use handwheels or stems as lifting or rigging points.

PART 2 - PRODUCTS

2.1 GENERAL REQUIREMENTS FOR VALVES

- A. Refer to valve schedule articles for applications of valves.
- B. Valve Pressure and Temperature Ratings: Not less than indicated and as required for system pressures and temperatures.
- C. Valve Sizes: Same as upstream piping unless otherwise indicated.
- D. Valve Actuator Types:
 - Hand lever: For quarter-turn valves NPS 6 and smaller except plug valves.
- E. Valves in Insulated Piping: With 2-inch stem extensions and the following features:

- Ball Valves: With extended operating handle of non-thermal-conductive material, and protective sleeve that allows operation of valve without breaking the vapor seal or disturbing insulation.
- 2. Butterfly Valves: With extended neck.

F. Valve-End Connections:

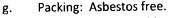
- 1. Flanged: With flanges according to ASME B16.1 for iron valves.
- 2. Grooved: With grooves according to AWWA C606.
- Solder Joint: With sockets according to ASME B16.18.
- 4. Threaded: With threads according to ASME B1.20.1.
- G. Valve Bypass and Drain Connections: MSS SP-45.

2.2 BRONZE ANGLE VALVES

- A. Class 125, Bronze Angle Valves with Bronze Disc:
 - 1. <u>Manufacturers</u>: Subject to compliance with requirements, provide products by one of the following:
 - a. Hammond Valve.
 - b. Milwaukee Valve Company or approved equal.

- a. Standard: MSS SP-80, Type 1.
- b. CWP Rating: 200 psig.
- c. Body Material: ASTM B 62, bronze with integral seat and screw-in bonnet.
- d. Ends: Threaded.
- e. Stem and Disc: Bronze.
- f. Packing: Asbestos free.
- g. Handwheel: Malleable iron, bronze.
- B. Class 125, Bronze Angle Valves with Nonmetallic Disc:
 - 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:
 - a. <u>American Valve, Inc.</u>
 - b. NIBCO INC.
 - 2. Description:
 - a. Standard: MSS SP-80, Type 2.
 - b. CWP Rating: 200 psig.

- c. Body Material: ASTM B 62, bronze with integral seat and screw-in bonnet.
- d. Ends: Threaded.
- e. Stem: Bronze.
- f. Disc: PTFE or TFE.
- g. Packing: Asbestos free.
- h. Handwheel: Malleable iron.
- C. Class 150, Bronze Angle Valves with Bronze Disc:
 - 1. <u>Manufacturers</u>: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:
 - a. <u>Crane Co.; Crane Valve Group; Stockham Division.</u>
 - b. <u>Kitz Corporation</u>.
 - 2. Description:
 - a. Standard: MSS SP-80, Type 1.
 - b. CWP Rating: 300 psig.
 - c. Body Material: ASTM B 62, bronze with integral seat and union-ring bonnet.
 - d. Ends: Threaded.
 - e. Stem and Disc: Bronze.
 - f. Packing: Asbestos free.
 - g. Handwheel: Malleable iron.
- D. Class 150, Bronze Angle Valves with Nonmetallic Disc:
 - 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:
 - a. <u>Crane Co.; Crane Valve Group; Crane Valves.</u>
 - b. <u>Crane Co.; Crane Valve Group; Jenkins Valves.</u>
 - c. <u>Crane Co.; Crane Valve Group; Stockham Division</u>.
 - d. Hammond Valve.
 - e. <u>Milwaukee Valve Company</u>.
 - f. NIBCO INC.
 - g. Powell Valves.
 - 2. Description:
 - a. Standard: MSS SP-80, Type 2.
 - b. CWP Rating: 300 psig.
 - c. Body Material: ASTM B 62, bronze with integral seat and union-ring bonnet.
 - d. Ends: Threaded.
 - e. Stem: Bronze.
 - f. Disc: PTFE or TFE.



h. Handwheel: Malleable iron.

2.3 BRASS BALL VALVES

- A. One-Piece, Reduced-Port, Brass Ball Valves with Brass Trim:
 - 1. <u>Manufacturers</u>: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:
 - Kitz Corporation.
 - 2. Description:

a. Standard: MSS SP-110.b. CWP Rating: 400 psig.

c. Body Design: One piece.

d. Body Material: Forged brass.

e. Ends: Threaded.f. Seats: PTFE or TFE.

g. Stem: Brass.

h. Ball: Chrome-plated brass.

i. Port: Reduced.

- B. Two-Piece, Full-Port, Brass Ball Valves with Brass Trim:
 - 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:
 - a. <u>Crane Co.; Crane Valve Group; Crane Valves</u>.
 - b. <u>Crane Co.; Crane Valve Group; Jenkins Valves.</u>
 - c. Hammond Valve.
 - d. Milwaukee Valve Company.
 - e. NIBCO INC.
 - f. Red-White Valve Corporation.
 - 2. Description:

a. Standard: MSS SP-110.

b. SWP Rating: 150 psig.

c. CWP Rating: 600 psig.

d. Body Design: Two piece.

e. Body Material: Forged brass.

f. Ends: Threaded.

g. Seats: PTFE or TFE.

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- h. Stem: Brass.
- i. Ball: Chrome-plated brass.
- j. Port: Full.

C. Two-Piece, Full-Port, Brass Ball Valves with Stainless-Steel Trim:

- 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:
 - a. <u>Crane Co.; Crane Valve Group; Crane Valves.</u>
 - b. <u>Crane Co.; Crane Valve Group; Jenkins Valves.</u>
 - c. <u>Hammond Valve</u>.
 - d. Milwaukee Valve Company.

2. Description:

- a. Standard: MSS SP-110.
- b. SWP Rating: 150 psig.
- c. CWP Rating: 600 psig.
- d. Body Design: Two piece.
- e. Body Material: Forged brass.
- f. Ends: Threaded.
- g. Seats: PTFE or TFE.
- h. Stem: Stainless steel.
- i. Ball: Stainless steel, vented.
- j. Port: Full.

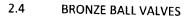
D. Two-Piece, Regular-Port, Brass Ball Valves with Brass Trim:

- 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:
 - a. Hammond Valve.
 - b. <u>Milwaukee Valve Company</u>.

- a. Standard: MSS SP-110.
- b. SWP Rating: 150 psig.
- c. CWP Rating: 600 psig.
- d. Body Design: Two piece.
- e. Body Material: Forged brass.
- f. Ends: Threaded.
- g. Seats: PTFE or TFE.
- h. Stem: Brass.
- Ball: Chrome-plated brass.



- j. Port: Regular.
- E. Two-Piece, Regular-Port, Brass Ball Valves with Stainless-Steel Trim:
 - 1. <u>Manufacturers</u>: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:
 - a. Jamesbury; a subsidiary of Metso Automation.
 - b. Marwin Valve; a division of Richards Industries.
 - 2. Description:
 - a. Standard: MSS SP-110.
 - b. SWP Rating: 150 psig.
 - c. CWP Rating: 600 psig.
 - d. Body Design: Two piece.
 - e. Body Material: Brass or bronze.
 - f. Ends: Threaded.
 - g. Seats: PTFE or TFE.
 - h. Stem: Stainless steel.
 - i. Ball: Stainless steel, vented.
 - j. Port: Regular.
- F. Three-Piece, Full-Port, Brass Ball Valves with Brass Trim:
 - 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:
 - a. Red-White Valve Corporation.
 - b. Watts Regulator Co.; a division of Watts Water Technologies, Inc.
 - 2. Description:
 - a. Standard: MSS SP-110.
 - b. SWP Rating: 150 psig.
 - c. CWP Rating: 600 psig.
 - d. Body Design: Three piece.
 - e. Body Material: Forged brass.
 - f. Ends: Threaded.
 - g. Seats: PTFE or TFE.
 - h. Stem: Brass.
 - i. Ball: Chrome-plated brass.
 - j. Port: Full.



- A. One-Piece, Reduced-Port, Bronze Ball Valves with Bronze Trim:
 - 1. <u>Manufacturers</u>: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:
 - a. American Valve, Inc.
 - b. <u>Conbraco Industries, Inc.; Apollo Valves.</u>
 - c. NIBCO INC.

2. Description:

- a. Standard: MSS SP-110.
- b. CWP Rating: 400 psig.
- c. Body Design: One piece.
- d. Body Material: Bronze.
- e. Ends: Threaded.
- f. Seats: PTFE or TFE.
- g. Stem: Bronze.
- h. Ball: Chrome-plated brass.
- i. Port: Reduced.
- B. Two-Piece, Full-Port, Bronze Ball Valves with Bronze Trim:
 - 1. <u>Manufacturers</u>: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:
 - a. <u>Conbraco Industries, Inc.; Apollo Valves</u>.
 - b. <u>Crane Co.; Crane Valve Group; Crane Valves.</u>
 - c. <u>Milwaukee Valve Company</u>.
 - d. NIBCO INC.
 - e. Red-White Valve Corporation.
 - f. Watts Regulator Co.; a division of Watts Water Technologies, Inc.

- a. Standard: MSS SP-110.
- b. SWP Rating: 150 psig.
- c. CWP Rating: 600 psig.
- d. Body Design: Two piece.
- e. Body Material: Bronze.
- f. Ends: Threaded.
- g. Seats: PTFE or TFE.
- h. Stem: Bronze.
- Ball: Chrome-plated brass.

- j. Port: Full.
- C. Two-Piece, Regular-Port, Bronze Ball Valves with Bronze Trim:
 - 1. <u>Manufacturers</u>: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:
 - a. Conbraco Industries, Inc.; Apollo Valves.
 - b. <u>Crane Co.; Crane Valve Group; Jenkins Valves.</u>
 - c. <u>Crane Co.; Crane Valve Group; Stockham Division</u>.
 - d. <u>Milwaukee Valve Company</u>.
 - e. NIBCO INC.
 - 2. Description:
 - a. Standard: MSS SP-110.
 - b. SWP Rating: 150 psig.
 - c. CWP Rating: 600 psig.
 - d. Body Design: Two piece.
 - e. Body Material: Bronze.
 - f. Ends: Threaded.
 - g. Seats: PTFE or TFE.
 - h. Stem: Bronze.
 - i. Ball: Chrome-plated brass.
 - j. Port: Regular.
- D. Three-Piece, Full-Port, Bronze Ball Valves with Bronze Trim:
 - 1. <u>Manufacturers</u>: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:
 - a. Conbraco Industries, Inc.; Apollo Valves.
 - b. Milwaukee Valve Company.
 - c. NIBCO INC.
 - d. Red-White Valve Corporation.
 - 2. Description:
 - a. Standard: MSS SP-110.
 - b. SWP Rating: 150 psig.
 - c. CWP Rating: 600 psig.
 - d. Body Design: Three piece.
 - e. Body Material: Bronze.
 - f. Ends: Threaded.
 - g. Seats: PTFE or TFE.

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i. Ball: Chrome-plated brass.

j. Port: Full.

2.5 IRON BALL VALVES

A. Class 125, Iron Ball Valves:

- 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:
 - a. <u>American Valve, Inc.</u>
 - b. <u>Conbraco Industries, Inc.; Apollo Valves.</u>
 - c. Watts Regulator Co.; a division of Watts Water Technologies, Inc.

2. Description:

- a. Standard: MSS SP-72.
- b. CWP Rating: 200 psig.
- c. Body Design: Split body.
- d. Body Material: ASTM A 126, gray iron.
- e. Ends: Flanged.
- f. Seats: PTFE or TFE.
- g. Stem: Stainless steel.
- h. Ball: Stainless steel.
- i. Port: Full.

2.6 BRONZE LIFT CHECK VALVES

A. Class 125, Lift Check Valves with Bronze Disc:

- 1. <u>Manufacturers</u>: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:
 - a. <u>Crane Co.; Crane Valve Group; Crane Valves.</u>
 - b. <u>Crane Co.; Crane Valve Group; Jenkins Valves.</u>
 - c. <u>Crane Co.; Crane Valve Group; Stockham Division.</u>

- a. Standard: MSS SP-80, Type 1.
- b. CWP Rating: 200 psig.
- c. Body Design: Vertical flow.
- d. Body Material: ASTM B 61 or ASTM B 62, bronze.

- e. Ends: Threaded.f. Disc: Bronze.
- B. Class 125, Lift Check Valves with Nonmetallic Disc:
 - 1. <u>Manufacturers</u>: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:
 - a. Hammond Valve.
 - b. Milwaukee Valve Company.
 - c. NIBCO INC.
 - d. Red-White Valve Corporation.
 - e. Watts Regulator Co.; a division of Watts Water Technologies, Inc.
 - 2. Description:
 - a. Standard: MSS SP-80, Type 2.
 - b. CWP Rating: 200 psig.
 - c. Body Design: Vertical flow.
 - d. Body Material: ASTM B 61 or ASTM B 62, bronze.
 - e. Ends: Threaded.
 - f. Disc: NBR, PTFE, or TFE.

2.7 IRON GATE VALVES

- A. Class 125, NRS, Iron Gate Valves:
 - 1. <u>Manufacturers</u>: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:
 - a. Crane Co.; Crane Valve Group; Crane Valves.
 - b. Crane Co.; Crane Valve Group; Jenkins Valves.
 - c. Crane Co.; Crane Valve Group; Stockham Division.
 - d. Milwaukee Valve Company.
 - e. NIBCO INC.
 - f. Red-White Valve Corporation.
 - g. Watts Regulator Co.; a division of Watts Water Technologies, Inc.
 - h. <u>Zy-Tech Global Industries, Inc.</u>
 - 2. Description:
 - a. Standard: MSS SP-70, Type I.

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- b. CWP Rating: 200 psig.
- c. Body Material: ASTM A 126, gray iron with bolted bonnet.
- d. Ends: Flanged.
- e. Trim: Bronze.
- f. Disc: Solid wedge.
- g. Packing and Gasket: Asbestos free.

B. Class 125, OS&Y, Iron Gate Valves:

- 1. <u>Manufacturers</u>: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:
 - a. <u>Crane Co.; Crane Valve Group; Crane Valves.</u>
 - b. <u>Crane Co.; Crane Valve Group; Jenkins Valves.</u>
 - c. <u>Crane Co.; Crane Valve Group;</u> Stockham Division.
 - d. Milwaukee Valve Company.
 - e. NIBCO INC.
 - f. Watts Regulator Co.; a division of Watts Water Technologies, Inc.
 - g. Zy-Tech Global Industries, Inc.

2. Description:

- a. Standard: MSS SP-70, Type I.
- b. CWP Rating: 200 psig.
- c. Body Material: ASTM A 126, gray iron with bolted bonnet.
- d. Ends: Flanged.
- e. Trim: Bronze.
- f. Disc: Solid wedge.
- g. Packing and Gasket: Asbestos free.

2.8 IRON GLOBE VALVES

- A. Class 125, Iron Globe Valves:
 - 1. <u>Manufacturers</u>: Subject to compliance with requirements, provide products by one of the following:
 - a. <u>Crane Co.; Crane Valve Group; Crane Valves.</u>
 - b. <u>Crane Co.; Crane Valve Group; Jenkins Valves.</u>
 - c. <u>Crane Co.; Crane Valve Group; Stockham Division.</u>
 - d. Milwaukee Valve Company.
 - e. NIBCO INC.
 - f. Red-White Valve Corporation.
 - 2. Description:



b. CWP Rating: 200 psig.

c. Body Material: ASTM A 126, gray iron with bolted bonnet.

d. Ends: Flanged.e. Trim: Bronze.

f. Packing and Gasket: Asbestos free.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine valve interior for cleanliness, freedom from foreign matter, and corrosion. Remove special packing materials, such as blocks, used to prevent disc movement during shipping and handling.
- B. Operate valves in positions from fully open to fully closed. Examine guides and seats made accessible by such operations.
- C. Examine threads on valve and mating pipe for form and cleanliness.
- D. Examine mating flange faces for conditions that might cause leakage. Check bolting for proper size, length, and material. Verify that gasket is of proper size, that its material composition is suitable for service, and that it is free from defects and damage.
- E. Do not attempt to repair defective valves; replace with new valves.

3.2 VALVE INSTALLATION

- A. Install valves with unions or flanges at each piece of equipment arranged to allow service, maintenance, and equipment removal without system shutdown.
- B. Locate valves for easy access and provide separate support where necessary.
- C. Install valves in horizontal piping with stem at or above center of pipe.
- D. Install valves in position to allow full stem movement.
- E. Install check valves for proper direction of flow and as follows:
 - Swing Check Valves: In horizontal position with hinge pin level.

3.3 ADJUSTING

A. Adjust or replace valve packing after piping systems have been tested and put into service but before final adjusting and balancing. Replace valves if persistent leaking occurs.

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- A. If valve applications are not indicated, use the following:
 - 1. Shutoff Service: Ball or gate valves.
 - 2. Pump-Discharge Check Valves:
 - NPS 2 and Smaller: Bronze swing check valves with bronze disc.
- B. If valves with specified SWP classes or CWP ratings are not available, the same types of valves with higher SWP classes or CWP ratings may be substituted.
- C. Select valves, except wafer types, with the following end connections:
 - 1. For Steel Piping, NPS 2 and Smaller: Threaded ends.
 - 2. For Steel Piping, NPS 2-1/2 to NPS 4: Flanged ends except where threaded valve-end option is indicated in valve schedules.

END OF SECTION 220523

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SECTION 22 05 29 - HANGERS AND SUPPORTS FOR PLUMBING PIPING AND EQUIPMENT

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. Section Includes:

- 1. Metal pipe hangers and supports.
- 2. Trapeze pipe hangers.
- 3. Fiberglass pipe hangers.
- 4. Metal framing systems.
- 5. Fiberglass strut systems.
- 6. Thermal-hanger shield inserts.
- 7. Fastener systems.
- 8. Pipe stands.
- 9. Pipe positioning systems.
- 10. Equipment supports.

1.3 DEFINITIONS

A. MSS: Manufacturers Standardization Society of The Valve and Fittings Industry Inc.

1.4 PERFORMANCE REQUIREMENTS

- A. Design Criteria: Design trapeze pipe hangers and equipment supports, including comprehensive engineering analysis by a qualified professional engineer, using performance requirements and design criteria indicated.
- B. Structural Performance: Hangers and supports for plumbing piping and equipment shall withstand the effects of gravity loads and stresses within limits and under conditions indicated according to ASCE/SEI 7.
 - 1. Design supports for multiple pipes, including pipe stands, capable of supporting combined weight of supported systems, system contents, and test water.
 - 2. Design equipment supports capable of supporting combined operating weight of supported equipment and connected systems and components.



1.5 ACTION SUBMITTALS

- A. Product Data: For each type of product indicated.
- B. Shop Drawings: Show fabrication and installation details and include calculations for the following; include Product Data for components:
 - 1. Trapeze pipe hangers.
 - 2. Metal framing systems.
 - 3. Fiberglass strut systems.
 - 4. Pipe stands.
 - 5. Equipment supports.
- C. Equipment Submittal: For trapeze hangers indicated to comply with performance requirements and design criteria, including analysis data signed and sealed by the qualified professional engineer responsible for their preparation.
 - 1. Detail fabrication and assembly of trapeze hangers.
 - 2. Design Calculations: Calculate requirements for designing trapeze hangers.

1.6 INFORMATIONAL SUBMITTALS

A. Welding certificates.

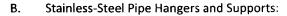
1.7 QUALITY ASSURANCE

- A. Structural Steel Welding Qualifications: Qualify procedures and personnel according to AWS D1.1/D1.1M, "Structural Welding Code Steel."
- B. Pipe Welding Qualifications: Qualify procedures and operators according to ASME Boiler and Pressure Vessel Code.

PART 2 - PRODUCTS

2.1 METAL PIPE HANGERS AND SUPPORTS

- A. Carbon-Steel Pipe Hangers and Supports:
 - 1. Description: MSS SP-58, Types 1 through 58, factory-fabricated components.
 - 2. Galvanized Metallic Coatings: Pregalvanized or hot dipped.
 - 3. Nonmetallic Coatings: Plastic coating, jacket, or liner.
 - 4. Padded Hangers: Hanger with fiberglass or other pipe insulation pad or cushion to support bearing surface of piping.
 - 5. Hanger Rods: Continuous-thread rod, nuts, and washer made of carbon steel.



- 1. Description: MSS SP-58, Types 1 through 58, factory-fabricated components.
- 2. Padded Hangers: Hanger with fiberglass or other pipe insulation pad or cushion to support bearing surface of piping.
- 3. Hanger Rods: Continuous-thread rod, nuts, and washer made of stainless steel.

C. Copper Pipe Hangers:

- 1. Description: MSS SP-58, Types 1 through 58, copper-coated-steel, factory-fabricated components.
- 2. Hanger Rods: Continuous-thread rod, nuts, and washer made of stainless steel.

2.2 TRAPEZE PIPE HANGERS

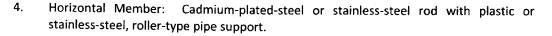
A. Description: MSS SP-69, Type 59, shop- or field-fabricated pipe-support assembly made from structural carbon-steel shapes with MSS SP-58 carbon-steel hanger rods, nuts, saddles, and Ubolts.

2.3 FASTENER SYSTEMS

- A. Powder-Actuated Fasteners: Threaded-steel stud, for use in hardened portland cement concrete with pull-out, tension, and shear capacities appropriate for supported loads and building materials where used.
- B. Mechanical-Expansion Anchors: Insert-wedge-type, stainless-steel anchors, for use in hardened portland cement concrete; with pull-out, tension, and shear capacities appropriate for supported loads and building materials where used.

2.4 PIPE STANDS

- A. General Requirements for Pipe Stands: Shop- or field-fabricated assemblies made of manufactured corrosion-resistant components to support roof-mounted piping.
- B. Compact Pipe Stand: One-piece plastic unit with integral-rod roller, pipe clamps, or V-shaped cradle to support pipe, for roof installation without membrane penetration.
- C. High-Type, Single-Pipe Stand:
 - 1. Description: Assembly of base, vertical and horizontal members, and pipe support, for roof installation without membrane penetration.
 - 2. Base: Stainless steel.
 - 3. Vertical Members: Two or more cadmium-plated-steel or stainless-steel, continuous-thread rods.



D. High-Type, Multiple-Pipe Stand:

- Description: Assembly of bases, vertical and horizontal members, and pipe supports, for roof installation without membrane penetration.
- 2. Bases: One or more; plastic.
- 3. Vertical Members: Two or more protective-coated-steel channels.
- 4. Horizontal Member: Protective-coated-steel channel.
- 5. Pipe Supports: Galvanized-steel, clevis-type pipe hangers.
- E. Curb-Mounting-Type Pipe Stands: Shop- or field-fabricated pipe supports made from structural-steel shapes, continuous-thread rods, and rollers, for mounting on permanent stationary roof curb.

2.5 PIPE POSITIONING SYSTEMS

A. Description: IAPMO PS 42, positioning system of metal brackets, clips, and straps for positioning piping in pipe spaces; for plumbing fixtures in commercial applications.

2.6 EQUIPMENT SUPPORTS

A. Description: Welded, shop- or field-fabricated equipment support made from structural carbon-steel shapes.

2.7 MISCELLANEOUS MATERIALS

- A. Structural Steel: ASTM A 36/A 36M, carbon-steel plates, shapes, and bars; black and galvanized.
- B. Grout: ASTM C 1107, factory-mixed and -packaged, dry, hydraulic-cement, nonshrink and nonmetallic grout; suitable for interior and exterior applications.
 - 1. Properties: Nonstaining, noncorrosive, and nongaseous.
 - 2. Design Mix: 5000-psi, 28-day compressive strength.

PART 3 - EXECUTION

3.1 HANGER AND SUPPORT INSTALLATION

A. Metal Pipe-Hanger Installation: Comply with MSS SP-69 and MSS SP-89. Install hangers, supports, clamps, and attachments as required to properly support piping from the building structure.

- B. Metal Trapeze Pipe-Hanger Installation: Comply with MSS SP-69 and MSS SP-89. Arrange for grouping of parallel runs of horizontal piping, and support together on field-fabricated trapeze pipe hangers.
 - 1. Pipes of Various Sizes: Support together and space trapezes for smallest pipe size or install intermediate supports for smaller diameter pipes as specified for individual pipe hangers.
 - 2. Field fabricate from ASTM A 36/A 36M, carbon-steel shapes selected for loads being supported. Weld steel according to AWS D1.1/D1.1M.
- C. Fiberglass Pipe-Hanger Installation: Comply with applicable portions of MSS SP-69 and MSS SP-89. Install hangers and attachments as required to properly support piping from building structure.
- D. Metal Framing System Installation: Arrange for grouping of parallel runs of piping, and support together on field-assembled metal framing systems.
- E. Fiberglass Strut System Installation: Arrange for grouping of parallel runs of piping, and support together on field-assembled fiberglass struts.
- F. Thermal-Hanger Shield Installation: Install in pipe hanger or shield for insulated piping.
- G. Fastener System Installation:
 - 1. Install powder-actuated fasteners for use in lightweight concrete or concrete slabs less than 4 inches thick in concrete after concrete is placed and completely cured. Use operators that are licensed by powder-actuated tool manufacturer. Install fasteners according to powder-actuated tool manufacturer's operating manual.
 - 2. Install mechanical-expansion anchors in concrete after concrete is placed and completely cured. Install fasteners according to manufacturer's written instructions.

H. Pipe Stand Installation:

- 1. Pipe Stand Types except Curb-Mounted Type: Assemble components and mount on smooth roof surface. Do not penetrate roof membrane.
- 2. Curb-Mounted-Type Pipe Stands: Assemble components or fabricate pipe stand and mount on permanent, stationary roof curb. See Section 077200 "Roof Accessories" for curbs.
- I. Pipe Positioning-System Installation: Install support devices to make rigid supply and waste piping connections to each plumbing fixture.
- J. Install hangers and supports complete with necessary attachments, inserts, bolts, rods, nuts, washers, and other accessories.
- K. Equipment Support Installation: Fabricate from welded-structural-steel shapes.

- L. Install hangers and supports to allow controlled thermal and seismic movement of piping systems, to permit freedom of movement between pipe anchors, and to facilitate action of expansion joints, expansion loops, expansion bends, and similar units.
- M. Install lateral bracing with pipe hangers and supports to prevent swaying.
- N. Install building attachments within concrete slabs or attach to structural steel. Install additional attachments at concentrated loads, including valves, flanges, and strainers, NPS 2-1/2 and larger and at changes in direction of piping. Install concrete inserts before concrete is placed; fasten inserts to forms and install reinforcing bars through openings at top of inserts.
- O. Load Distribution: Install hangers and supports so that piping live and dead loads and stresses from movement will not be transmitted to connected equipment.
- P. Pipe Slopes: Install hangers and supports to provide indicated pipe slopes and to not exceed maximum pipe deflections allowed by ASME B31.9 for building services piping.
- Q. Insulated Piping:
 - 1. Attach clamps and spacers to piping.
 - a. Piping Operating above Ambient Air Temperature: Clamp may project through insulation.
 - b. Piping Operating below Ambient Air Temperature: Use thermal-hanger shield insert with clamp sized to match OD of insert.
 - Do not exceed pipe stress limits allowed by ASME B31.9 for building services piping.
 - 2. Install MSS SP-58, Type 39, protection saddles if insulation without vapor barrier is indicated. Fill interior voids with insulation that matches adjoining insulation.
 - Option: Thermal-hanger shield inserts may be used. Include steel weightdistribution plate for pipe NPS 4 and larger if pipe is installed on rollers.
 - 3. Install MSS SP-58, Type 40, protective shields on cold piping with vapor barrier. Shields shall span an arc of 180 degrees.
 - a. Option: Thermal-hanger shield inserts may be used. Include steel weightdistribution plate for pipe NPS 4 and larger if pipe is installed on rollers.
 - 4. Shield Dimensions for Pipe: Not less than the following:
 - a. NPS 1/4 to NPS 3-1/2: 12 inches long and 0.048 inch thick.
 - b. NPS 4: 12 inches long and 0.06 inch thick.
 - c. NPS 5 and NPS 6: 18 inches long and 0.06 inch thick.
 - d. NPS 8 to NPS 14: 24 inches long and 0.075 inch thick.
 - e. NPS 16 to NPS 24: 24 inches long and 0.105 inch thick.

- 5. Pipes NPS 8 and Larger: Include wood or reinforced calcium-silicate-insulation inserts of length at least as long as protective shield.
- 6. Thermal-Hanger Shields: Install with insulation same thickness as piping insulation.

3.2 EQUIPMENT SUPPORTS

- A. Fabricate structural-steel stands to suspend equipment from structure overhead or to support equipment above floor.
- B. Grouting: Place grout under supports for equipment and make bearing surface smooth.
- C. Provide lateral bracing, to prevent swaying, for equipment supports.

3.3 METAL FABRICATIONS

- A. Cut, drill, and fit miscellaneous metal fabrications for trapeze pipe hangers.
- B. Fit exposed connections together to form hairline joints. Field weld connections that cannot be shop welded because of shipping size limitations.
- C. Field Welding: Comply with AWS D1.1/D1.1M procedures for shielded, metal arc welding; appearance and quality of welds; and methods used in correcting welding work; and with the following:
 - 1. Use materials and methods that minimize distortion and develop strength and corrosion resistance of base metals.
 - 2. Obtain fusion without undercut or overlap.
 - 3. Remove welding flux immediately.
 - 4. Finish welds at exposed connections so no roughness shows after finishing and so contours of welded surfaces match adjacent contours.

3.4 ADJUSTING

- A. Hanger Adjustments: Adjust hangers to distribute loads equally on attachments and to achieve indicated slope of pipe.
- B. Trim excess length of continuous-thread hanger and support rods to 1-1/2 inches.

3.5 PAINTING

- A. Touchup: Clean field welds and abraded areas of shop paint. Paint exposed areas immediately after erecting hangers and supports. Use same materials as used for shop painting. Comply with SSPC-PA 1 requirements for touching up field-painted surfaces.
 - 1. Apply paint by brush or spray to provide a minimum dry film thickness of 2.0 mils.



- B. Touchup: Cleaning and touchup painting of field welds, bolted connections, and abraded areas of shop paint on miscellaneous metal are specified in Section 099123 "Interior Painting."
- C. Galvanized Surfaces: Clean welds, bolted connections, and abraded areas and apply galvanizing-repair paint to comply with ASTM A 780.

3.6 HANGER AND SUPPORT SCHEDULE

- A. Specific hanger and support requirements are in Sections specifying piping systems and equipment.
- B. Comply with MSS SP-69 for pipe-hanger selections and applications that are not specified in piping system Sections.
- C. Use hangers and supports with galvanized metallic coatings for piping and equipment that will not have field-applied finish.
- D. Use nonmetallic coatings on attachments for electrolytic protection where attachments are in direct contact with copper tubing.
- E. Use carbon-steel pipe hangers and supports and attachments for general service applications.
- F. Use copper-plated pipe hangers and copper attachments for copper piping and tubing.
- G. Use padded hangers for piping that is subject to scratching.
- H. Use thermal-hanger shield inserts for insulated piping and tubing.
- I. Horizontal-Piping Hangers and Supports: Unless otherwise indicated and except as specified in piping system Sections, install the following types:
 - 1. Adjustable, Steel Clevis Hangers (MSS Type 1): For suspension of noninsulated or insulated, stationary pipes NPS 1/2 to NPS 30.
 - 2. Yoke-Type Pipe Clamps (MSS Type 2): For suspension of up to 1050 deg F, pipes NPS 4 to NPS 24, requiring up to 4 inches of insulation.
 - 3. Carbon- or Alloy-Steel, Double-Bolt Pipe Clamps (MSS Type 3): For suspension of pipes NPS 3/4 to NPS 36, requiring clamp flexibility and up to 4 inches of insulation.
 - 4. Steel Pipe Clamps (MSS Type 4): For suspension of cold and hot pipes NPS 1/2 to NPS 24 if little or no insulation is required.
 - 5. Pipe Hangers (MSS Type 5): For suspension of pipes NPS 1/2 to NPS 4, to allow off-center closure for hanger installation before pipe erection.
 - 6. Adjustable, Swivel Split- or Solid-Ring Hangers (MSS Type 6): For suspension of noninsulated, stationary pipes NPS 3/4 to NPS 8.
 - 7. Adjustable, Steel Band Hangers (MSS Type 7): For suspension of noninsulated, stationary pipes NPS 1/2 to NPS 8.
 - 8. Adjustable Band Hangers (MSS Type 9): For suspension of noninsulated, stationary pipes NPS 1/2 to NPS 8.

- 9. Adjustable, Swivel-Ring Band Hangers (MSS Type 10): For suspension of noninsulated, stationary pipes NPS 1/2 to NPS 8.
- 10. Split Pipe Ring with or without Turnbuckle Hangers (MSS Type 11): For suspension of noninsulated, stationary pipes NPS 3/8 to NPS 8.
- 11. Extension Hinged or Two-Bolt Split Pipe Clamps (MSS Type 12): For suspension of noninsulated, stationary pipes NPS 3/8 to NPS 3.
- 12. U-Bolts (MSS Type 24): For support of heavy pipes NPS 1/2 to NPS 30.
- 13. Clips (MSS Type 26): For support of insulated pipes not subject to expansion or contraction.
- 14. Pipe Saddle Supports (MSS Type 36): For support of pipes NPS 4 to NPS 36, with steel-pipe base stanchion support and cast-iron floor flange or carbon-steel plate.
- 15. Pipe Stanchion Saddles (MSS Type 37): For support of pipes NPS 4 to NPS 36, with steel-pipe base stanchion support and cast-iron floor flange or carbon-steel plate, and with U-bolt to retain pipe.
- 16. Adjustable Pipe Saddle Supports (MSS Type 38): For stanchion-type support for pipes NPS 2-1/2 to NPS 36 if vertical adjustment is required, with steel-pipe base stanchion support and cast-iron floor flange.
- 17. Single-Pipe Rolls (MSS Type 41): For suspension of pipes NPS 1 to NPS 30, from two rods if longitudinal movement caused by expansion and contraction might occur.
- 18. Adjustable Roller Hangers (MSS Type 43): For suspension of pipes NPS 2-1/2 to NPS 24, from single rod if horizontal movement caused by expansion and contraction might occur.
- Complete Pipe Rolls (MSS Type 44): For support of pipes NPS 2 to NPS 42 if longitudinal movement caused by expansion and contraction might occur but vertical adjustment is not necessary.
- 20. Pipe Roll and Plate Units (MSS Type 45): For support of pipes NPS 2 to NPS 24 if small horizontal movement caused by expansion and contraction might occur and vertical adjustment is not necessary.
- 21. Adjustable Pipe Roll and Base Units (MSS Type 46): For support of pipes NPS 2 to NPS 30 if vertical and lateral adjustment during installation might be required in addition to expansion and contraction.
- J. Vertical-Piping Clamps: Unless otherwise indicated and except as specified in piping system Sections, install the following types:
 - Extension Pipe or Riser Clamps (MSS Type 8): For support of pipe risers NPS 3/4 to NPS 24.
 - 2. Carbon- or Alloy-Steel Riser Clamps (MSS Type 42): For support of pipe risers NPS 3/4 to NPS 24 if longer ends are required for riser clamps.
- K. Hanger-Rod Attachments: Unless otherwise indicated and except as specified in piping system Sections, install the following types:
 - 1. Steel Turnbuckles (MSS Type 13): For adjustment up to 6 inches for heavy loads.
 - 2. Steel Clevises (MSS Type 14): For 120 to 450 deg F piping installations.
 - 3. Swivel Turnbuckles (MSS Type 15): For use with MSS Type 11, split pipe rings.



- 4. Malleable-Iron Sockets (MSS Type 16): For attaching hanger rods to various types of building attachments.
- 5. Steel Weldless Eye Nuts (MSS Type 17): For 120 to 450 deg F piping installations.
- L. Building Attachments: Unless otherwise indicated and except as specified in piping system Sections, install the following types:
 - 1. Steel or Malleable Concrete Inserts (MSS Type 18): For upper attachment to suspend pipe hangers from concrete ceiling.
 - 2. Top-Beam C-Clamps (MSS Type 19): For use under roof installations with bar-joist construction, to attach to top flange of structural shape.
 - 3. Side-Beam or Channel Clamps (MSS Type 20): For attaching to bottom flange of beams, channels, or angles.
 - 4. Center-Beam Clamps (MSS Type 21): For attaching to center of bottom flange of beams.
 - 5. Welded Beam Attachments (MSS Type 22): For attaching to bottom of beams if loads are considerable and rod sizes are large.
 - 6. C-Clamps (MSS Type 23): For structural shapes.
 - 7. Top-Beam Clamps (MSS Type 25): For top of beams if hanger rod is required tangent to flange edge.
 - 8. Side-Beam Clamps (MSS Type 27): For bottom of steel I-beams.
 - 9. Steel-Beam Clamps with Eye Nuts (MSS Type 28): For attaching to bottom of steel I-beams for heavy loads.
 - 10. Linked-Steel Clamps with Eye Nuts (MSS Type 29): For attaching to bottom of steel I-beams for heavy loads, with link extensions.
 - 11. Malleable-Beam Clamps with Extension Pieces (MSS Type 30): For attaching to structural steel.
 - 12. Welded-Steel Brackets: For support of pipes from below or for suspending from above by using clip and rod. Use one of the following for indicated loads:
 - a. Light (MSS Type 31): 750 lb.
 - b. Medium (MSS Type 32): 1500 lb.
 - c. Heavy (MSS Type 33): 3000 lb.
 - 13. Side-Beam Brackets (MSS Type 34): For sides of steel or wooden beams.
 - 14. Plate Lugs (MSS Type 57): For attaching to steel beams if flexibility at beam is required.
 - 15. Horizontal Travelers (MSS Type 58): For supporting piping systems subject to linear horizontal movement where headroom is limited.
- M. Saddles and Shields: Unless otherwise indicated and except as specified in piping system Sections, install the following types:
 - 1. Steel-Pipe-Covering Protection Saddles (MSS Type 39): To fill interior voids with insulation that matches adjoining insulation.
 - 2. Protection Shields (MSS Type 40): Of length recommended in writing by manufacturer to prevent crushing insulation.
 - 3. Thermal-Hanger Shield Inserts: For supporting insulated pipe.

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- N. Spring Hangers and Supports: Unless otherwise indicated and except as specified in piping system Sections, install the following types:
 - 1. Restraint-Control Devices (MSS Type 47): Where indicated to control piping movement.
 - 2. Spring Cushions (MSS Type 48): For light loads if vertical movement does not exceed 1-1/4 inches.
 - 3. Spring-Cushion Roll Hangers (MSS Type 49): For equipping Type 41, roll hanger with springs.
 - 4. Spring Sway Braces (MSS Type 50): To retard sway, shock, vibration, or thermal expansion in piping systems.
 - 5. Variable-Spring Hangers (MSS Type 51): Preset to indicated load and limit variability factor to 25 percent to allow expansion and contraction of piping system from hanger.
 - Variable-Spring Base Supports (MSS Type 52): Preset to indicated load and limit variability factor to 25 percent to allow expansion and contraction of piping system from base support.
 - 7. Variable-Spring Trapeze Hangers (MSS Type 53): Preset to indicated load and limit variability factor to 25 percent to allow expansion and contraction of piping system from trapeze support.
 - 8. Constant Supports: For critical piping stress and if necessary to avoid transfer of stress from one support to another support, critical terminal, or connected equipment. Include auxiliary stops for erection, hydrostatic test, and load-adjustment capability. These supports include the following types:
 - a. Horizontal (MSS Type 54): Mounted horizontally.
 - b. Vertical (MSS Type 55): Mounted vertically.
 - Trapeze (MSS Type 56): Two vertical-type supports and one trapeze member.
- O. Comply with MSS SP-69 for trapeze pipe-hanger selections and applications that are not specified in piping system Sections.
- P. Comply with MFMA-103 for metal framing system selections and applications that are not specified in piping system Sections.
- Q. Use mechanical-expansion anchors instead of building attachments where required in concrete construction.
- R. Use pipe positioning systems in pipe spaces behind plumbing fixtures to support supply and waste piping for plumbing fixtures.

END OF SECTION 220529

- 8
- E. Minimum Label Size: Length and width vary for required label content, but not less than 2-1/2 by 3/4 inch (64 by 19 mm).
- F. Minimum Letter Size: 1/4 inch (6.4 mm) for name of units if viewing distance is less than 24 inches (600 mm), 1/2 inch (13 mm) for viewing distances up to 72 inches (1830 mm), and proportionately larger lettering for greater viewing distances. Include secondary lettering two-thirds to three-fourths the size of principal lettering.
- G. Fasteners: Stainless-steel rivets or self-tapping screws.
- H. Adhesive: Contact-type permanent adhesive, compatible with label and with substrate.
- I. Label Content: Include caution and warning information, plus emergency notification instructions.

2.3 PIPE LABELS

- A. General Requirements for Manufactured Pipe Labels: Preprinted, color-coded, with lettering indicating service, and showing flow direction.
- B. Pretensioned Pipe Labels: Precoiled, semirigid plastic formed to cover full circumference of pipe and to attach to pipe without fasteners or adhesive.
- C. Self-Adhesive Pipe Labels: Printed plastic with contact-type, permanent-adhesive backing.
- D. Pipe Label Contents: Include identification of piping service using same designations or abbreviations as used on Drawings, pipe size, and an arrow indicating flow direction.
 - 1. Flow-Direction Arrows: Integral with piping system service lettering to accommodate both directions, or as separate unit on each pipe label to indicate flow direction.
 - 2. Lettering Size: At least 1-1/2 inches (38 mm)high.

PART 3 - EXECUTION

3.1 PREPARATION

A. Clean piping and equipment surfaces of substances that could impair bond of identification devices, including dirt, oil, grease, release agents, and incompatible primers, paints, and encapsulants.

3.2 EQUIPMENT LABEL INSTALLATION

- A. Install or permanently fasten labels on each major item of mechanical equipment.
- B. Locate equipment labels where accessible and visible.

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3.3 PIPE LABEL INSTALLATION

- A. Locate pipe labels where piping is exposed or above accessible ceilings in finished spaces; machine rooms; accessible maintenance spaces such as shafts, tunnels, and plenums; and exterior exposed locations as follows:
 - 1. Near each valve and control device.
 - 2. Near each branch connection, excluding short takeoffs for fixtures and terminal units. Where flow pattern is not obvious, mark each pipe at branch.
 - 3. Near penetrations through walls, floors, ceilings, and inaccessible enclosures.
 - 4. At access doors, manholes, and similar access points that permit view of concealed piping.
 - 5. Near major equipment items and other points of origination and termination.
 - 6. Spaced at maximum intervals of 50 feet (15 m) along each run. Reduce intervals to 25 feet (7.6 m) in areas of congested piping and equipment.
 - 7. On piping above removable acoustical ceilings. Omit intermediately spaced labels.

END OF SECTION 220553

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SECTION 22 13 16 - SANITARY WASTE AND VENT PIPING

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. Section Includes:
 - 1. Pipe, tube, and fittings.
 - 2. Specialty pipe fittings.
 - 3. Encasement for underground metal piping.

1.3 PERFORMANCE REQUIREMENTS

- A. Components and installation shall be capable of withstanding the following minimum working pressure unless otherwise indicated:
 - 1. Soil, Waste, and Vent Piping: 10-foot head of water (30 kPa).

1.4 ACTION SUBMITTALS

A. Product Data: For each type of product indicated.

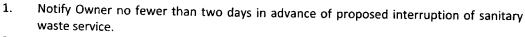
1.5 QUALITY ASSURANCE

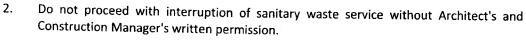
- A. Piping materials shall bear label, stamp, or other markings of specified testing agency.
- B. Comply with NSF/ANSI 14, "Plastics Piping Systems Components and Related Materials," for plastic piping components. Include marking with "NSF-dwv" for plastic drain, waste, and vent piping and "NSF-sewer" for plastic sewer piping.

1.6 PROJECT CONDITIONS

A. Interruption of Existing Sanitary Waste Service: Do not interrupt service to facilities occupied by Owner or others unless permitted under the following conditions and then only after arranging to provide temporary service according to requirements indicated:

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PART 2 - PRODUCTS

2.1 PIPING MATERIALS

A. Comply with requirements in "Piping Schedule" Article for applications of pipe, tube, fitting materials, and joining methods for specific services, service locations, and pipe sizes.

2.2 HUB-AND-SPIGOT, CAST-IRON SOIL PIPE AND FITTINGS

- A. Pipe and Fittings: ASTM A 74, Service class(es).
- B. Gaskets: ASTM C 564, rubber.
- C. Calking Materials: ASTM B 29, pure lead and oakum or hemp fiber.

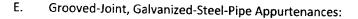
2.3 HUBLESS, CAST-IRON SOIL PIPE AND FITTINGS

- A. Pipe and Fittings: ASTM A 888 or CISPI 301.
- B. Sovent Stack Fittings: ASME B16.45 or ASSE 1043, hubless, cast-iron aerator and deaerator drainage fittings.
- C. CISPI, Hubless-Piping Couplings:
 - 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:
 - a. ANACO-Husky.
 - b. Fernco Inc.
 - c. Mission Rubber Company; a division of MCP Industries, Inc.
 - d. Tyler Pipe.
 - 2. Standards: ASTM C 1277 and CISPI 310.
 - Description: Stainless-steel corrugated shield with stainless-steel bands and tightening devices; and ASTM C 564, rubber sleeve with integral, center pipe stop.
- D. Heavy-Duty, Hubless-Piping Couplings:

- 1. 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:
 - a. ANACO-Husky.
 - b. Clamp-All Corp.
 - c. Mission Rubber Company; a division of MCP Industries, Inc.
 - d. Tyler Pipe.
- 2. Standards: ASTM C 1277 and ASTM C 1540.
- Description: Stainless-steel shield with stainless-steel bands and tightening devices; and ASTM C 564, rubber sleeve with integral, center pipe stop.
- E. Cast-Iron, Hubless-Piping Couplings:
 - 1. 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:
 - a. MG Piping Products Company.
 - 2. Standard: ASTM C 1277.
 - 3. Description: Two-piece ASTM A 48/A 48M, cast-iron housing; stainless-steel bolts and nuts; and ASTM C 564, rubber sleeve with integral, center pipe stop.

2.4 GALVANIZED-STEEL PIPE AND FITTINGS

- A. Galvanized-Steel Pipe: ASTM A 53/A 53M, Type E, Standard Weight class. Include square-cut-grooved or threaded ends matching joining method.
- B. Galvanized-Cast-Iron Drainage Fittings: ASME B16.12, threaded.
- C. Steel Pipe Pressure Fittings:
 - Galvanized-Steel Pipe Nipples: ASTM A 733, made of ASTM A 53/A 53M or ASTM A 106/A 106M, Schedule 40, seamless steel pipe. Include ends matching joining method.
 - 2. Malleable-Iron Unions: ASME B16.39; Class 150; hexagonal-stock body with ball-and-socket, metal-to-metal, bronze seating surface; and female threaded ends.
 - Galvanized-Gray-Iron, Threaded Fittings: ASME B16.4, Class 125, standard pattern.
- D. Cast-Iron Flanges: ASME B16.1, Class 125.
 - 1. Flange Gasket Materials: ASME B16.21, full-face, flat, nonmetallic, asbestos-free, 1/8-inch (3.2-mm) maximum thickness unless thickness or specific material is indicated.
 - 2. Flange Bolts and Nuts: ASME B18.2.1, carbon steel unless otherwise indicated.



- 1. 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:
 - a. Anvil International; a subsidiary of Mueller Water Products, Inc.
 - b. Shurjoint Piping Products.
 - c. Victaulic Company.
- Galvanized, Grooved-End Fittings for Galvanized-Steel Piping: ASTM A 536 ductile-iron castings, ASTM A 47/A 47M malleable-iron castings, ASTM A 234/A 234M forged steel fittings, or ASTM A 106/A 106M steel pipes with dimensions matching ASTM A 53/A 53M steel pipe, and complying with AWWA C606 for grooved ends.
- Grooved Mechanical Couplings for Galvanized-Steel Piping: ASTM F 1476, Type I. Include ferrous housing sections with continuous curved keys; EPDM-rubber gasket suitable for hot and cold water; and bolts and nuts.

2.5 SPECIALTY PIPE FITTINGS

A. Transition Couplings:

- General Requirements: Fitting or device for joining piping with small differences in OD's
 or of different materials. Include end connections same size as and compatible with
 pipes to be joined.
- 2. Fitting-Type Transition Couplings: Manufactured piping coupling or specified piping system fitting.
- 3. Unshielded, Nonpressure Transition Couplings:
 - 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) Fernco Inc.
 - 2) Mission Rubber Company; a division of MCP Industries, Inc.
 - 3) Plastic Oddities; a division of Diverse Corporate Technologies, Inc.
 - b. Standard: ASTM C 1173.
 - c. Description: Elastomeric, sleeve-type, reducing or transition pattern. Include shear ring and corrosion-resistant-metal tension band and tightening mechanism on each end.
 - d. Sleeve Materials:
 - 1) For Cast-Iron Soil Pipes: ASTM C 564, rubber.
 - 2) For Plastic Pipes: ASTM F 477, elastomeric seal or ASTM D 5926, PVC.
 - 3) For Dissimilar Pipes: ASTM D 5926, PVC or other material compatible with pipe materials being joined.

- Shielded, Nonpressure Transition Couplings:
 - 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) Cascade Waterworks Mfg. Co.
 - 2) Mission Rubber Company; a division of MCP Industries, Inc.
 - b. Standard: ASTM C 1460.
 - c. Description: Elastomeric or rubber sleeve with full-length, corrosion-resistant outer shield and corrosion-resistant-metal tension band and tightening mechanism on each end.
- 5. Pressure Transition Couplings:
 - 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) Cascade Waterworks Mfg. Co.
 - 2) Dresser, Inc.
 - 3) The Ford Meter Box Company, Inc.
 - 4) Viking Johnson.
 - b. Standard: AWWA C219.
 - c. Description: Metal, sleeve-type same size as, with pressure rating at least equal to, and ends compatible with, pipes to be joined.
 - d. Center-Sleeve Material: Manufacturer's standard.
 - e. Gasket Material: Natural or synthetic rubber.
 - f. Metal Component Finish: Corrosion-resistant coating or material.
- B. Dielectric Fittings:
 - 1. General Requirements: Assembly of copper alloy and ferrous materials with separating nonconductive insulating material. Include end connections compatible with pipes to be joined.
 - 2. Dielectric Unions:
 - 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) Watts Regulator Co.; a division of Watts Water Technologies, Inc.
 - 2) Wilkins; a Zurn company.
 - b. Description:

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- 2) Pressure Rating: [125 psig minimum at 180 deg F] [150 psig] [250 psig].
- 3) End Connections: Solder-joint copper alloy and threaded ferrous.

3. Dielectric Flanges:

- 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) Watts Regulator Co.; a division of Watts Water Technologies, Inc.
 - 2) Wilkins; a Zurn company.

b. Description:

- 1) Standard: ASSE 1079.
- 2) Factory-fabricated, bolted, companion-flange assembly.
- 3) Pressure Rating: [125 psig minimum at 180 deg F] [150 psig] [175 psig] [300 psig].
- 4) End Connections: Solder-joint copper alloy and threaded ferrous; threaded solder-joint copper alloy and threaded ferrous.

4. Dielectric-Flange Insulating Kits:

- 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) Advance Products & Systems, Inc.
 - 2) Central Plastics Company.
 - 3) Pipeline Seal and Insulator, Inc.

b. Description:

- 1) Nonconducting materials for field assembly of companion flanges.
- 2) Pressure Rating: 150 psig
- 3) Gasket: Neoprene or phenolic.
- 4) Bolt Sleeves: Phenolic or polyethylene.
- 5) Washers: Phenolic with steel backing washers.

5. Dielectric Nipples:

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:

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- 1) Grinnell Mechanical Products.
- 2) Precision Plumbing Products, Inc.
- 3) Victaulic Company.

b. Description:

- 1) Standard: IAPMO PS 66
- 2) Electroplated steel nipple.
- 3) Pressure Rating: 300 psig at 225 deg F.
- 4) End Connections: Male threaded or grooved.
- 5) Lining: Inert and noncorrosive, propylene.

2.6 ENCASEMENT FOR UNDERGROUND METAL PIPING

- A. Standard: ASTM A 674 or AWWA C105/A 21.5.
- B. Material: Linear low-density polyethylene film of 0.008-inch or high-density, cross-laminated polyethylene film of 0.004-inch minimum thickness.
- C. Form: Sheet or tube.
- D. Color: Black or natural.

PART 3 - EXECUTION

3.1 PIPING INSTALLATION

- A. Drawing plans, schematics, and diagrams indicate general location and arrangement of piping systems. Indicated locations and arrangements were used to size pipe and calculate friction loss, expansion, pump sizing, and other design considerations. Install piping as indicated unless deviations to layout are approved on coordination drawings.
- B. Install piping in concealed locations unless otherwise indicated and except in equipment rooms and service areas.
- C. Install piping indicated to be exposed and piping in equipment rooms and service areas at right angles or parallel to building walls. Diagonal runs are prohibited unless specifically indicated otherwise.
- D. Install piping above accessible ceilings to allow sufficient space for ceiling panel removal.
- E. Install piping to permit valve servicing.
- F. Install piping at indicated slopes.
- G. Install piping free of sags and bends.

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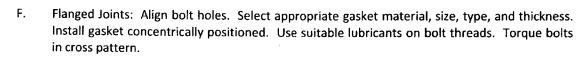
- H. Install fittings for changes in direction and branch connections.
- Install piping to allow application of insulation.
- J. Make changes in direction for soil and waste drainage and vent piping using appropriate branches, bends, and long-sweep bends. Sanitary tees and short-sweep 1/4 bends may be used on vertical stacks if change in direction of flow is from horizontal to vertical. Use long-turn, double Y-branch and 1/8-bend fittings if two fixtures are installed back to back or side by side with common drain pipe. Straight tees, elbows, and crosses may be used on vent lines. Do not change direction of flow more than 90 degrees. Use proper size of standard increasers and reducers if pipes of different sizes are connected. Reducing size of drainage piping in direction of flow is prohibited.
- K. Lay buried building drainage piping beginning at low point of each system. Install true to grades and alignment indicated, with unbroken continuity of invert. Place hub ends of piping upstream. Install required gaskets according to manufacturer's written instructions for use of lubricants, cements, and other installation requirements. Maintain swab in piping and pull past each joint as completed.
- L. Install soil and waste drainage and vent piping at the following minimum slopes unless otherwise indicated:
 - Building Sanitary Drain: 2 percent downward in direction of flow for piping NPS 3 and smaller; 1 percent downward in direction of flow for piping NPS 4 and larger.
 - 2. Horizontal Sanitary Drainage Piping: 2 percent downward in direction of flow.
 - 3. Vent Piping: 1 percent down toward vertical fixture vent or toward vent stack.
- M. Install cast-iron soil piping according to CISPI's "Cast Iron Soil Pipe and Fittings Handbook," Chapter IV, "Installation of Cast Iron Soil Pipe and Fittings."
 - Install encasement on underground piping according to ASTM A 674 or AWWA C105/A 21.5.
- N. Install steel piping according to applicable plumbing code.
- O. Install engineered soil and waste drainage and vent piping systems as follows:
 - 1. Combination Waste and Vent: Comply with standards of authorities having jurisdiction.
 - 2. Reduced-Size Venting: Comply with standards of authorities having jurisdiction.
- P. Install underground, ductile-iron, force-main piping according to AWWA C600. Install buried piping inside building between wall and floor penetrations and connection to sanitary sewer piping outside building with restrained joints. Anchor pipe to wall or floor. Install thrust-block supports at vertical and horizontal offsets.
 - Install encasement on piping according to ASTM A 674 or AWWA C105/A 21.5.
- Q. Install underground, copper, force-main tubing according to CDA's "Copper Tube Handbook."



- 1. Install encasement on piping according to ASTM A 674 or AWWA C105/A 21.5.
- R. Install force mains at elevations indicated.
- S. Plumbing Specialties:
 - 1. Install backwater valves in sanitary waster gravity-flow piping.
 - 2. Install cleanouts at grade and extend to where building sanitary drains connect to building sanitary sewers in sanitary drainage gravity-flow piping. Install cleanout fitting with closure plug inside the building in sanitary drainage force-main piping.
 - 3. Install drains in sanitary drainage gravity-flow piping.
- T. Do not enclose, cover, or put piping into operation until it is inspected and approved by authorities having jurisdiction.
- U. Install sleeves for piping penetrations of walls, ceilings, and floors.
- V. Install sleeve seals for piping penetrations of concrete walls and slabs.
- W. Install escutcheons for piping penetrations of walls, ceilings, and floors.

3.2 JOINT CONSTRUCTION

- A. Join hub-and-spigot, cast-iron soil piping with gasket joints according to CISPI's "Cast Iron Soil Pipe and Fittings Handbook" for compression joints.
- B. Join hub-and-spigot, cast-iron soil piping with calked joints according to CISPI's "Cast Iron Soil Pipe and Fittings Handbook" for lead-and-oakum calked joints.
- C. Join hubless, cast-iron soil piping according to CISPI 310 and CISPI's "Cast Iron Soil Pipe and Fittings Handbook" for hubless-piping coupling joints.
- D. Threaded Joints: Thread pipe with tapered pipe threads according to ASME B1.20.1. Cut threads full and clean using sharp dies. Ream threaded pipe ends to remove burrs and restore full ID. Join pipe fittings and valves as follows:
 - 1. Apply appropriate tape or thread compound to external pipe threads unless dry seal threading is specified.
 - Damaged Threads: Do not use pipe or pipe fittings with threads that are corroded or damaged. Do not use pipe sections that have cracked or open welds.
- E. Grooved Joints: Cut groove ends of pipe according to AWWA C606. Lubricate and install gasket over ends of pipes or pipe and fitting. Install coupling housing sections, over gasket, with keys seated in piping grooves. Install and tighten housing bolts.



3.3 SPECIALTY PIPE FITTING INSTALLATION

A. Transition Couplings:

- 1. Install transition couplings at joints of piping with small differences in OD's.
- 2. In Drainage Piping: Shielded, nonpressure transition couplings.
- 3. In Aboveground Force Main Piping: Fitting-type transition couplings.
- 4. In Underground Force Main Piping:
 - a. NPS 1-1/2 and Smaller: Fitting-type transition couplings.
 - b. NPS 2 and Larger: Pressure transition couplings.

B. Dielectric Fittings:

- 1. Install dielectric fittings in piping at connections of dissimilar metal piping and tubing.
- 2. Dielectric Fittings for NPS 2 and Smaller: Use dielectric nipples, unions.
- 3. Dielectric Fittings for NPS 2-1/2 to NPS 4: Use dielectric flange kits.
- 4. Dielectric Fittings for NPS 5 and Larger: Use dielectric flange kits.

3.4 VALVE INSTALLATION

A. General valve installation requirements are specified in Section 220523 "General-Duty Valves for Plumbing Piping."

B. Shutoff Valves:

- 1. Install shutoff valve on each sewage pump discharge.
- 2. Install gate or full-port ball valve for piping NPS 2 and smaller.
- 3. Install gate valve for piping NPS 2-1/2 and larger.
- Check Valves: Install swing check valve, between pump and shutoff valve, on each sewage pump discharge.
- D. Backwater Valves: Install backwater valves in piping subject to backflow.
 - 1. Horizontal Piping: Horizontal backwater valves. Use normally closed type unless otherwise indicated.
 - 2. Floor Drains: Drain outlet backwater valves unless drain has integral backwater valve.
 - 3. Install backwater valves in accessible locations.
 - 4. Comply with requirements for backwater valve as shown.

3.5 HANGER AND SUPPORT INSTALLATION

- A. Comply with requirements for seismic-restraint devices as shown.
- B. Comply with requirements for pipe hanger and support devices and installation specified in Section 220529 "Hangers and Supports for Plumbing Piping and Equipment."
 - 1. Install carbon-steel pipe hangers for horizontal piping in noncorrosive environments.
 - 2. Install stainless-steel pipe hangers for horizontal piping in corrosive environments.
 - 3. Install carbon-steel pipe support clamps for vertical piping in noncorrosive environments.
 - 4. Install stainless-steel pipe support clamps for vertical piping in corrosive environments.
 - 5. Vertical Piping: MSS Type 8 or Type 42, clamps.
 - 6. Install individual, straight, horizontal piping runs:
 - a. 100 Feet and Less: MSS Type 1, adjustable, steel clevis hangers.
 - b. Longer Than 100 Feet: MSS Type 43, adjustable roller hangers.
 - c. Longer Than 100 Feet if Indicated: MSS Type 49, spring cushion rolls.
 - 7. Multiple, Straight, Horizontal Piping Runs 100 Feet or Longer: MSS Type 44, pipe rolls. Support pipe rolls on trapeze.
 - 8. Base of Vertical Piping: MSS Type 52, spring hangers.
- C. Support horizontal piping and tubing within 12 inches of each fitting valve, and coupling.
- D. Support vertical piping and tubing at base and at each floor.
- E. Rod diameter may be reduced one size for double-rod hangers, with 3/8-inch minimum rods.
- F. Install hangers for cast-iron soil piping with the following maximum horizontal spacing and minimum rod diameters:
 - 1. NPS 1-1/2 and NPS 2: 60 inches with 3/8-inch rod.
 - 2. NPS 3: 60 inches with 1/2-inch rod.
 - 3. NPS 4 and NPS 5: 60 inches with 5/8-inch rod.
 - 4. NPS 6 and NPS 8: 60 inches with 3/4-inch rod.
 - 5. NPS 10 and NPS 12: 60 inches with 7/8-inch rod.
 - 6. Spacing for 10-foot lengths may be increased to 10 feet. Spacing for fittings is limited to 60 inches.
- G. Install supports for vertical cast-iron soil piping every 15 feet.
- H. Install hangers for steel piping with the following maximum horizontal spacing and minimum rod diameters:
 - 1. NPS 1-1/4: 84 inches with 3/8-inch rod.
 - 2. NPS 1-1/2: 108 inches with 3/8-inch rod.
 - 3. NPS 2: 10 feet with 3/8-inch rod.

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- 4. NPS 2-1/2: 11 feet with 1/2-inch rod.
- 5. NPS 3: 12 feet with 1/2-inch rod.
- 6. NPS 4 and NPS 5: 12 feet with 5/8-inch rod.
- 7. NPS 6 and NPS 8: 12 feet with 3/4-inch rod.
- NPS 10 and NPS 12: 12 feet with 7/8-inch rod.
- Install supports for vertical steel piping every 15 feet (4.5 m).

3.6 CONNECTIONS

- A. Drawings indicate general arrangement of piping, fittings, and specialties.
- B. Connect soil and waste piping to exterior sanitary sewerage piping. Use transition fitting to join dissimilar piping materials.
- C. Connect drainage and vent piping to the following:
 - 1. Plumbing Fixtures: Connect drainage piping in sizes indicated, but not smaller than required by plumbing code.
 - 2. Plumbing Fixtures and Equipment: Connect atmospheric vent piping in sizes indicated, but not smaller than required by authorities having jurisdiction.
 - 3. Plumbing Specialties: Connect drainage and vent piping in sizes indicated, but not smaller than required by plumbing code.
 - 4. Install test tees (wall cleanouts) in conductors near floor and floor cleanouts with cover flush with floor.
 - Equipment: Connect drainage piping as indicated. Provide shutoff valve if indicated and union for each connection. Use flanges instead of unions for connections NPS 2-1/2 (DN 65) and larger.
- D. Connect force-main piping to the following:
 - 1. Sanitary Sewer: To exterior force main.
 - 2. Sewage Pump: To sewage pump discharge.
- E. Where installing piping adjacent to equipment, allow space for service and maintenance of equipment.
- F. Make connections according to the following unless otherwise indicated:
 - 1. Install unions, in piping NPS 2 and smaller, adjacent to each valve and at final connection to each piece of equipment.
 - 2. Install flanges, in piping NPS 2-1/2 and larger, adjacent to flanged valves and at final connection to each piece of equipment.

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3.7 IDENTIFICATION

A. Identify exposed sanitary waste and vent piping. Comply with requirements for identification specified in Section 220553 "Identification for Plumbing Piping and Equipment."

3.8 FIELD QUALITY CONTROL

- A. During installation, notify authorities having jurisdiction at least 24 hours before inspection must be made. Perform tests specified below in presence of authorities having jurisdiction.
 - 1. Roughing-in Inspection: Arrange for inspection of piping before concealing or closing-in after roughing-in and before setting fixtures.
 - 2. Final Inspection: Arrange for final inspection by authorities having jurisdiction to observe tests specified below and to ensure compliance with requirements.
- B. Reinspection: If authorities having jurisdiction find that piping will not pass test or inspection, make required corrections and arrange for reinspection.
- C. Reports: Prepare inspection reports and have them signed by authorities having jurisdiction.
- D. Test sanitary drainage and vent piping according to procedures of authorities having jurisdiction or, in absence of published procedures, as follows:
 - 1. Test for leaks and defects in new piping and parts of existing piping that have been altered, extended, or repaired. If testing is performed in segments, submit separate report for each test, complete with diagram of portion of piping tested.
 - Leave uncovered and unconcealed new, altered, extended, or replaced drainage and vent piping until it has been tested and approved. Expose work that was covered or concealed before it was tested.
 - 3. Roughing-in Plumbing Test Procedure: Test drainage and vent piping except outside leaders on completion of roughing-in. Close openings in piping system and fill with water to point of overflow, but not less than 10-foot head of water. From 15 minutes before inspection starts to completion of inspection, water level must not drop. Inspect joints for leaks.
 - 4. Finished Plumbing Test Procedure: After plumbing fixtures have been set and traps filled with water, test connections and prove they are gastight and watertight. Plug vent-stack openings on roof and building drains where they leave building. Introduce air into piping system equal to pressure of 1-inch wg. Use U-tube or manometer inserted in trap of water closet to measure this pressure. Air pressure must remain constant without introducing additional air throughout period of inspection. Inspect plumbing fixture connections for gas and water leaks.
 - 5. Repair leaks and defects with new materials and retest piping, or portion thereof, until satisfactory results are obtained.
 - 6. Prepare reports for tests and required corrective action.
- E. Test force-main piping according to procedures of authorities having jurisdiction or, in absence of published procedures, as follows:



- Leave uncovered and unconcealed new, altered, extended, or replaced force-main piping until it has been tested and approved. Expose work that was covered or concealed before it was tested.
- Cap and subject piping to static-water operating pressure, without exceeding pressure rating of piping system materials. Isolate test source and allow to stand for four hours. Leaks and loss in test pressure constitute defects that must be repaired.
- 3. Repair leaks and defects with new materials and retest piping, or portion thereof, until satisfactory results are obtained.
- 4. Prepare reports for tests and required corrective action.

3.9 CLEANING AND PROTECTION

- A. Clean interior of piping. Remove dirt and debris as work progresses.
- B. Protect drains during remainder of construction period to avoid clogging with dirt and debris and to prevent damage from traffic and construction work.
- C. Place plugs in ends of uncompleted piping at end of day and when work stops.

3.10 PIPING SCHEDULE

- A. Flanges and unions may be used on aboveground pressure piping unless otherwise indicated.
- B. Aboveground, soil and waste piping NPS 4 shall be any of the following:
 - 1. Service class, cast-iron soil pipe and fittings; gaskets; and gasketed joints.
 - 2. Hubless, cast-iron soil pipe and fittings hubless-piping couplings; and coupled joints.
 - 3. Dissimilar Pipe-Material Couplings: Shielded, nonpressure transition couplings.
- C. Aboveground, soil and waste piping NPS 5 and larger shall be any of the following:
 - Service class, cast-iron soil pipe and fittings; gaskets; and gasketed joints.
 - 2. Hubless, cast-iron soil pipe and fittings and sovent stack fittings hubless-piping couplings; and coupled joints.
- D. Aboveground, vent piping NPS 4 and smaller shall be any of the following:
 - 1. Service class, cast-iron soil pipe and fittings; gaskets; and gasketed joints.
 - 2. Hubless, cast-iron soil pipe and fittings; CISPI heavy-duty hubless-piping couplings; and coupled joints.
 - Dissimilar Pipe-Material Couplings: Shielded, nonpressure transition couplings.
- E. Aboveground, vent piping NPS 5 and larger shall be any of the following:
 - 1. Service class, cast-iron soil pipe and fittings; gaskets; and gasketed joints.

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- 2. Hubless, cast-iron soil pipe and fittings; CISPI heavy-duty hubless-piping couplings; and coupled joints.
- F. Underground, soil, waste, and vent piping NPS 4 and smaller shall be any of the following:
 - 1. Service class, cast-iron soil piping; gaskets; and gasketed calking materials; and calked joints.
 - 2. Hubless, cast-iron soil pipe and fittings; cast-iron hubless-piping couplings; and coupled joints.
 - 3. Dissimilar Pipe-Material Couplings: Shielded, nonpressure transition couplings.
- G. Underground, soil and waste piping NPS 5 and larger shall be any of the following:
 - 1. Service class, cast-iron soil piping; gaskets; and gasketed joints.
 - 2. Hubless, cast-iron soil pipe and fittings; cast-iron hubless-piping couplings; coupled joints.
 - 3. Dissimilar Pipe-Material Couplings: Shielded, nonpressure transition couplings.
- H. Aboveground sanitary-sewage force mains NPS 1-1/2 and NPS 2 shall be any of the following:
 - 1. Galvanized-steel pipe, pressure fittings, and threaded joints.
- l. Aboveground sanitary-sewage force mains NPS 2-1/2 to NPS 6 shall be any of the following:
 - 1. Galvanized-steel pipe, pressure fittings, and threaded joints.
 - 2. Grooved-end, galvanized-steel pipe; grooved-joint, galvanized-steel-pipe appurtenances; and grooved joints.

END OF SECTION 221316

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SECTION 22 14 29 - SUMP PUMPS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. Section Includes:

- 1. Submersible sump pumps.
- 2. Wet-pit-volute sump pumps.
- 3. Sump-pump basins and basin covers.
- Packaged drainage-pump units.

B. Related Section:

1. Section 221316 "Sanitary waste and Vent Piping".

1.3 ACTION SUBMITTALS

- A. Product Data: For each type of product indicated.
 - 1. Equipment Cuts of each pump, Indicating parts and materials.
 - 2. Motor data.
 - 3. Cuts of each control panel and components.
- B. Wiring Diagrams: For power, signal, and control wiring.

1.4 CLOSEOUT SUBMITTALS

A. Operation and Maintenance Data: For pumps and controls, to include in operation and maintenance manuals.

1.5 QUALITY ASSURANCE

- A. Electrical Components, Devices, and Accessories: Listed and labeled as defined in NFPA 70, by a qualified testing agency, and marked for intended location and application.
- B. UL Compliance: Comply with UL 778 for motor-operated water pumps.

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1.6 DELIVERY, STORAGE, AND HANDLING

- A. Retain shipping flange protective covers and protective coatings during storage.
- B. Protect bearings and couplings against damage.
- C. Comply with pump manufacturer's written rigging instructions for handling.

PART 2 - PRODUCTS

2.1 SUBMERSIBLE SUMP PUMPS

- A. Submersible, Fixed-Position, Single-Seal Sump Pumps:
 - 1. Manufacturers: Subject to compliance with requirements, provide products by one of the following.
 - Basis-of-Design Product: Subject to compliance with requirements, provide Sump Pump model "Stancor SE-50" or comparable product by one of the following:
 - a. Weil Pump Company, Inc.
 - b. Zoeller Company or approved equal
 - 3. Description: Factory-assembled and -tested sump-pump unit.
 - 4. Pump Type: Submersible, end-suction, single-stage, close-coupled, overhung-impeller, centrifugal sump pump as defined in HI 1.1-1.2 and HI 1.3.
 - 5. Pump Casing: Cast iron, with strainer inlet, legs that elevate pump to permit flow into impeller, and vertical discharge for piping connection.
 - 6. Impeller: Statically and dynamically balanced, ASTM A 48/A 48M, Class No. 25 A cast iron design for clear wastewater handling, and keyed and secured to shaft.
 - 7. Pump and Motor Shaft: Stainless steel or steel, with factory-sealed, grease-lubricated ball bearings.
 - 8. Seal: Mechanical.
 - 9. Motor: Hermetically sealed capacitor-start type; with built-in overload protection; lifting eye or lug; and three-conductor, waterproof power cable of length required and with grounding plug and cable-sealing assembly for connection at pump.

10. Controls:

- a. Enclosure: NEMA 250, Type 4X.
- b. Switch Type: Pedestal-mounted float switch with float rods and rod buttons.
- c. Automatic Alternator: Start pumps on successive cycles and start multiple pumps if one cannot handle load.
- d. Float Guides: Pipe or other restraint for floats and rods in basins of depth greater than 60 inches (1500 mm).
- e. High-Water Alarm: Cover-mounted, compression-probe alarm, with electric bell; 120-V ac, with transformer and contacts for remote alarm bell.

11. Controls:

- a. Enclosure: NEMA 250, Type 4X.
- b. Switch Type: Mechanical-float type, in NEMA 250, Type 6 enclosures with mounting rod and electric cables.
- c. Automatic Alternator: Start pumps on successive cycles and start multiple pumps if one cannot handle load.
- d. High-Water Alarm: Rod-mounted, NEMA 250, Type 6 enclosure with mechanicalfloat, switch matching control and electric bell; 120-V ac, with transformer and contacts for remote alarm bell.

12. Control-Interface Features:

- a. Remote Alarm Contacts: For remote alarm interface.
- b. Building Automation System Interface: Auxiliary contacts in pump controls for interface to building automation system and capable of providing the following:
 - 1) On-off status of pump.
 - 2) Alarm status.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine roughing-in for plumbing piping to verify actual locations of storm drainage piping connections before sump pump installation.

3.2 INSTALLATION

Pump Installation Standards: Comply with HI 1.4 for installation of sump pumps.

3.3 CONNECTIONS

A. Install piping adjacent to equipment to allow service and maintenance.

3.4 FIELD QUALITY CONTROL

- A. Manufacturer's Field Service: Engage a factory-authorized service representative to inspect, test, and adjust components, assemblies, and equipment installations, including connections.
- B. Perform tests and inspections.

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 Manufacturer's Field Service: Engage a factory-authorized service representative to inspect components, assemblies, and equipment installations, including connections, and to assist in testing.

C. Tests and Inspections:

- 1. Perform each visual and mechanical inspection.
- 2. Leak Test: After installation, charge system and test for leaks. Repair leaks and retest until no leaks exist.
- 3. Operational Test: After electrical circuitry has been energized, start units to confirm proper motor rotation and unit operation.
- 4. Test and adjust controls and safeties. Replace damaged and malfunctioning controls and equipment.
- D. Pumps and controls will be considered defective if they do not pass tests and inspections.
- E. Prepare test and inspection reports.

3.5 INSTRUCTION AND START UP:

- A. The Contractor shall provide instruction and startup support for all sump pump systems. Startup services shall include not less than two (2) hours per sump pump installation, and instruction shall include not less than three (3) sessions of two (2) hours each to accommodate plant personnel.
- B. Adjust pumps to function smoothly, and lubricate as recommended by manufacturer.
- C. Adjust control set points.

3.6 DEMONSTRATION

A. Engage a factory-authorized service representative to instruct Owner's maintenance personnel to adjust, operate, and maintain controls and pumps.

END OF SECTION 221429

SUMP PUMPS



PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. Section includes general requirements for single-phase and polyphase, general-purpose, horizontal, small and medium, squirrel-cage induction motors for use on ac power systems up to 600 V and installed at equipment manufacturer's factory or shipped separately by equipment manufacturer for field installation.

1.3 COORDINATION

- A. Coordinate features of motors, installed units, and accessory devices to be compatible with the following:
 - 1. Motor controllers.
 - 2. Torque, speed, and horsepower requirements of the load.
 - Ratings and characteristics of supply circuit and required control sequence.
 - 4. Ambient and environmental conditions of installation location.

PART 2 - PRODUCTS

2.1 GENERAL MOTOR REQUIREMENTS

A. Comply with NEMA MG 1 unless otherwise indicated.

2.2 MOTOR CHARACTERISTICS

- A. Duty: Continuous duty at ambient temperature of 40 deg C and at altitude of 3300 feet above sea level.
- B. Capacity and Torque Characteristics: Sufficient to start, accelerate, and operate connected loads at designated speeds, at installed altitude and environment, with indicated operating sequence, and without exceeding nameplate ratings or considering service factor.



2.3 POLYPHASE MOTORS

- A. Description: NEMA MG 1, Design B, medium induction motor.
- B. Efficiency: Premium efficient, as defined in NEMA MG 1.
- C. Service Factor: 1.15.
- D. Multispeed Motors: Variable torque.
 - 1. For motors with 2:1 speed ratio, consequent pole, single winding.
 - 2. For motors with other than 2:1 speed ratio, separate winding for each speed.
- E. Rotor: Random-wound, squirrel cage.
- F. Bearings: Regreasable, shielded, antifriction ball bearings suitable for radial and thrust loading.
- G. Temperature Rise: Class®B.
- H. Insulation: Class F.
- I. Code Letter Designation:
 - 1. Motors 15 HP and Larger: NEMA starting Code F or Code G.
 - 2. Motors Smaller than 15 HP: Manufacturer's standard starting characteristic.

2.4 POLYPHASE MOTORS WITH ADDITIONAL REQUIREMENTS

- A. Motors Used with Variable Frequency Controllers:
 - Windings: Copper magnet wire with moisture-resistant insulation varnish, designed and tested to resist transient spikes, high frequencies, and short time rise pulses produced by pulse-width modulated inverters.
 - 2. Premium-Efficient Motors: Class B temperature rise; Class F insulation.
 - 3. Inverter-Duty Motors: Class F temperature rise; Class H insulation.
 - Thermal Protection: Comply with NEMA MG 1 requirements for thermally protected motors.

2.5 SINGLE-PHASE MOTORS

- A. Motors larger than 1/20 hp shall be one of the following, to suit starting torque and requirements of specific motor application:
 - 1. Permanent-split capacitor.
 - 2. Split phase.
 - 3. Capacitor start, inductor run.

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- 4. Capacitor start, capacitor run.
- B. Multispeed Motors: Variable-torque, permanent-split-capacitor type.
- C. Bearings: Prelubricated, antifriction ball bearings or sleeve bearings suitable for radial and thrust loading.
- D. Motors 1/20 HP and Smaller: Shaded-pole type.
- E. Thermal Protection: Internal protection to automatically open power supply circuit to motor when winding temperature exceeds a safe value calibrated to temperature rating of motor insulation. Thermal-protection device shall automatically reset when motor temperature returns to normal range.

PART 3 - EXECUTION (Not Applicable)

END OF SECTION 230513

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SECTION 23 05 17 - SLEEVES AND SLEEVE SEALS FOR HVAC PIPING

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. Section Includes:

- 1. Sleeves.
- 2. Stack-sleeve fittings.
- 3. Sleeve-seal systems.
- 4. Grout.

1.3 ACTION SUBMITTALS

A. Product Data: For each type of product indicated.

PART 2 - PRODUCTS

2.1 SLEEVES

A. Galvanized-Steel-Pipe Sleeves: ASTM A 53/A 53M, Type E, Grade B, Schedule 40, zinc coated, with plain ends.

2.2 STACK-SLEEVE FITTINGS

- A. Basis-of-Design Product: Subject to compliance with requirements, provide product indicated on Drawings.
- B. Description: Manufactured, EPDM rubber cone sleeve with integral clamping flange. Include clamping ring, bolts, and nuts for membrane flashing.

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- 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. Advance Products & Systems, Inc.
 - 2. CALPICO, Inc.
 - 3. Metraflex Company (The).
 - 4. Pipeline Seal and Insulator, Inc.
 - 5. Proco Products, Inc.
- B. Description: Modular sealing-element unit, designed for field assembly, for filling annular space between piping and sleeve.
 - Sealing Elements: EPDM-rubber interlocking links shaped to fit surface of pipe. Include type and number required for pipe material and size of pipe.
 - 2. Pressure Plates: Carbon steel.
 - 3. Connecting Bolts and Nuts: Carbon steel, with corrosion-resistant coating, of length required to secure pressure plates to sealing elements.

2.4 GROUT

- A. Standard: ASTM C 1107/C 1107M, Grade B, post-hardening and volume-adjusting, dry, hydraulic-cement grout.
- B. Characteristics: Nonshrink; recommended for interior and exterior applications.
- C. Design Mix: 5000-psi, 28-day compressive strength.
- D. Packaging: Premixed and factory packaged.

PART 3 - EXECUTION

3.1 SLEEVE INSTALLATION

- A. Install sleeves for piping passing through penetrations in floors, partitions, roofs, and walls.
- B. For sleeves that will have sleeve-seal system installed, select sleeves of size large enough to provide 2-inch annular clear space between piping and concrete slabs and walls.
- C. Install sleeves in concrete floors, concrete roof slabs, and concrete walls as new slabs and walls are constructed.
 - Cut sleeves to length for mounting flush with both surfaces.

SECTION 23 05 17 - SLEEVES AND SLEEVE SEALS FOR HVAC PIPING

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. Section Includes:
 - 1. Sleeves.
 - 2. Stack-sleeve fittings.
 - 3. Sleeve-seal systems.
 - 4. Grout.

1.3 ACTION SUBMITTALS

A. Product Data: For each type of product indicated.

PART 2 - PRODUCTS

2.1 SLEEVES

A. Galvanized-Steel-Pipe Sleeves: ASTM A 53/A 53M, Type E, Grade B, Schedule 40, zinc coated, with plain ends.

2.2 STACK-SLEEVE FITTINGS

- A. Basis-of-Design Product: Subject to compliance with requirements, provide product indicated on Drawings.
- B. Description: Manufactured, EPDM rubber cone sleeve with integral clamping flange. Include clamping ring, bolts, and nuts for membrane flashing.



2.3 SLEEVE-SEAL SYSTEMS

- 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. Advance Products & Systems, Inc.
 - 2. CALPICO, Inc.
 - 3. Metraflex Company (The).
 - 4. Pipeline Seal and Insulator, Inc.
 - 5. Proco Products, Inc.
- B. Description: Modular sealing-element unit, designed for field assembly, for filling annular space between piping and sleeve.
 - 1. Sealing Elements: EPDM-rubber interlocking links shaped to fit surface of pipe. Include type and number required for pipe material and size of pipe.
 - 2. Pressure Plates: Carbon steel.
 - 3. Connecting Bolts and Nuts: Carbon steel, with corrosion-resistant coating, of length required to secure pressure plates to sealing elements.

2.4 GROUT

- A. Standard: ASTM C 1107/C 1107M, Grade B, post-hardening and volume-adjusting, dry, hydraulic-cement grout.
- B. Characteristics: Nonshrink; recommended for interior and exterior applications.
- C. Design Mix: 5000-psi, 28-day compressive strength.
- D. Packaging: Premixed and factory packaged.

PART 3 - EXECUTION

3.1 SLEEVE INSTALLATION

- A. Install sleeves for piping passing through penetrations in floors, partitions, roofs, and walls.
- B. For sleeves that will have sleeve-seal system installed, select sleeves of size large enough to provide 2-inch annular clear space between piping and concrete slabs and walls.
- C. Install sleeves in concrete floors, concrete roof slabs, and concrete walls as new slabs and walls are constructed.
 - 1. Cut sleeves to length for mounting flush with both surfaces.

- Exception: Extend sleeves installed in floors of mechanical equipment areas or other wet areas 2 inches above finished floor level.
- 2. Using grout, seal the space outside of sleeves in slabs and walls without sleeve-seal system.
- D. Install sleeves for pipes passing through interior partitions.
 - 1. Cut sleeves to length for mounting flush with both surfaces.
 - 2. Seal annular space between sleeve and piping or piping insulation; use joint sealants appropriate for size, depth, and location of joint. Comply with requirements for sealants specified in Section 079200 "Joint Sealants."
- E. Fire-Barrier Penetrations: Maintain indicated fire rating of walls, partitions, ceilings, and floors at pipe penetrations. Seal pipe penetrations with firestop materials. Comply with requirements for firestopping specified in Section 078413 "Penetration Firestopping."

3.2 STACK-SLEEVE-FITTING INSTALLATION

- A. Install stack-sleeve fittings in new slabs as slabs are constructed.
 - 1. Install fittings that are large enough to provide 1/4-inch annular clear space between sleeve and pipe or pipe insulation.
 - 2. Secure flashing between clamping flanges for pipes penetrating floors with membrane waterproofing. Comply with requirements for flashing as shown.
 - 3. Using grout, seal the space around outside of stack-sleeve fittings.
- B. Fire-Barrier Penetrations: Maintain indicated fire rating of floors at pipe penetrations. Seal pipe penetrations with firestop materials. Comply with requirements for firestopping specified in Section 078413 "Penetration Firestopping."

3.3 SLEEVE-SEAL-SYSTEM INSTALLATION

- A. Install sleeve-seal systems in sleeves in exterior concrete walls and slabs-on-grade at service piping entries into building.
- B. Select type, size, and number of sealing elements required for piping material and size and for sleeve ID or hole size. Position piping in center of sleeve. Center piping in penetration, assemble sleeve-seal system components, and install in annular space between piping and sleeve. Tighten bolts against pressure plates that cause sealing elements to expand and make a watertight seal.

3.4 SLEEVE-SEAL-FITTING INSTALLATION

A. Install sleeve-seal fittings in new walls and slabs as they are constructed.

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- B. Assemble fitting components of length to be flush with both surfaces of concrete slabs and walls. Position waterstop flange to be centered in concrete slab or wall.
- Secure nailing flanges to concrete forms.
- D. Using grout, seal the space around outside of sleeve-seal fittings.

3.5 SLEEVE AND SLEEVE-SEAL SCHEDULE

- A. Use sleeves and sleeve seals for the following piping-penetration applications:
 - 1. Exterior Concrete Walls above Grade:
 - All pipe sizes shall utilize galvanized-steel-pipe sleeves.
 - 2. Concrete Slabs above Grade:
 - a. All pipe sizes shall utilize galvanized-steel-pipe sleeves.
 - 3. Interior Partitions:
 - a. All pipe sizes shall utilize galvanized-steel-pipe sleeves.

END OF SECTION 230517

SECTION 23 05 23 - GENERAL-DUTY VALVES FOR HVAC PIPING

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. Section Includes:
 - 1. Bronze ball valves.
 - 2. Bronze gate valves.
 - 3. Bronze globe valves.
- B. Related Sections:
 - Section 230553 "Identification for HVAC Piping and Equipment" for valve tags and schedules.

1.3 DEFINITIONS

- A. CWP: Cold working pressure.
- B. NRS: Nonrising stem.
- C. SWP: Steam working pressure.

1.4 ACTION SUBMITTALS

A. Product Data: For each type of valve indicated.

1.5 QUALITY ASSURANCE

- A. Source Limitations for Valves: Obtain each type of valve from single source from single manufacturer.
- B. ASME Compliance:
 - ASME B16.10 and ASME B16.34 for ferrous valve dimensions and design criteria.

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- 2. ASME B31.1 for power piping valves.
- ASME B31.9 for building services piping valves.

1.6 DELIVERY, STORAGE, AND HANDLING

- A. Prepare valves for shipping as follows:
 - 1. Protect internal parts against rust and corrosion.
 - 2. Protect threads, flange faces, grooves, and weld ends.
 - Set gate and globe valves closed to prevent rattling.
 - 4. Set ball open to minimize exposure of functional surfaces.
- B. Use the following precautions during storage:
 - 1. Maintain valve end protection.
 - 2. Store valves indoors and maintain at higher than ambient dew point temperature. If outdoor storage is necessary, store valves off the ground in watertight enclosures.
- C. Use sling to handle large valves; rig sling to avoid damage to exposed parts. Do not use handwheels or stems as lifting or rigging points.

PART 2 - PRODUCTS

2.1 GENERAL REQUIREMENTS FOR VALVES

- A. Refer to HVAC valve schedule articles for applications of valves.
- B. Valve Pressure and Temperature Ratings: Not less than indicated and as required for system pressures and temperatures.
- C. Valve Sizes: Same as upstream piping unless otherwise indicated.
- D. Valve Actuator Types:
 - Handlever: For quarter-turn valves NPS 6 and smaller except plug valves.
- E. Valves in Insulated Piping: With 2-inch stem extensions and the following features:
 - 1. Gate Valves: With rising stem.
 - Ball Valves: With extended operating handle of non-thermal-conductive material, and protective sleeve that allows operation of valve without breaking the vapor seal or disturbing insulation.
- F. Valve-End Connections:
 - Solder Joint: With sockets according to ASME B16.18.

- a. Caution: Use solder with melting point below 840 deg F (454 deg C) for gate, and globe valves and below 421 deg F (216 deg C) for ball valves.
- 2. Threaded: With threads according to ASME B1.20.1.
- G. Valve Bypass and Drain Connections: MSS SP-45.

2.2 BRONZE BALL VALVES

- A. Two-Piece, Full-Port, Bronze Ball Valves with Bronze Trim:
 - Manufacturers: Subject to compliance with requirements, available manufacturers
 offering products that may be incorporated nto the Work include, but are not limited to,
 the following:
 - a. American Valve, Inc.
 - b. Conbraco Industries, Inc.; Apollo Valves.
 - c. Crane Co.; Crane Valve Group; Crane Valves.
 - d. Hammond Valve.
 - e. Lance Valves; a division of Advanced Thermal Systems, Inc.
 - f. Legend Valve.
 - g. Milwaukee Valve Company.
 - h. NIBCO INC.
 - i. Red-White Valve Corporation.
 - j. Watts Regulator Co.; a division of Watts Water Technologies, Inc.

2. Description:

- a. Standard: MSS SP-110.
- b. SWP Rating: 150 psig.
- c. CWP Rating: 600 psig.
- d. Body Design: Two piece.
- e. Body Material: Bronze.
- f. Ends: Threaded.
- g. Seats: PTFE or TFE.
- h. Stem: Bronze.
- i. Ball: Chrome-plated brass.
- j. Port: Full.

2.3 BRONZE GATE VALVES

- A. Class 125, NRS Bronze Gate Valves:
 - 1. 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:

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- b. Crane Co.; Crane Valve Group; Crane Valves.
- c. Crane Co.; Crane Valve Group; Jenkins Valves.
- d. Crane Co.; Crane Valve Group; Stockham Division.
- e. Hammond Valve.
- f. Kitz Corporation.
- g. Milwaukee Valve Company.
- h. NIBCO INC.
- i. Powell Valves.
- j. Red-White Valve Corporation.
- k. Watts Regulator Co.; a division of Watts Water Technologies, Inc.
- I. Zy-Tech Global Industries, Inc.

2. Description:

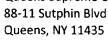
- a. Standard: MSS SP-80, Type 1.
- b. CWP Rating: 200 psig.
- c. Body Material: ASTM B 62, bronze with integral seat and screw-in bonnet.
- d. Ends: Threaded or solder joint.
- e. Stem: Bronze.
- f. Disc: Solid wedge; bronze.
- g. Packing: Asbestos free.

2.4 BRONZE GLOBE VALVES

- A. Class 125, Bronze Globe Valves with Bronze Disc:
 - 1. 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:
 - a. Crane Co.; Crane Valve Group; Crane Valves.
 - b. Crane Co.; Crane Valve Group; Stockham Division.
 - c. Hammond Valve.
 - d. Kitz Corporation.
 - e. Milwaukee Valve Company.
 - f. NIBCO INC.
 - g. Powell Valves.
 - h. Red-White Valve Corporation.
 - i. Watts Regulator Co.; a division of Watts Water Technologies, Inc.
 - Zy-Tech Global Industries, Inc.

2. Description:

- a. Standard: MSS SP-80, Type 1.
- b. CWP Rating: 200 psig.



- Body Material: ASTM B 62, bronze with integral seat and screw-in bonnet. C.
- d. Ends: Threaded or solder joint.
- Stem and Disc: Bronze. e.
- f. Packing: Asbestos free.

PART 3 - EXECUTION

3.1 **EXAMINATION**

- Α. Examine valve interior for cleanliness, freedom from foreign matter, and corrosion. Remove special packing materials, such as blocks, used to prevent disc movement during shipping and handling.
- В. Operate valves in positions from fully open to fully closed. Examine guides and seats made accessible by such operations.
- C. Examine threads on valve and mating pipe for form and cleanliness.
- D. Do not attempt to repair defective valves; replace with new valves.

3.2 **VALVE INSTALLATION**

- A. Install valves with unions or flanges at each piece of equipment arranged to allow service, maintenance, and equipment removal without system shutdown.
- В. Locate valves for easy access and provide separate support where necessary.
- C. Install valves in horizontal piping with stem at or above center of pipe.
- D. Install valves in position to allow full stem movement.

3.3 **ADJUSTING**

A. Adjust or replace valve packing after piping systems have been tested and put into service but before final adjusting and balancing. Replace valves if persistent leaking occurs.

3.4 GENERAL REQUIREMENTS FOR VALVE APPLICATIONS

- A. If valve applications are not indicated, use the following:
 - 1. Shutoff Service: Ball, or gate valves.
 - 2. Throttling Service except Steam: Globe or ball valves.

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- B. If valves with specified SWP classes or CWP ratings are not available, the same types of valves with higher SWP classes or CWP ratings may be substituted.
- C. Select valves, except wafer types, with the following end connections:
 - 1. For Copper Tubing, NPS 2 and Smaller: Threaded ends except where solder-joint valveend option is indicated in valve schedules below.
 - 2. For Copper Tubing, NPS 2-1/2 to NPS 4: Flanged ends except where threaded valve-end option is indicated in valve schedules below.
 - 3. For Copper Tubing, NPS 5 and Larger: Flanged ends.
 - 4. For Steel Piping, NPS 2 and Smaller: Threaded ends.

END OF SECTION 230523

SECTION 23 05 29 - HANGERS AND SUPPORTS FOR HVAC PIPING AND EQUIPMENT

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. Section Includes:

- 1. Metal pipe hangers and supports.
- 2. Trapeze pipe hangers.
- 3. Metal framing systems.
- 4. Thermal-hanger shield inserts.
- 5. Fastener systems.
- 6. Pipe stands.
- 7. Equipment supports.

B. Related Sections:

- Section 055000 "Metal Fabrications" for structural-steel shapes and plates for trapeze hangers for pipe and equipment supports.
- Section 230548 "Vibration and Seismic Controls for HVAC" for vibration isolation devices.
- 3. Section 233113 "Metal Ducts" for duct hangers and supports.

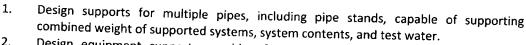
1.3 DEFINITIONS

A. MSS: Manufacturers Standardization Society of The Valve and Fittings Industry Inc.

1.4 PERFORMANCE REQUIREMENTS

- A. Design Criteria: Design trapeze pipe hangers and equipment supports, including comprehensive engineering analysis by a qualified professional engineer, using performance requirements and design criteria indicated.
- B. Structural Performance: Hangers and supports for HVAC piping and equipment shall withstand the effects of gravity loads and stresses within limits and under conditions indicated according to ASCE/SEI 7

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 Design equipment supports capable of supporting combined operating weight of supported equipment and connected systems and components.

3. Design seismic-restraint hangers and supports for piping and equipment and obtain approval from authorities having jurisdiction.

1.5 ACTION SUBMITTALS

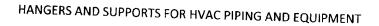
- A. Product Data: For each type of product indicated.
- B. Shop Drawings: Signed and sealed by a qualified professional engineer. Show fabrication and installation details and include calculations for the following; include Product Data for components:
 - Trapeze pipe hangers.
 - 2. Metal framing systems.
 - 3. Pipe stands.
 - 4. Equipment supports.
- C. Equipment Submittal: For trapeze hangers indicated to comply with performance requirements and design criteria, including analysis data signed and sealed by the qualified professional engineer responsible for their preparation.
 - 1. Detail fabrication and assembly of trapeze hangers.
 - Design Calculations: Calculate requirements for designing trapeze hangers.

1.6 INFORMATIONAL SUBMITTALS

A. Welding certificates.

1.7 QUALITY ASSURANCE

- A. Structural Steel Welding Qualifications: Qualify procedures and personnel according to AWS D1.1/D1.1M, "Structural Welding Code Steel."
- B. Pipe Welding Qualifications: Qualify procedures and operators according to ASME Boiler and Pressure Vessel Code.





2.1 METAL PIPE HANGERS AND SUPPORTS

A. Carbon-Steel Pipe Hangers and Supports:

- Description: MSS SP-58, Types 1 through 58, factory-fabricated components.
- 2. Galvanized Metallic Coatings: Pregalvanized or hot dipped.
- 3. Nonmetallic Coatings: Plastic coating, jacket, or liner.
- 4. Padded Hangers: Hanger with fiberglass or other pipe insulation pad or cushion to support bearing surface of piping.
- 5. Hanger Rods: Continuous-thread rod, nuts, and washer made of carbon steel.

B. Copper Pipe Hangers:

- 1. Description: MSS SP-58, Types 1 through 58, copper-coated-steel, factory-fabricated components.
- 2. Hanger Rods: Continuous-thread rod, nuts, and washer made of copper-coated steel.

2.2 TRAPEZE PIPE HANGERS

A. Description: MSS SP-69, Type 59, shop- or field-fabricated pipe-support assembly made from structural carbon-steel shapes with MSS SP-58 carbon-steel hanger rods, nuts, saddles, and U-bolts.

2.3 METAL FRAMING SYSTEMS

A. MFMA Manufacturer Metal Framing Systems:

- 1. 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:
 - a. Allied Tube & Conduit.
 - b. Cooper B-Line, Inc.
 - c. Flex-Strut Inc.
 - d. GS Metals Corp.
 - e. Thomas & Betts Corporation.
 - f. Unistrut Corporation; Tyco International, Ltd.
 - g. Wesanco, Inc.
- 2. Description: Shop- or field-fabricated pipe-support assembly for supporting multiple parallel pipes.
- 3. Standard: MFMA-4.
- 4. Channels: Continuous slotted steel channel with inturned lips.



- Channel Nuts: Formed or stamped steel nuts or other devices designed to fit into channel slot and, when tightened, prevent slipping along channel.
- 6. Hanger Rods: Continuous-thread rod, nuts, and washer made of carbon steel.
- 7. Metallic Coating: Hot-dipped galvanized

2.4 THERMAL-HANGER SHIELD INSERTS

- 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. Carpenter & Paterson, Inc.
 - 2. Clement Support Services.
 - 3. ERICO International Corporation.
 - 4. National Pipe Hanger Corporation.
 - 5. PHS Industries, Inc.
 - 6. Pipe Shields, Inc.; a subsidiary of Piping Technology & Products, Inc.
 - 7. Piping Technology & Products, Inc.
 - 8. Rilco Manufacturing Co., Inc.
 - 9. Value Engineered Products, Inc.
- B. Insulation-Insert Material for Cold Piping: ASTM C 552, Type II cellular glass with 100-psig or ASTM C 591, Type VI, Grade 1 polyisocyanurate with 125-psig minimum compressive strength and vapor barrier.
- C. Insulation-Insert Material for Hot Piping: Water-repellent treated, ASTM C 533, Type I calcium silicate with 100-psig or ASTM C 591, Type VI, Grade 1 polyisocyanurate with 125-psig minimum compressive strength.
- D. For Trapeze or Clamped Systems: Insert and shield shall cover entire circumference of pipe.
- E. For Clevis or Band Hangers: Insert and shield shall cover lower 180 degrees of pipe.
- F. Insert Length: Extend 2 inches beyond sheet metal shield for piping operating below ambient air temperature.

2.5 FASTENER SYSTEMS

- A. Powder-Actuated Fasteners: Threaded-steel stud, for use in hardened portland cement concrete with pull-out, tension, and shear capacities appropriate for supported loads and building materials where used.
- B. Mechanical-Expansion Anchors: Insert-wedge-type, zinc-coated steel anchors, for use in hardened portland cement concrete; with pull-out, tension, and shear capacities appropriate for supported loads and building materials where used.

2.6 PIPE STANDS

- A. General Requirements for Pipe Stands: Shop- or field-fabricated assemblies made of manufactured corrosion-resistant components to support roof-mounted piping.
- B. Compact Pipe Stand: One-piece plastic unit with integral-rod roller, pipe clamps, or V-shaped cradle to support pipe, for roof installation without membrane penetration.
- C. Low-Type, Single-Pipe Stand: One-piece stainless-steel base unit with plastic roller, for roof installation without membrane penetration.

D. High-Type, Single-Pipe Stand:

- 1. Description: Assembly of base, vertical and horizontal members, and pipe support, for roof installation without membrane penetration.
- 2. Base: Stainless steel.
- 3. Vertical Members: Two or more cadmium-plated-steel or stainless-steel, continuous-thread rods.
- 4. Horizontal Member: Cadmium-plated-steel or stainless-steel rod with plastic or stainless-steel, roller-type pipe support.

E. High-Type, Multiple-Pipe Stand:

- 1. Description: Assembly of bases, vertical and horizontal members, and pipe supports, for roof installation without membrane penetration.
- 2. Bases: One or more; plastic.
- 3. Vertical Members: Two or more protective-coated-steel channels.
- 4. Horizontal Member: Protective-coated-steel channel.
- 5. Pipe Supports: Galvanized-steel, clevis-type pipe hangers.
- F. Curb-Mounted-Type Pipe Stands: Shop- or field-fabricated pipe supports made from structural-steel shapes, continuous-thread rods, and rollers, for mounting on permanent stationary roof curb.

2.7 EQUIPMENT SUPPORTS

A. Description: Welded, shop- or field-fabricated equipment support made from structural carbon-steel shapes.

2.8 MISCELLANEOUS MATERIALS

- A. Structural Steel: ASTM A 36/A 36M, carbon-steel plates, shapes, and bars; black and galvanized.
- B. Grout: ASTM C 1107, factory-mixed and -packaged, dry, hydraulic-cement, nonshrink and nonmetallic grout; suitable for interior and exterior applications.



- 1. Properties: Nonstaining, noncorrosive, and nongaseous.
- 2. Design Mix: 5000-psi, 28-day compressive strength.

PART 3 - EXECUTION

3.1 HANGER AND SUPPORT INSTALLATION

- A. Metal Pipe-Hanger Installation: Comply with MSS SP-69 and MSS SP-89. Install hangers, supports, clamps, and attachments as required to properly support piping from the building structure.
- B. Metal Trapeze Pipe-Hanger Installation: Comply with MSS SP-69 and MSS SP-89. Arrange for grouping of parallel runs of horizontal piping, and support together on field-fabricated trapeze pipe hangers.
 - 1. Pipes of Various Sizes: Support together and space trapezes for smallest pipe size or install intermediate supports for smaller diameter pipes as specified for individual pipe hangers.
 - Field fabricate from ASTM A 36/A 36M, carbon-steel shapes selected for loads being supported. Weld steel according to AWS D1.1/D1.1M.
- C. Metal Framing System Installation: Arrange for grouping of parallel runs of piping, and support together on field-assembled metal framing systems.
- Thermal-Hanger Shield Installation: Install in pipe hanger or shield for insulated piping.

E. Fastener System Installation:

- Install powder-actuated fasteners for use in lightweight concrete or concrete slabs less than 4 inches thick in concrete after concrete is placed and completely cured. Use operators that are licensed by powder-actuated tool manufacturer. Install fasteners according to powder-actuated tool manufacturer's operating manual.
- Install mechanical-expansion anchors in concrete after concrete is placed and completely cured. Install fasteners according to manufacturer's written instructions.

F. Pipe Stand Installation:

- 1. Pipe Stand Types except Curb-Mounted Type: Assemble components and mount on smooth roof surface. Do not penetrate roof membrane.
- Curb-Mounted-Type Pipe Stands: Assemble components or fabricate pipe stand and mount on permanent, stationary roof curb. See Section 077200 "Roof Accessories" for curbs.
- G. Install hangers and supports complete with necessary attachments, inserts, bolts, rods, nuts, washers, and other accessories.

- H. Equipment Support Installation: Fabricate from welded-structural-steel shapes.
- I. Install hangers and supports to allow controlled thermal and seismic movement of piping systems, to permit freedom of movement between pipe anchors, and to facilitate action of expansion joints, expansion loops, expansion bends, and similar units.
- J. Install lateral bracing with pipe hangers and supports to prevent swaying.
- K. Install building attachments within concrete slabs or attach to structural steel. Install additional attachments at concentrated loads, including valves, flanges, and strainers, NPS 2-1/2 and larger and at changes in direction of piping. Install concrete inserts before concrete is placed; fasten inserts to forms and install reinforcing bars through openings at top of inserts.
- Load Distribution: Install hangers and supports so that piping live and dead loads and stresses from movement will not be transmitted to connected equipment.
- M. Pipe Slopes: Install hangers and supports to provide indicated pipe slopes and to not exceed maximum pipe deflections allowed by ASME B31.9 for building services piping.
- N. Insulated Piping:
 - 1. Attach clamps and spacers to piping.
 - a. Piping Operating above Ambient Air Temperature: Clamp may project through insulation.
 - b. Piping Operating below Ambient Air Temperature: Use thermal-hanger shield insert with clamp sized to match OD of insert.
 - Do not exceed pipe stress limits allowed by ASME B31.9 for building services piping.
 - 2. Install MSS SP-58, Type 39, protection saddles if insulation without vapor barrier is indicated. Fill interior voids with insulation that matches adjoining insulation.
 - Option: Thermal-hanger shield inserts may be used. Include steel weightdistribution plate for pipe NPS 4 and larger if pipe is installed on rollers.
 - 3. Install MSS SP-58, Type 40, protective shields on cold piping with vapor barrier. Shields shall span an arc of 180 degrees.
 - a. Option: Thermal-hanger shield inserts may be used. Include steel weight-distribution plate for pipe NPS 4 and larger if pipe is installed on rollers.
 - 4. Shield Dimensions for Pipe: Not less than the following:
 - a. NPS 1/4 to NPS 3-1/2: 12 inches long and 0.048 inch thick.
 - b. NPS 4: 12 inches long and 0.06 inch thick.
 - c. NPS 5 and NPS 6: 18 inches long and 0.06 inch thick.
 - d. NPS 8 to NPS 14: 24 inches long and 0.075 inch thick.

- 4. Steel Pipe Clamps (MSS Type 4): For suspension of cold and hot pipes NPS 1/2 to NPS 24 if little or no insulation is required.
- 5. Pipe Hangers (MSS Type 5): For suspension of pipes NPS 1/2 to NPS 4, to allow off-center closure for hanger installation before pipe erection.
- 6. Adjustable, Swivel Split- or Solid-Ring Hangers (MSS Type 6): For suspension of noninsulated, stationary pipes NPS 3/4 to NPS 8.
- 7. Adjustable, Steel Band Hangers (MSS Type 7): For suspension of noninsulated, stationary pipes NPS 1/2 to NPS 8.
- 8. Adjustable Band Hangers (MSS Type 9): For suspension of noninsulated, stationary pipes NPS 1/2 to NPS 8.
- 9. Adjustable, Swivel-Ring Band Hangers (MSS Type 10): For suspension of noninsulated, stationary pipes NPS 1/2 to NPS 8.
- 10. Split Pipe Ring with or without Turnbuckle Hangers (MSS Type 11): For suspension of noninsulated, stationary pipes NPS 3/8 to NPS 8.
- 11. Extension Hinged or Two-Bolt Split Pipe Clamps (MSS Type 12): For suspension of noninsulated, stationary pipes NPS 3/8 to NPS 3.
- 12. U-Bolts (MSS Type 24): For support of heavy pipes NPS 1/2 to NPS 30.
- 13. Clips (MSS Type 26): For support of insulated pipes not subject to expansion or contraction.
- 14. Pipe Saddle Supports (MSS Type 36): For support of pipes NPS 4 to NPS 36, with steel-pipe base stanchion support and cast-iron floor flange or carbon-steel plate.
- 15. Pipe Stanchion Saddles (MSS Type 37): For support of pipes NPS 4 to NPS 36, with steel-pipe base stanchion support and cast-iron floor flange or carbon-steel plate, and with U-bolt to retain pipe.
- 16. Adjustable Pipe Saddle Supports (MSS Type 38): For stanchion-type support for pipes NPS 2-1/2 to NPS 36 if vertical adjustment is required, with steel-pipe base stanchion support and cast-iron floor flange.
- 17. Single-Pipe Rolls (MSS Type 41): For suspension of pipes NPS 1 to NPS 30, from two rods if longitudinal movement caused by expansion and contraction might occur.
- 18. Adjustable Roller Hangers (MSS Type 43): For suspension of pipes NPS 2-1/2 to NPS 24, from single rod if horizontal movement caused by expansion and contraction might occur.
- 19. Complete Pipe Rolls (MSS Type 44): For support of pipes NPS 2 to NPS 42 if longitudinal movement caused by expansion and contraction might occur but vertical adjustment is not necessary.
- 20. Pipe Roll and Plate Units (MSS Type 45): For support of pipes NPS 2 to NPS 24 if small horizontal movement caused by expansion and contraction might occur and vertical adjustment is not necessary.
- 21. Adjustable Pipe Roll and Base Units (MSS Type 46): For support of pipes NPS 2 to NPS 30 if vertical and lateral adjustment during installation might be required in addition to expansion and contraction.
- K. Vertical-Piping Clamps: Unless otherwise indicated and except as specified in piping system Sections, install the following types:
 - 1. Extension Pipe or Riser Clamps (MSS Type 8): For support of pipe risers NPS 3/4 to NPS 24.

- Carbon- or Alloy-Steel Riser Clamps (MSS Type 42): For support of pipe risers NPS 3/4 to NPS 24 if longer ends are required for riser clamps.
- L. Hanger-Rod Attachments: Unless otherwise indicated and except as specified in piping system Sections, install the following types:
 - 1. Steel Turnbuckles (MSS Type 13): For adjustment up to 6 inches for heavy loads.
 - 2. Steel Clevises (MSS Type 14): For 120 to 450 deg F piping installations.
 - 3. Swivel Turnbuckles (MSS Type 15): For use with MSS Type 11, split pipe rings.
 - 4. Malleable-Iron Sockets (MSS Type 16): For attaching hanger rods to various types of building attachments.
 - Steel Weldless Eye Nuts (MSS Type 17): For 120 to 450 deg F piping installations.
- M. Building Attachments: Unless otherwise indicated and except as specified in piping system Sections, install the following types:
 - 1. Steel or Malleable Concrete Inserts (MSS Type 18): For upper attachment to suspend pipe hangers from concrete ceiling.
 - 2. Top-Beam C-Clamps (MSS Type 19): For use under roof installations with bar-joist construction, to attach to top flange of structural shape.
 - 3. Side-Beam or Channel Clamps (MSS Type 20): For attaching to bottom flange of beams, channels, or angles.
 - 4. Center-Beam Clamps (MSS Type 21): For attaching to center of bottom flange of beams.
 - 5. Welded Beam Attachments (MSS Type 22): For attaching to bottom of beams if loads are considerable and rod sizes are large.
 - 6. C-Clamps (MSS Type 23): For structural shapes.
 - 7. Top-Beam Clamps (MSS Type 25): For top of beams if hanger rod is required tangent to flange edge.
 - 8. Side-Beam Clamps (MSS Type 27): For bottom of steel I-beams.
 - 9. Steel-Beam Clamps with Eye Nuts (MSS Type 28): For attaching to bottom of steel I-beams for heavy loads.
 - 10. Linked-Steel Clamps with Eye Nuts (MSS Type 29): For attaching to bottom of steel I-beams for heavy loads, with link extensions.
 - 11. Malleable-Beam Clamps with Extension Pieces (MSS Type 30): For attaching to structural steel.
 - 12. Welded-Steel Brackets: For support of pipes from below or for suspending from above by using clip and rod. Use one of the following for indicated loads:
 - a. Light (MSS Type 31): 750 lb.
 - b. Medium (MSS Type 32): 1500 lb.
 - c. Heavy (MSS Type 33): 3000 lb.
 - 13. Side-Beam Brackets (MSS Type 34): For sides of steel or wooden beams.
 - 14. Plate Lugs (MSS Type 57): For attaching to steel beams if flexibility at beam is required.
 - 15. Horizontal Travelers (MSS Type 58): For supporting piping systems subject to linear horizontal movement where headroom is limited.

- N. Saddles and Shields: Unless otherwise indicated and except as specified in piping system Sections, install the following types:
 - 1. Steel-Pipe-Covering Protection Saddles (MSS Type 39): To fill interior voids with insulation that matches adjoining insulation.
 - 2. Protection Shields (MSS Type 40): Of length recommended in writing by manufacturer to prevent crushing insulation.
 - 3. Thermal-Hanger Shield Inserts: For supporting insulated pipe.
- O. Spring Hangers and Supports: Unless otherwise indicated and except as specified in piping system Sections, install the following types:
 - 1. Restraint-Control Devices (MSS Type 47): Where indicated to control piping movement.
 - 2. Spring Cushions (MSS Type 48): For light loads if vertical movement does not exceed 1-1/4 inches.
 - 3. Spring-Cushion Roll Hangers (MSS Type 49): For equipping Type 41, roll hanger with springs.
 - 4. Spring Sway Braces (MSS Type 50): To retard sway, shock, vibration, or thermal expansion in piping systems.
 - Variable-Spring Hangers (MSS Type 51): Preset to indicated load and limit variability factor to 25 percent to allow expansion and contraction of piping system from hanger.
 - 6. Variable-Spring Base Supports (MSS Type 52): Preset to indicated load and limit variability factor to 25 percent to allow expansion and contraction of piping system from base support.
 - Variable-Spring Trapeze Hangers (MSS Type 53): Preset to indicated load and limit variability factor to 25 percent to allow expansion and contraction of piping system from trapeze support.
 - 8. Constant Supports: For critical piping stress and if necessary to avoid transfer of stress from one support to another support, critical terminal, or connected equipment. Include auxiliary stops for erection, hydrostatic test, and load-adjustment capability. These supports include the following types:
 - a. Horizontal (MSS Type 54): Mounted horizontally.
 - b. Vertical (MSS Type 55): Mounted vertically.
 - Trapeze (MSS Type 56): Two vertical-type supports and one trapeze member.
- P. Comply with MSS SP-69 for trapeze pipe-hanger selections and applications that are not specified in piping system Sections.
- Q. Comply with MFMA-103 for metal framing system selections and applications that are not specified in piping system Sections.
- R. Use powder-actuated fasteners or mechanical-expansion anchors instead of building attachments where required in concrete construction.

END OF SECTION 230529



PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. Section Includes:

- 1. Elastomeric isolation pads.
- 2. Pipe-riser resilient supports.
- 3. Resilient pipe guides.
- 4. Spring hangers.
- 5. Snubbers.
- 6. Seismic-restraint accessories.
- 7. Mechanical anchor bolts.
- 8. Adhesive anchor bolts.

1.3 DEFINITIONS

- A. IBC: International Building Code.
- B. ICC-ES: ICC-Evaluation Service.
- C. OSHPD: Office of Statewide Health Planning & Development (for the State of California).

1.4 ACTION SUBMITTALS

- A. Product Data: For each type of product.
 - 1. Include rated load, rated deflection, and overload capacity for each vibration isolation
 - 2. Illustrate and indicate style, material, strength, fastening provision, and finish for each type and size of vibration isolation device and seismic-restraint component required.
 - a. Tabulate types and sizes of seismic restraints, complete with report numbers and rated strength in tension and shear as evaluated by an agency acceptable to authorities having jurisdiction.



- b. Annotate to indicate application of each product submitted and compliance with requirements.
- 3. Interlocking Snubbers: Include ratings for horizontal, vertical, and combined loads.

B. Shop Drawings:

- 1. Detail fabrication and assembly of equipment bases. Detail fabrication including anchorages and attachments to structure and to supported equipment. Include adjustable motor bases, rails, and frames for equipment mounting.
- 2. Vibration Isolation Base Details: Detail fabrication including anchorages and attachments to structure and to supported equipment. Include adjustable motor bases, rails, and frames for equipment mounting.
- C. Equipment Submittal: For each vibration isolation and seismic-restraint device.
 - 1. Include design calculations and details for selecting vibration isolators, seismic restraints, and vibration isolation bases complying with performance requirements, design criteria, and analysis data signed and sealed by the qualified professional engineer responsible for their preparation.
 - Design Calculations: Calculate static and dynamic loading due to equipment weight, operation, and seismic and wind forces required to select vibration isolators and seismic and wind restraints and for designing vibration isolation bases.
 - Coordinate design calculations with wind load calculations required for equipment mounted outdoors. Comply with requirements in other Sections for equipment mounted outdoors.
 - 3. Riser Supports: Include riser diagrams and calculations showing anticipated expansion and contraction at each support point, initial and final loads on building structure, spring deflection changes, and seismic loads. Include certification that riser system was examined for excessive stress and that none exists.
 - 4. Seismic and Wind-Restraint Details:
 - a. Design Analysis: To support selection and arrangement of seismic and wind restraints. Include calculations of combined tensile and shear loads.
 - b. Details: Indicate fabrication and arrangement. Detail attachments of restraints to the restrained items and to the structure. Show attachment locations, methods, and spacings. Identify components, list their strengths, and indicate directions and values of forces transmitted to the structure during seismic events. Indicate association with vibration isolation devices.
 - c. Coordinate seismic-restraint and vibration isolation details with wind-restraint details required for equipment mounted outdoors. Comply with requirements in other Sections for equipment mounted outdoors.
 - d. Preapproval and Evaluation Documentation: By an agency acceptable to authorities having jurisdiction, showing maximum ratings of restraint items and the basis for approval (tests or calculations).

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1.5 INFORMATIONAL SUBMITTALS

- A. Coordination Drawings: Show coordination of vibration isolation device installation and seismic bracing for HVAC piping and equipment with other systems and equipment in the vicinity, including other supports and restraints, if any.
- B. Qualification Data: For professional engineer.
- C. Welding certificates.
- D. Field quality-control reports.

1.6 QUALITY ASSURANCE

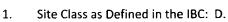
- A. Testing Agency Qualifications: An independent agency, with the experience and capability to conduct the testing indicated, that is an NRTL as defined by OSHA in 29 CFR 1910.7 and that is acceptable to authorities having jurisdiction.
- B. Comply with seismic-restraint requirements in the New York City Building Code unless requirements in this Section are more stringent.
- C. Welding Qualifications: Qualify procedures and personnel according to AWS D1.1/D1.1M, "Structural Welding Code - Steel."
- D. Seismic-restraint devices shall have horizontal and vertical load testing and analysis and shall bear anchorage preapproval OPA number from OSHPD, preapproval by ICC-ES, or preapproval by another agency acceptable to authorities having jurisdiction, showing maximum seismic-restraint ratings. Ratings based on independent testing are preferred to ratings based on calculations. If preapproved ratings are unavailable, submittals based on independent testing are preferred. Calculations (including combining shear and tensile loads) to support seismic-restraint designs must be signed and sealed by a qualified professional engineer.

PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

- A. Wind-Restraint Loading:
 - 1. Basic Wind Speed: 100mph.
 - 2. Building Classification Category: III.
 - 3. Minimum 10 lb/sq. ft. multiplied by maximum area of HVAC component projected on vertical plane normal to wind direction, and 45 degrees either side of normal.
- B. Seismic-Restraint Loading:

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- 2. Assigned Seismic Use Group or Building Category as Defined in the IBC: III.
 - a. Component Importance Factor: 1.0.
 - b. Component Response Modification Factor: 6.0.
 - c. Component Amplification Factor: 2.5.
- 3. Rated strengths, features, and applications shall be as defined in reports by an agency acceptable to authorities having jurisdiction.
 - a. Structural Safety Factor: Allowable strength in tension, shear, and pullout force of components shall be at least four times the maximum seismic forces to which they are subjected.

2.2 ELASTOMERIC ISOLATION PADS

A. Elastomeric Isolation Pads:

- 1. 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:
 - a. Ace Mountings Co., Inc.
 - b. California Dynamics Corporation.
 - c. Isolation Technology, Inc.
 - d. Kinetics Noise Control, Inc.
 - e. Mason Industries, Inc.
 - f. Vibration Eliminator Co., Inc.
 - g. Vibration Isolation.
 - h. Vibration Mountings & Controls, Inc.
- 2. Fabrication: Single or multiple layers of sufficient durometer stiffness for uniform loading over pad area.
- 3. Size: Factory or field cut to match requirements of supported equipment.
- 4. Pad Material: Oil and water resistant with elastomeric properties.
- 5. Surface Pattern: Waffle pattern.
- 6. Infused nonwoven cotton or synthetic fibers.
- 7. Load-bearing metal plates adhered to pads.

2.3 PIPE-RISER RESILIENT SUPPORT

- A. Description: All-directional, acoustical pipe anchor consisting of two steel tubes separated by a minimum 1/2-inch-thick neoprene.
 - 1. Vertical-Limit Stops: Steel and neoprene vertical-limit stops arranged to prevent vertical travel in both directions.



2. Maximum Load Per Support: 500 psig on isolation material providing equal isolation in all directions.

2.4 RESILIENT PIPE GUIDES

- A. Description: Telescopic arrangement of two steel tubes or post and sleeve arrangement separated by a minimum 1/2-inch thick neoprene.
 - 1. Factory-Set Height Guide with Shear Pin: Shear pin shall be removable and reinsertable to allow for selection of pipe movement. Guides shall be capable of motion to meet location requirements.

2.5 SPRING HANGERS

- A. Combination Coil-Spring and Elastomeric-Insert Hanger with Spring and Insert in Compression:
 - 1. 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:
 - a. Ace Mountings Co., Inc.
 - b. California Dynamics Corporation.
 - c. Kinetics Noise Control, Inc.
 - d. Mason Industries, Inc.
 - e. Vibration Eliminator Co., Inc.
 - f. Vibration Isolation.
 - g. Vibration Mountings & Controls, Inc.
 - Frame: Steel, fabricated for connection to threaded hanger rods and to allow for a maximum of 30 degrees of angular hanger-rod misalignment without binding or reducing isolation efficiency.
 - 3. Outside Spring Diameter: Not less than 80 percent of the compressed height of the spring at rated load.
 - 4. Minimum Additional Travel: 50 percent of the required deflection at rated load.
 - 5. Lateral Stiffness: More than 80 percent of rated vertical stiffness.
 - 6. Overload Capacity: Support 200 percent of rated load, fully compressed, without deformation or failure.
 - 7. Elastomeric Element: Molded, oil-resistant rubber or neoprene. Steel-washer-reinforced cup to support spring and bushing projecting through bottom of frame.
 - 8. Adjustable Vertical Stop: Steel washer with neoprene washer "up-stop" on lower threaded rod.
 - 9. Self-centering hanger-rod cap to ensure concentricity between hanger rod and support spring coil.



2.6 SNUBBERS

- 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. Kinetics Noise Control, Inc.
 - 2. Mason Industries, Inc.
 - 3. Vibration Mountings & Controls, Inc.
- B. Description: Factory fabricated using welded structural-steel shapes and plates, anchor bolts, and replaceable resilient isolation washers and bushings.
 - 1. Anchor bolts for attaching to concrete shall be seismic-rated, drill-in, and stud-wedge or female-wedge type.
 - 2. Resilient Isolation Washers and Bushings: Oil- and water-resistant neoprene.
 - 3. Maximum 1/4-inch air gap, and minimum 1/4-inch thick resilient cushion.

2.7 SEISMIC-RESTRAINT ACCESSORIES

- 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. Cooper B-Line, Inc.
 - 2. Kinetics Noise Control, Inc.
 - 3. Mason Industries, Inc.
 - 4. TOLCO.
- B. Hanger-Rod Stiffener: Steel tube or steel slotted-support-system sleeve with internally bolted connections to hanger rod.
- C. Hinged and Swivel Brace Attachments: Multifunctional steel connectors for attaching hangers to rigid channel bracings.
- D. Bushings for Floor-Mounted Equipment Anchor Bolts: Neoprene bushings designed for rigid equipment mountings, and matched to type and size of anchor bolts and studs.
- E. Bushing Assemblies for Wall-Mounted Equipment Anchorage: Assemblies of neoprene elements and steel sleeves designed for rigid equipment mountings, and matched to type and size of attachment devices used.
- F. Resilient Isolation Washers and Bushings: One-piece, molded, oil- and water-resistant neoprene, with a flat washer face.

2.8 MECHANICAL ANCHOR BOLTS

- 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. Cooper B-Line, Inc.
 - 2. Hilti, Inc.
 - 3. Kinetics Noise Control, Inc.
 - 4. Mason Industries, Inc.
- B. Mechanical Anchor Bolts: Drilled-in and stud-wedge or female-wedge type in zinc-coated steel for interior applications and stainless steel for exterior applications. Select anchor bolts with strength required for anchor and as tested according to ASTM E 488.

2.9 ADHESIVE ANCHOR BOLTS

- 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. Hilti, Inc.
 - 2. Kinetics Noise Control, Inc.
 - 3. Mason Industries, Inc.
- B. Adhesive Anchor Bolts: Drilled-in and capsule anchor system containing PVC or urethane methacrylate-based resin and accelerator, or injected polymer or hybrid mortar adhesive. Provide anchor bolts and hardware with zinc-coated steel for interior applications and stainless steel for exterior applications. Select anchor bolts with strength required for anchor and as tested according to ASTM E 488.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine areas and equipment to receive vibration isolation and seismic and wind-control devices for compliance with requirements for installation tolerances and other conditions affecting performance of the Work.
- B. Examine roughing-in of reinforcement and cast-in-place anchors to verify actual locations before installation.
- C. Proceed with installation only after unsatisfactory conditions have been corrected.



3.2 APPLICATIONS

- A. Multiple Pipe Supports: Secure pipes to trapeze member with clamps approved for application by an agency acceptable to authorities having jurisdiction.
- B. Hanger-Rod Stiffeners: Install hanger-rod stiffeners where indicated or scheduled on Drawings to receive them and where required to prevent buckling of hanger rods due to seismic forces.
- C. Strength of Support and Seismic-Restraint Assemblies: Where not indicated, select sizes of components so strength is adequate to carry present and future static and seismic loads within specified loading limits.

3.3 VIBRATION CONTROL AND SEISMIC-RESTRAINT DEVICE INSTALLATION

- A. Coordinate the location of embedded connection hardware with supported equipment attachment and mounting points.
- B. Installation of vibration isolators must not cause any change of position of equipment, piping, or ductwork resulting in stresses or misalignment.
- C. Comply with requirements in Section 077200 "Roof Accessories" for installation of roof curbs, equipment supports, and roof penetrations.

D. Equipment Restraints:

- 1. Install seismic snubbers on HVAC equipment mounted on vibration isolators. Locate snubbers as close as possible to vibration isolators and bolt to equipment base and supporting structure.
- 2. Install resilient bolt isolation washers on equipment anchor bolts where clearance between anchor and adjacent surface exceeds 0.125 inch.
- Install seismic-restraint devices using methods approved by an agency acceptable to authorities having jurisdiction that provides required submittals for component.

E. Piping Restraints:

- 1. Comply with requirements in MSS SP-127.
- 2. Space lateral supports a maximum of 40 feet o.c., and longitudinal supports a maximum of 80 feet o.c.
- 3. Brace a change of direction longer than 12 feet.
- F. Install cables so they do not bend across edges of adjacent equipment or building structure.
- G. Install seismic-restraint devices using methods approved by an agency acceptable to authorities having jurisdiction that provides required submittals for component.
- H. Install bushing assemblies for anchor bolts for floor-mounted equipment, arranged to provide resilient media between anchor bolt and mounting hole in concrete base.

- Install bushing assemblies for mounting bolts for wall-mounted equipment, arranged to provide resilient media where equipment or equipment-mounting channels are attached to wall.
- J. Attachment to Structure: If specific attachment is not indicated, anchor bracing to structure at flanges of beams, at upper truss chords of bar joists, or at concrete members.

K. Drilled-in Anchors:

- Identify position of reinforcing steel and other embedded items prior to drilling holes for anchors. Do not damage existing reinforcing or embedded items during coring or drilling. Notify the structural engineer if reinforcing steel or other embedded items are encountered during drilling. Locate and avoid prestressed tendons, electrical and telecommunications conduit, and gas lines.
- 2. Do not drill holes in concrete or masonry until concrete, mortar, or grout has achieved full design strength.
- 3. Wedge Anchors: Protect threads from damage during anchor installation. Heavy-duty sleeve anchors shall be installed with sleeve fully engaged in the structural element to which anchor is to be fastened.
- 4. Adhesive Anchors: Clean holes to remove loose material and drilling dust prior to installation of adhesive. Place adhesive in holes proceeding from the bottom of the hole and progressing toward the surface in such a manner as to avoid introduction of air pockets in the adhesive.
- 5. Set anchors to manufacturer's recommended torque, using a torque wrench.
- 6. Install zinc-coated steel anchors for interior and stainless-steel anchors for exterior applications.

3.4 ACCOMMODATION OF DIFFERENTIAL SEISMIC MOTION

A. Install flexible connections in piping where they cross seismic joints, where adjacent sections or branches are supported by different structural elements, and where the connections terminate with connection to equipment that is anchored to a different structural element from the one supporting the connections as they approach equipment. Comply with requirements in Section 232113 "Hydronic Piping" for piping flexible connections.

3.5 FIELD QUALITY CONTROL

- A. Testing Agency: Engage a qualified testing agency to perform tests and inspections.
- B. Perform tests and inspections.
- C. Tests and Inspections:
 - 1. Provide evidence of recent calibration of test equipment by a testing agency acceptable to authorities having jurisdiction.

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- 2. Schedule test with Owner, through Architect, before connecting anchorage device to restrained component (unless postconnection testing has been approved), and with at least seven days' advance notice.
- 3. Obtain Architect's approval before transmitting test loads to structure. Provide temporary load-spreading members.
- 4. Test at least four of each type and size of installed anchors and fasteners selected by Architect.
- 5. Test to 90 percent of rated proof load of device.
- 6. Measure isolator restraint clearance.
- 7. Measure isolator deflection.
- 8. Verify snubber minimum clearances.
- D. Remove and replace malfunctioning units and retest as specified above.
- E. Prepare test and inspection reports.

3.6 ADJUSTING

- A. Adjust isolators after piping system is at operating weight.
- B. Adjust limit stops on restrained-spring isolators to mount equipment at normal operating height. After equipment installation is complete, adjust limit stops so they are out of contact during normal operation.

END OF SECTION 230548

SECTION 23 05 53 - IDENTIFICATION FOR HVAC PIPING AND EQUIPMENT

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. Section Includes:

- 1. Equipment labels.
- 2. Warning signs and labels.
- 3. Pipe labels.
- 4. Duct labels.
- 5. Stencils.
- 6. Valve tags.
- 7. Warning tags.

1.3 ACTION SUBMITTALS

- A. Product Data: For each type of product indicated.
- B. Samples: For color, letter style, and graphic representation required for each identification material and device.
- C. Equipment Label Schedule: Include a listing of all equipment to be labeled with the proposed content for each label.
- D. Valve numbering scheme.
- E. Valve Schedules: For each piping system to include in maintenance manuals.

1.4 COORDINATION

- A. Coordinate installation of identifying devices with completion of covering and painting of surfaces where devices are to be applied.
- B. Coordinate installation of identifying devices with locations of access panels and doors.
- C. Install identifying devices before installing acoustical ceilings and similar concealment.

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PART 2 - PRODUCTS

2.1 EQUIPMENT LABELS

A. Metal Labels for Equipment:

- 1. Material and Thickness: Stainless steel, 0.025-inch or anodized aluminum, 0.032-inch minimum thickness, and having predrilled or stamped holes for attachment hardware.
- 2. Minimum Label Size: Length and width vary for required label content, but not less than 2-1/2 by 3/4 inch.
- 3. Minimum Letter Size: 1/4 inch for name of units if viewing distance is less than 24 inches, 1/2 inch for viewing distances up to 72 inches, and proportionately larger lettering for greater viewing distances. Include secondary lettering two-thirds to three-fourths the size of principal lettering.
- 4. Fasteners: Stainless-steel self-tapping screws.
- 5. Adhesive: Contact-type permanent adhesive, compatible with label and with substrate.
- B. Label Content: Include equipment's Drawing designation or unique equipment number, Drawing numbers where equipment is indicated (plans, details, and schedules), plus the Specification Section number and title where equipment is specified.
- C. Equipment Label Schedule: For each item of equipment to be labeled, on 8-1/2-by-11-inch bond paper. Tabulate equipment identification number and identify Drawing numbers where equipment is indicated (plans, details, and schedules), plus the Specification Section number and title where equipment is specified. Equipment schedule shall be included in operation and maintenance data.

2.2 WARNING SIGNS AND LABELS

- A. Material and Thickness: Multilayer, multicolor, plastic labels for mechanical engraving, 1/8 inch thick, and having predrilled holes for attachment hardware.
- B. Letter Color: Black.
- C. Background Color: Red.
- D. Maximum Temperature: Able to withstand temperatures up to 160 deg F.
- E. Minimum Label Size: Length and width vary for required label content, but not less than 2-1/2 by 3/4 inch.
- F. Minimum Letter Size: 1/4 inch for name of units if viewing distance is less than 24 inches, 1/2 inch for viewing distances up to 72 inches, and proportionately larger lettering for greater viewing distances. Include secondary lettering two-thirds to three-fourths the size of principal lettering.

- G. Fasteners: Stainless-steel self-tapping screws.
- H. Adhesive: Contact-type permanent adhesive, compatible with label and with substrate.
- I. Label Content: Include caution and warning information, plus emergency notification instructions.

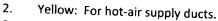
2.3 PIPE LABELS

- A. General Requirements for Manufactured Pipe Labels: Preprinted, color-coded, with lettering indicating service, and showing flow direction.
- B. Pretensioned Pipe Labels: Precoiled, semirigid plastic formed to cover full circumference of pipe and to attach to pipe without fasteners or adhesive.
- C. Self-Adhesive Pipe Labels: Printed plastic with contact-type, permanent-adhesive backing.
- D. Pipe Label Contents: Include identification of piping service using same designations or abbreviations as used on Drawings, pipe size, and an arrow indicating flow direction.
 - Flow-Direction Arrows: Integral with piping system service lettering to accommodate both directions, or as separate unit on each pipe label to indicate flow direction.
 - 2. Lettering Size: At least 1-1/2 inches high.

2.4 DUCT LABELS

- A. Material and Thickness: Multilayer, multicolor, plastic labels for mechanical engraving, 1/8 inch thick, and having predrilled holes for attachment hardware.
- B. Letter Color: Black.
- C. Background Color: White.
- D. Maximum Temperature: Able to withstand temperatures up to 160 deg F.
- E. Minimum Label Size: Length and width vary for required label content, but not less than 2-1/2 by 3/4 inch.
- F. Minimum Letter Size: 1/4 inch for name of units if viewing distance is less than 24 inches, 1/2 inch for viewing distances up to 72 inches, and proportionately larger lettering for greater viewing distances. Include secondary lettering two-thirds to three-fourths the size of principal lettering.
- G. Fasteners: Stainless-steel self-tapping screws.
- H. Adhesive: Contact-type permanent adhesive, compatible with label and with substrate.

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- 3. Green: For exhaust-, outside-, relief-, return-, and mixed-air ducts.
- ASME A13.1 Colors and Designs: For hazardous material exhaust.
- B. Locate labels near points where ducts enter into concealed spaces and at maximum intervals of 50 feet in each space where ducts are exposed or concealed by removable ceiling system.

3.5 VALVE-TAG INSTALLATION

- A. Install tags on valves and control devices in piping systems, except check valves; valves within factory-fabricated equipment units; shutoff valves; faucets; convenience and lawn-watering hose connections; and HVAC terminal devices and similar roughing-in connections of end-use fixtures and units. List tagged valves in a valve schedule.
- B. Valve-Tag Application Schedule: Tag valves according to size, shape, and color scheme and with captions similar to those indicated in the following subparagraphs:
 - 1. Valve-Tag Size and Shape:

a. Chilled Water: 2 inches, round.b. Condenser Water: 2 inches, round.

c. Refrigerant: 2 inches, round.

2. Valve-Tag Color:

a. Chilled Water: Naturalb. Condenser Water: Naturalc. Refrigerant: Natural

3. Letter Color:

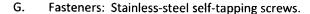
a. Chilled Water: Black.b. Condenser Water: Black.c. Refrigerant: Black.

3.6 WARNING-TAG INSTALLATION

A. Write required message on, and attach warning tags to, equipment and other items where required.

END OF SECTION 230553





- H. Adhesive: Contact-type permanent adhesive, compatible with label and with substrate.
- I. Label Content: Include caution and warning information, plus emergency notification instructions.

2.3 PIPE LABELS

- A. General Requirements for Manufactured Pipe Labels: Preprinted, color-coded, with lettering indicating service, and showing flow direction.
- B. Pretensioned Pipe Labels: Precoiled, semirigid plastic formed to cover full circumference of pipe and to attach to pipe without fasteners or adhesive.
- C. Self-Adhesive Pipe Labels: Printed plastic with contact-type, permanent-adhesive backing.
- D. Pipe Label Contents: Include identification of piping service using same designations or abbreviations as used on Drawings, pipe size, and an arrow indicating flow direction.
 - 1. Flow-Direction Arrows: Integral with piping system service lettering to accommodate both directions, or as separate unit on each pipe label to indicate flow direction.
 - 2. Lettering Size: At least 1-1/2 inches high.

2.4 DUCT LABELS

- A. Material and Thickness: Multilayer, multicolor, plastic labels for mechanical engraving, 1/8 inch thick, and having predrilled holes for attachment hardware.
- B. Letter Color: Black.
- C. Background Color: White.
- D. Maximum Temperature: Able to withstand temperatures up to 160 deg F.
- E. Minimum Label Size: Length and width vary for required label content, but not less than 2-1/2 by 3/4 inch.
- F. Minimum Letter Size: 1/4 inch for name of units if viewing distance is less than 24 inches, 1/2 inch for viewing distances up to 72 inches, and proportionately larger lettering for greater viewing distances. Include secondary lettering two-thirds to three-fourths the size of principal lettering.
- G. Fasteners: Stainless-steel self-tapping screws.
- H. Adhesive: Contact-type permanent adhesive, compatible with label and with substrate.

- 8
- Duct Label Contents: Include identification of duct service using same designations or abbreviations as used on Drawings, duct size, and an arrow indicating flow direction.
 - 1. Flow-Direction Arrows: Integral with duct system service lettering to accommodate both directions, or as separate unit on each duct label to indicate flow direction.
 - 2. Lettering Size: At least 1-1/2 inches high.

2.5 VALVE TAGS

- A. Valve Tags: Stamped or engraved with 1/4-inch letters for piping system abbreviation and 1/2-inch numbers.
 - 1. Tag Material: Stainless steel, 0.025-inch or anodized aluminum, 0.032-inch minimum thickness, and having predrilled or stamped holes for attachment hardware.
 - 2. Fasteners: Brass wire-link or beaded chain; or S-hook.
- B. Valve Schedules: For each piping system, on 8-1/2-by-11-inch bond paper. Tabulate valve number, piping system, system abbreviation (as shown on valve tag), location of valve (room or space), normal-operating position (open, closed, or modulating), and variations for identification. Mark valves for emergency shutoff and similar special uses.
 - 1. Valve-tag schedule shall be included in operation and maintenance data.

2.6 WARNING TAGS

- A. Warning Tags: Preprinted or partially preprinted, accident-prevention tags, of plasticized card stock with matte finish suitable for writing.
 - 1. Size: Approximately 4 by 7 inches.
 - Fasteners: Reinforced grommet and wire or string.
 - Nomenclature: Large-size primary caption such as "DANGER," "CAUTION," or "DO NOT OPERATE."
 - 4. Color: Yellow background with black lettering.

PART 3 - EXECUTION

3.1 PREPARATION

A. Clean piping and equipment surfaces of substances that could impair bond of identification devices, including dirt, oil, grease, release agents, and incompatible primers, paints, and encapsulants.

3.2 EQUIPMENT LABEL INSTALLATION

- A. Install or permanently fasten labels on each major item of mechanical equipment.
- B. Locate equipment labels where accessible and visible.

3.3 PIPE LABEL INSTALLATION

- A. Locate pipe labels where piping is exposed or above accessible ceilings in finished spaces; machine rooms; accessible maintenance spaces such as shafts, tunnels, and plenums; and exterior exposed locations as follows:
 - 1. Near each valve and control device.
 - 2. Near each branch connection, excluding short takeoffs for fixtures and terminal units. Where flow pattern is not obvious, mark each pipe at branch.
 - 3. Near penetrations through walls, floors, ceilings, and inaccessible enclosures.
 - 4. At access doors, manholes, and similar access points that permit view of concealed piping.
 - 5. Near major equipment items and other points of origination and termination.
 - 6. Spaced at maximum intervals of 50 feet along each run. Reduce intervals to 25 feet in areas of congested piping and equipment.
 - 7. On piping above removable acoustical ceilings. Omit intermediately spaced labels.

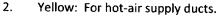
B. Pipe Label Color Schedule:

- 1. Chilled-Water Piping:
 - Background Color: Black.
 - b. Letter Color: Blue.
- 2. Condenser-Water Piping:
 - a. Background Color: Black.
 - b. Letter Color: Green.
- 3. Refrigerant Piping:
 - a. Background Color: Black.
 - b. Letter Color: White.

3.4 DUCT LABEL INSTALLATION

- A. Install self-adhesive duct labels with permanent adhesive on air ducts in the following color codes:
 - 1. Blue: For cold-air supply ducts.

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- 3. Green: For exhaust-, outside-, relief-, return-, and mixed-air ducts.
- 4. ASME A13.1 Colors and Designs: For hazardous material exhaust.
- B. Locate labels near points where ducts enter into concealed spaces and at maximum intervals of 50 feet in each space where ducts are exposed or concealed by removable ceiling system.

3.5 VALVE-TAG INSTALLATION

- A. Install tags on valves and control devices in piping systems, except check valves; valves within factory-fabricated equipment units; shutoff valves; faucets; convenience and lawn-watering hose connections; and HVAC terminal devices and similar roughing-in connections of end-use fixtures and units. List tagged valves in a valve schedule.
- B. Valve-Tag Application Schedule: Tag valves according to size, shape, and color scheme and with captions similar to those indicated in the following subparagraphs:
 - 1. Valve-Tag Size and Shape:
 - a. Chilled Water: 2 inches, round.b. Condenser Water: 2 inches, round.
 - b. Condenser Water: 2 inches, round.
 - c. Refrigerant: 2 inches, round.
 - 2. Valve-Tag Color:
 - a. Chilled Water: Natural
 - b. Condenser Water: Natural
 - c. Refrigerant: Natural
 - 3. Letter Color:
 - a. Chilled Water: Black.
 - b. Condenser Water: Black.
 - c. Refrigerant: Black.

3.6 WARNING-TAG INSTALLATION

A. Write required message on, and attach warning tags to, equipment and other items where required.

END OF SECTION 230553

SECTION 23 05 93 - TESTING, ADJUSTING, AND BALANCING FOR HVAC

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. Section Includes:
 - 1. Balancing Air Systems:
 - a. Constant-volume air systems.

1.3 DEFINITIONS

- A. AABC: Associated Air Balance Council.
- B. NEBB: National Environmental Balancing Bureau.
- C. TAB: Testing, adjusting, and balancing.
- D. TAB Specialist: An entity engaged to perform TAB Work.

1.4 INFORMATIONAL SUBMITTALS

- A. Qualification Data: Within 15 days of Contractor's Notice to Proceed, submit documentation that the TAB contractor and this Project's TAB team members meet the qualifications specified in "Quality Assurance" Article.
- B. Contract Documents Examination Report: Within 30 days of Contractor's Notice to Proceed, submit the Contract Documents review report as specified in Part 3.
- C. Strategies and Procedures Plan: Within 60 days of Contractor's Notice to Proceed, submit TAB strategies and step-by-step procedures as specified in "Preparation" Article.
- D. Certified TAB reports.
- E. Sample report forms.



- F. Instrument calibration reports, to include the following:
 - 1. Instrument type and make.
 - 2. Serial number.
 - 3. Application.
 - 4. Dates of use.
 - 5. Dates of calibration.

1.5 QUALITY ASSURANCE

- A. TAB Contractor Qualifications: Engage a TAB entity certified by AABC or NEBB.
 - 1. TAB Field Supervisor: Employee of the TAB contractor and certified by AABC or NEBB.
 - 2. TAB Technician: Employee of the TAB contractor and who is certified by AABC or NEBB as a TAB technician.
- B. TAB Conference: Meet with the Engineer, Owner, Construction Manager, and Commissioning Authority on approval of the TAB strategies and procedures plan to develop a mutual understanding of the details. Require the participation of the TAB field supervisor and technicians. Provide seven days' advance notice of scheduled meeting time and location.
 - 1. Agenda Items:
 - a. The Contract Documents examination report.
 - b. The TAB plan.
 - c. Coordination and cooperation of trades and subcontractors.
 - d. Coordination of documentation and communication flow.
- C. Certify TAB field data reports and perform the following:
 - 1. Review field data reports to validate accuracy of data and to prepare certified TAB reports.
 - 2. Certify that the TAB team complied with the approved TAB plan and the procedures specified and referenced in this Specification.
- D. TAB Report Forms: Use standard TAB contractor's forms approved by Engineer.
- E. Instrumentation Type, Quantity, Accuracy, and Calibration: As described in ASHRAE 111, Section 5, "Instrumentation."
- F. ASHRAE Compliance: Applicable requirements in ASHRAE 62.1, Section 7.2.2 "Air Balancing."
- G. ASHRAE/IESNA Compliance: Applicable requirements in ASHRAE/IESNA 90.1, Section 6.7.2.3 "System Balancing."



A. Full Owner Occupancy: Owner will occupy the site and existing building during entire TAB period. Cooperate with Owner during TAB operations to minimize conflicts with Owner's operations.

1.7 COORDINATION

- Notice: Provide seven days' advance notice for each test. Include scheduled test dates and times.
- B. Perform TAB after leakage and pressure tests on air and water distribution systems have been satisfactorily completed.

PART 2 - PRODUCTS (Not Applicable)

PART 3 - EXECUTION

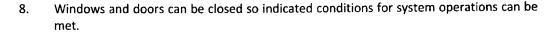
3.1 EXAMINATION

- A. Examine the Contract Documents to become familiar with Project requirements and to discover conditions in systems' designs that may preclude proper TAB of systems and equipment.
- B. Examine systems for installed balancing devices, such as test ports, gage cocks, thermometer wells, flow-control devices, balancing valves and fittings, and manual volume dampers. Verify that locations of these balancing devices are accessible.
- C. Examine the approved submittals for HVAC systems and equipment.
- D. Examine design data including HVAC system descriptions, statements of design assumptions for environmental conditions and systems' output, and statements of philosophies and assumptions about HVAC system and equipment controls.
- E. Examine ceiling plenums and under floor air plenums used for supply, return, or relief air to verify that they meet the leakage class of connected ducts as specified in Section 233113 "Metal Ducts" and are properly separated from adjacent areas. Verify that penetrations in plenum walls are sealed and fire-stopped if required.
- F. Examine equipment performance data including fan and pump curves.
 - Relate performance data to Project conditions and requirements, including system
 effects that can create undesired or unpredicted conditions that cause reduced
 capacities in all or part of a system.

- 2. Calculate system-effect factors to reduce performance ratings of HVAC equipment when installed under conditions different from the conditions used to rate equipment performance. To calculate system effects for air systems, use tables and charts found in AMCA 201, "Fans and Systems," or in SMACNA's "HVAC Systems Duct Design." Compare results with the design data and installed conditions.
- G. Examine system and equipment installations and verify that field quality-control testing, cleaning, and adjusting specified in individual Sections have been performed.
- H. Examine test reports specified in individual system and equipment Sections.
- Examine HVAC equipment and filters and verify that bearings are greased, belts are aligned and tight, and equipment with functioning controls is ready for operation.
- J. Examine terminal units and verify that they are accessible and their controls are connected and functioning.
- K. Examine strainers. Verify that startup screens are replaced by permanent screens with indicated perforations.
- L. Examine three-way valves for proper installation for their intended function of diverting or mixing fluid flows.
- M. Examine heat-transfer coils for correct piping connections and for clean and straight fins.
- N. Examine system pumps to ensure absence of entrained air in the suction piping.
- O. Examine operating safety interlocks and controls on HVAC equipment.
- P. Report deficiencies discovered before and during performance of TAB procedures. Observe and record system reactions to changes in conditions. Record default set points if different from indicated values.

3.2 PREPARATION

- A. Prepare a TAB plan that includes strategies and step-by-step procedures.
- B. Complete system-readiness checks and prepare reports. Verify the following:
 - Permanent electrical-power wiring is complete.
 - 2. Hydronic systems are filled, clean, and free of air.
 - 3. Automatic temperature-control systems are operational.
 - 4. Equipment and duct access doors are securely closed.
 - 5. Balance, smoke, and fire dampers are open.
 - 6. Isolating and balancing valves are open and control valves are operational.
 - 7. Ceilings are installed in critical areas where air-pattern adjustments are required and access to balancing devices is provided.



3.3 GENERAL PROCEDURES FOR TESTING AND BALANCING

- A. Perform testing and balancing procedures on each system according to the procedures contained in AABC's "National Standards for Total System Balance" / NEBB's "Procedural Standards for Testing, Adjusting, and Balancing of Environmental Systems" and in this Section.
 - 1. Comply with requirements in ASHRAE 62.1, Section 7.2.2 "Air Balancing."
- B. Cut insulation, ducts, pipes, and equipment cabinets for installation of test probes to the minimum extent necessary for TAB procedures.
 - 1. After testing and balancing, install test ports and duct access doors that comply with requirements in Section 233300 "Air Duct Accessories."
 - Install and join new insulation that matches removed materials. Restore insulation, coverings, vapor barrier, and finish according to Section 230713 "Duct Insulation," Section 230716 "HVAC Equipment Insulation," and Section 230719 "HVAC Piping Insulation."
- C. Mark equipment and balancing devices, including damper-control positions, valve position indicators, fan-speed-control levers, and similar controls and devices, with paint or other suitable, permanent identification material to show final settings.
- D. Take and report testing and balancing measurements in inch-pound (IP) units.

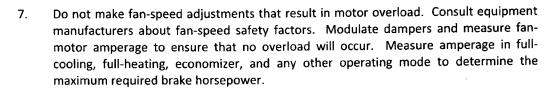
3.4 GENERAL PROCEDURES FOR BALANCING AIR SYSTEMS

- A. Prepare test reports for both fans and outlets. Obtain manufacturer's outlet factors and recommended testing procedures. Crosscheck the summation of required outlet volumes with required fan volumes.
- B. Prepare schematic diagrams of systems' "as-built" duct layouts.
- C. Determine the best locations in main and branch ducts for accurate duct-airflow measurements.
- D. Check airflow patterns from the outdoor-air louvers and dampers and the return- and exhaustair dampers through the supply-fan discharge and mixing dampers.
- E. Locate start-stop and disconnect switches, electrical interlocks, and motor starters.
- F. Verify that motor starters are equipped with properly sized thermal protection.
- G. Check dampers for proper position to achieve desired airflow path.

- H. Check for airflow blockages.
- Check condensate drains for proper connections and functioning.
- Check for proper sealing of air-handling-unit components.
- K. Verify that air duct system is sealed as specified in Section 233113 "Metal Ducts."

3.5 PROCEDURES FOR CONSTANT-VOLUME AIR SYSTEMS

- A. Adjust fans to deliver total indicated airflows within the maximum allowable fan speed listed by fan manufacturer.
 - 1. Measure total airflow.
 - a. Where sufficient space in ducts is unavailable for Pitot-tube traverse measurements; measure airflow at terminal outlets and inlets and calculate the total airflow.
 - 2. Measure fan static pressures as follows to determine actual static pressure:
 - a. Measure outlet static pressure as far downstream from the fan as practical and upstream from restrictions in ducts such as elbows and transitions.
 - b. Measure static pressure directly at the fan outlet or through the flexible connection.
 - c. Measure inlet static pressure of single-inlet fans in the inlet duct as near the fan as possible, upstream from the flexible connection, and downstream from duct restrictions.
 - d. Measure inlet static pressure of double-inlet fans through the wall of the plenum that houses the fan.
 - 3. Measure static pressure across each component that makes up an air-handling unit, rooftop unit, and other air-handling and -treating equipment.
 - a. Report the cleanliness status of filters and the time static pressures are measured.
 - Measure static pressures entering and leaving other devices, such as sound traps, heatrecovery equipment, and air washers, under final balanced conditions.
 - Review Record Documents to determine variations in design static pressures versus actual static pressures. Calculate actual system-effect factors. Recommend adjustments to accommodate actual conditions.
 - Obtain approval from Construction Manager for adjustment of fan speed higher or lower than indicated speed. Comply with requirements in HVAC Sections for airhandling units for adjustment of fans, belts, and pulley sizes to achieve indicated airhandling-unit performance.



- B. Adjust volume dampers for main duct, submain ducts, and major branch ducts to indicated airflows within specified tolerances.
 - 1. Measure airflow of submain and branch ducts.
 - a. Where sufficient space in submain and branch ducts is unavailable for Pitot-tube traverse measurements, measure airflow at terminal outlets and inlets and calculate the total airflow for that zone.
 - 2. Measure static pressure at a point downstream from the balancing damper, and adjust volume dampers until the proper static pressure is achieved.
 - 3. Remeasure each submain and branch duct after all have been adjusted. Continue to adjust submain and branch ducts to indicated airflows within specified tolerances.
- C. Measure air outlets and inlets without making adjustments.
 - 1. Measure terminal outlets using a direct-reading hood or outlet manufacturer's written instructions and calculating factors.
- D. Adjust air outlets and inlets for each space to indicated airflows within specified tolerances of indicated values. Make adjustments using branch volume dampers rather than extractors and the dampers at air terminals.
 - 1. Adjust each outlet in same room or space to within specified tolerances of indicated quantities without generating noise levels above the limitations prescribed by the Contract Documents.
 - 2. Adjust patterns of adjustable outlets for proper distribution without drafts.

3.6 GENERAL PROCEDURES FOR HYDRONIC SYSTEMS

- A. Prepare test reports with pertinent design data, and number in sequence starting at pump to end of system. Check the sum of branch-circuit flows against the approved pump flow rate. Correct variations that exceed plus or minus 5 percent.
- B. Prepare schematic diagrams of systems' "as-built" piping layouts.
- C. Prepare hydronic systems for testing and balancing according to the following, in addition to the general preparation procedures specified above:
 - 1. Open all manual valves for maximum flow.
 - 2. Check liquid level in expansion tank.

- Check makeup water-station pressure gage for adequate pressure for highest vent.
- 4. Check flow-control valves for specified sequence of operation, and set at indicated flow.
- 5. Set differential-pressure control valves at the specified differential pressure. Do not set at fully closed position when pump is positive-displacement type unless several terminal valves are kept open.
- 6. Set system controls so automatic valves are wide open to heat exchangers.
- 7. Check pump-motor load. If motor is overloaded, throttle main flow-balancing device so motor nameplate rating is not exceeded.
- 8. Check air vents for a forceful liquid flow exiting from vents when manually operated.

3.7 PROCEDURES FOR MOTORS

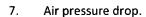
- A. Motors, 1/2 HP and Larger: Test at final balanced conditions and record the following data:
 - 1. Manufacturer's name, model number, and serial number.
 - 2. Motor horsepower rating.
 - 3. Motor rpm.
 - 4. Efficiency rating.
 - 5. Nameplate and measured voltage, each phase.
 - 6. Nameplate and measured amperage, each phase.
 - 7. Starter thermal-protection-element rating.
- B. Motors Driven by Variable-Frequency Controllers: Test for proper operation at speeds varying from minimum to maximum. Test the manual bypass of the controller to prove proper operation. Record observations including name of controller manufacturer, model number, serial number, and nameplate data.

3.8 PROCEDURES FOR CONDENSING UNITS

- A. Verify proper rotation of fans.
- B. Measure entering- and leaving-air temperatures.
- C. Record compressor data.

3.9 PROCEDURES FOR HEAT-TRANSFER COILS

- A. Measure, adjust, and record the following data for each water coil:
 - 1. Entering- and leaving-water temperature.
 - 2. Water flow rate.
 - 3. Water pressure drop.
 - 4. Dry-bulb temperature of entering and leaving air.
 - 5. Wet-bulb temperature of entering and leaving air for cooling coils.
 - 6. Airflow.



- B. Measure, adjust, and record the following data for each refrigerant coil:
 - 1. Dry-bulb temperature of entering and leaving air.
 - 2. Wet-bulb temperature of entering and leaving air.
 - 3. Airflow.
 - Air pressure drop.
 - 5. Refrigerant suction pressure and temperature.

3.10 PROCEDURES FOR TESTING, ADJUSTING, AND BALANCING EXISTING SYSTEMS

- A. Perform a preconstruction inspection of existing equipment that is to remain and be reused.
 - 1. Measure and record the operating speed, airflow, and static pressure of each fan.
 - 2. Measure motor voltage and amperage. Compare the values to motor nameplate information.
 - 3. Check the refrigerant charge.
 - 4. Check the condition of filters.
 - 5. Check the condition of coils.
 - 6. Check the operation of the drain pan and condensate-drain trap.
 - 7. Check bearings and other lubricated parts for proper lubrication.
 - 8. Report on the operating condition of the equipment and the results of the measurements taken. Report deficiencies.
- B. Before performing testing and balancing of existing systems, inspect existing equipment that is to remain and be reused to verify that existing equipment has been cleaned and refurbished. Verify the following:
 - 1. New filters are installed.
 - Coils are clean and fins combed.
 - 3. Drain pans are clean.
 - 4. Fans are clean.
 - 5. Bearings and other parts are properly lubricated.
 - 6. Deficiencies noted in the preconstruction report are corrected.
- C. Perform testing and balancing of existing systems to the extent that existing systems are affected by the renovation work.
 - 1. Compare the indicated airflow of the renovated work to the measured fan airflows, and determine the new fan speed and the face velocity of filters and coils.
 - Verify that the indicated airflows of the renovated work result in filter and coil face velocities and fan speeds that are within the acceptable limits defined by equipment manufacturer.
 - 3. If calculations increase or decrease the air flow rates and water flow rates by more than 5 percent, make equipment adjustments to achieve the calculated rates. If increase or decrease is 5 percent or less, equipment adjustments are not required.



4. Balance each air outlet.

3.11 TOLERANCES

- A. Set HVAC system's air flow rates and water flow rates within the following tolerances:
 - 1. Supply, Return, and Exhaust Fans and Equipment with Fans: Plus or minus 10 percent.
 - 2. Air Outlets and Inlets: Plus or minus 10 percent.
 - 3. Cooling-Water Flow Rate: Plus or minus 10 percent.

3.12 REPORTING

- A. Initial Construction-Phase Report: Based on examination of the Contract Documents as specified in "Examination" Article, prepare a report on the adequacy of design for systems' balancing devices. Recommend changes and additions to systems' balancing devices to facilitate proper performance measuring and balancing. Recommend changes and additions to HVAC systems and general construction to allow access for performance measuring and balancing devices.
- B. Status Reports: Prepare weekly progress reports to describe completed procedures, procedures in progress, and scheduled procedures. Include a list of deficiencies and problems found in systems being tested and balanced. Prepare a separate report for each system and each building floor for systems serving multiple floors.

3.13 FINAL REPORT

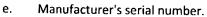
- A. General: Prepare a certified written report; tabulate and divide the report into separate sections for tested systems and balanced systems.
 - 1. Include a certification sheet at the front of the report's binder, signed and sealed by the certified testing and balancing engineer.
 - 2. Include a list of instruments used for procedures, along with proof of calibration.
- B. Final Report Contents: In addition to certified field-report data, include the following:
 - 1. Fan curves.
 - 2. Manufacturers' test data.
 - Field test reports prepared by system and equipment installers.
 - 4. Other information relative to equipment performance; do not include Shop Drawings and product data.
- C. General Report Data: In addition to form titles and entries, include the following data:
 - 1. Title page.
 - 2. Name and address of the TAB contractor.
 - 3. Project name.

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- 4. Project location.
- Architect's name and address.
- 6. Engineer's name and address.
- 7. Contractor's name and address.
- 8. Report date.
- 9. Signature of TAB supervisor who certifies the report.
- 10. Table of Contents with the total number of pages defined for each section of the report.

 Number each page in the report.
- 11. Summary of contents including the following:
 - a. Indicated versus final performance.
 - b. Notable characteristics of systems.
 - c. Description of system operation sequence if it varies from the Contract Documents.
- 12. Nomenclature sheets for each item of equipment.
- 13. Data for terminal units, including manufacturer's name, type, size, and fittings.
- 14. Notes to explain why certain final data in the body of reports vary from indicated values.
- 15. Test conditions for fans and pump performance forms including the following:
 - a. Settings for outdoor-, return-, and exhaust-air dampers.
 - b. Conditions of filters.
 - c. Cooling coil, wet- and dry-bulb conditions.
 - d. Face and bypass damper settings at coils.
 - e. Fan drive settings including settings and percentage of maximum pitch diameter.
 - f. Settings for supply-air, static-pressure controller.
 - g. Other system operating conditions that affect performance.
- D. System Diagrams: Include schematic layouts of air and hydronic distribution systems. Present each system with single-line diagram and include the following:
 - 1. Quantities of outdoor, supply, return, and exhaust airflows.
 - 2. Water and steam flow rates.
 - 3. Duct, outlet, and inlet sizes.
 - 4. Pipe and valve sizes and locations.
 - 5. Terminal units.
 - 6. Balancing stations.
 - 7. Position of balancing devices.
- E. Air-Handling-Unit Test Reports: For air-handling units with coils, include the following:
 - 1. Unit Data:
 - a. Unit identification.
 - b. Location.
 - c. Make and type.
 - d. Model number and unit size.

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- f. Unit arrangement and class.
- g. Discharge arrangement.
- h. Sheave make, size in inches, and bore.
- i. Center-to-center dimensions of sheave, and amount of adjustments in inches.
- j. Number, make, and size of belts.
- k. Number, type, and size of filters.

2. Motor Data:

- a. Motor make, and frame type and size.
- b. Horsepower and rpm.
- c. Volts, phase, and hertz.
- d. Full-load amperage and service factor.
- e. Sheave make, size in inches, and bore.
- f. Center-to-center dimensions of sheave, and amount of adjustments in inches.

3. Test Data (Indicated and Actual Values):

- a. Total air flow rate in cfm.
- b. Total system static pressure in inches wg.
- c. Fan rpm.
- d. Discharge static pressure in inches wg.
- e. Filter static-pressure differential in inches wg.
- f. Preheat-coil static-pressure differential in inches wg.
- g. Cooling-coil static-pressure differential in inches wg.
- h. Heating-coil static-pressure differential in inches wg.
- i. Outdoor airflow in cfm.
- Return airflow in cfm.
- k. Outdoor-air damper position.
- Return-air damper position.
- m. Vortex damper position.

F. Apparatus-Coil Test Reports:

1. Coil Data:

- a. System identification.
- b. Location.
- c. Coil type.
- d. Number of rows.
- e. Fin spacing in fins per inch o.c.
- f. Make and model number.
- g. Face area in sq. ft..
- Tube size in NPS.
- i. Tube and fin materials.
- j. Circuiting arrangement.





- a. Air flow rate in cfm.
- b. Average face velocity in fpm.
- c. Air pressure drop in inches wg.
- d. Outdoor-air, wet- and dry-bulb temperatures in deg F.
- e. Return-air, wet- and dry-bulb temperatures in deg F.
- f. Entering-air, wet- and dry-bulb temperatures in deg F.
- g. Leaving-air, wet- and dry-bulb temperatures in deg F.
- h. Water flow rate in gpm.
- i. Water pressure differential in feet of head or psig.
- j. Entering-water temperature in deg F.
- k. Leaving-water temperature in deg F.
- i. Refrigerant expansion valve and refrigerant types.
- m. Refrigerant suction pressure in psig.
- n. Refrigerant suction temperature in deg F.
- o. Inlet steam pressure in psig.

G. Fan Test Reports: For supply, return, and exhaust fans, include the following:

1. Fan Data:

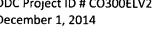
- a. System identification.
- b. Location.
- c. Make and type.
- d. Model number and size.
- e. Manufacturer's serial number.
- f. Arrangement and class.
- g. Sheave make, size in inches, and bore.
- h. Center-to-center dimensions of sheave, and amount of adjustments in inches.

2. Motor Data:

- a. Motor make, and frame type and size.
- b. Horsepower and rpm.
- c. Volts, phase, and hertz.
- d. Full-load amperage and service factor.
- e. Sheave make, size in inches, and bore.
- f. Center-to-center dimensions of sheave, and amount of adjustments in inches.
- g. Number, make, and size of belts.

3. Test Data (Indicated and Actual Values):

- a. Total airflow rate in cfm.
- b. Total system static pressure in inches wg.
- c. Fan rpm.
- d. Discharge static pressure in inches wg.



- Suction static pressure in inches wg.
- H. Rectangular Duct Traverse Reports: Include a diagram with a grid representing the duct crosssection and record the following:

1. Report Data:

- a. System and air-handling-unit number.
- b. Location and zone.
- c. Traverse air temperature in deg F.
- d. Duct static pressure in inches wg.
- e. Duct size in inches.
- f. Duct area in sq. ft..
- Indicated air flow rate in cfm. g.
- Indicated velocity in fpm. h.
- Actual air flow rate in cfm. i.
- Actual average velocity in fpm. j.
- k. Barometric pressure in psig.

Air-Terminal-Device Reports:

1. Unit Data:

- a. System and air-handling unit identification.
- b. Location and zone.
- c. Apparatus used for test.
- d. Area served.
- e. Make.
- f. Number from system diagram.
- Type and model number. g.
- h. Size.
- i. Effective area in sq. ft..

2. Test Data (Indicated and Actual Values):

- a. Air flow rate in cfm.
- b. Air velocity in fpm.
- c. Preliminary air flow rate as needed in cfm.
- d. Preliminary velocity as needed in fpm.
- Final air flow rate in cfm. e.
- f. Final velocity in fpm.
- Space temperature in deg F.

J. Instrument Calibration Reports:

- 1. Report Data:
 - Instrument type and make.



- c. Application.
- Dates of use.
- e. Dates of calibration.

3.14 INSPECTIONS

A. Initial Inspection:

- 1. After testing and balancing are complete, operate each system and randomly check measurements to verify that the system is operating according to the final test and balance readings documented in the final report.
- 2. Check the following for each system:
 - a. Measure airflow of at least 10percent of air outlets.
 - b. Measure water flow of at least 5percent of terminals.
 - c. Measure room temperature at each thermostat/temperature sensor. Compare the reading to the set point.
 - d. Verify that balancing devices are marked with final balance position.
 - e. Note deviations from the Contract Documents in the final report.

B. Final Inspection:

- 1. After initial inspection is complete and documentation by random checks verifies that testing and balancing are complete and accurately documented in the final report, request that a final inspection be made by Construction Manager.
- 2. The TAB contractor's test and balance engineer shall conduct the inspection in the presence of Construction Manager.
- Construction Manager shall randomly select measurements, documented in the final report, to be rechecked. Rechecking shall be limited to either 10 percent of the total measurements recorded or the extent of measurements that can be accomplished in a normal 8-hour business day.
- 4. If rechecks yield measurements that differ from the measurements documented in the final report by more than the tolerances allowed, the measurements shall be noted as "FAILED."
- 5. If the number of "FAILED" measurements is greater than 10 percent of the total measurements checked during the final inspection, the testing and balancing shall be considered incomplete and shall be rejected.
- C. TAB Work will be considered defective if it does not pass final inspections. If TAB Work fails, proceed as follows:
 - 1. Recheck all measurements and make adjustments. Revise the final report and balancing device settings to include all changes; resubmit the final report and request a second final inspection.

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- 2. If the second final inspection also fails, Owner may contract the services of another TAB contractor to complete TAB Work according to the Contract Documents and deduct the cost of the services from the original TAB contractor's final payment.
- D. Prepare test and inspection reports.

3.15 ADDITIONAL TESTS

- A. Within 90 days of completing TAB, perform additional TAB to verify that balanced conditions are being maintained throughout and to correct unusual conditions.
- B. Seasonal Periods: If initial TAB procedures were not performed during near-peak summer and winter conditions, perform additional TAB during near-peak summer and winter conditions.

END OF SECTION 230593

SECTION 230713 - DUCT INSULATION

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. Section includes insulating the following duct services:
 - 1. Elevator hoistway exhaust.

1.3 SUBMITTALS

- A. Product Data: For each type of product indicated. Include thermal conductivity, water-vapor permeance thickness, and jackets (both factory- and field-applied if any).
- B. Shop Drawings: Include plans, elevations, sections, details, and attachments to other work.
 - 1. Detail application of protective shields, saddles, and inserts at hangers for each type of insulation and hanger.
 - 2. Detail insulation application at elbows, fittings, dampers, specialties and flanges for each type of insulation.
 - 3. Detail application of field-applied jackets.
 - 4. Detail application at linkages of control devices.
- C. Samples: For each type of insulation and jacket indicated. Identify each Sample, describing product and intended use. Sample sizes are as follows:
 - 1. Sheet Form Insulation Materials: 12 inches (300 mm) square.
 - 2. Sheet Jacket Materials: 12 inches (300 mm) square.
 - 3. Manufacturer's Color Charts: For products where color is specified, show the full range of colors available for each type of finish material.
- D. Qualification Data: For qualified Installer.
- E. Material Test Reports: From a qualified testing agency acceptable to authorities having jurisdiction indicating, interpreting, and certifying test results for compliance of insulation materials, sealers, attachments, cements, and jackets, with requirements indicated. Include dates of tests and test methods employed.
- F. Field quality-control reports.



1.4 QUALITY ASSURANCE

- A. Installer Qualifications: Skilled mechanics who have successfully completed an apprenticeship program or another craft training program certified by the Department of Labor, Bureau of Apprenticeship and Training.
- B. Surface-Burning Characteristics: For insulation and related materials, as determined by testing identical products according to ASTM E 84, by a testing agency acceptable to authorities having jurisdiction. Factory label insulation and jacket materials and adhesive, mastic, tapes, and cement material containers, with appropriate markings of applicable testing agency.
 - 1. Insulation Installed Indoors: Flame-spread index of 25 or less, and smoke-developed index of 50 or less.
 - 2. Insulation Installed Outdoors: Flame-spread index of 75 or less, and smoke-developed index of 150 or less.
- C. Mockups: Before installing insulation, build mockups for each type of insulation and finish listed below to demonstrate quality of insulation application and finishes. Build mockups in the location indicated or, if not indicated, as directed by Architect. Use materials indicated for the completed Work.

1. Ductwork Mockups:

- a. One 10-foot (3-m) section each of rectangular and round straight duct.
- b. One each of a 90-degree mitered round and rectangular elbow, and one each of a 90-degree radius round and rectangular elbow.
- c. One rectangular branch takeoff and one round branch takeoff from a rectangular duct. One round tee fitting.
- d. One rectangular and round transition fitting.
- e. Four support hangers for round and rectangular ductwork.
- f. Each type of damper and specialty.
- 2. For each mockup, fabricate cutaway sections to allow observation of application details for insulation materials, adhesives, mastics, attachments, and jackets.
- 3. Notify Architect seven days in advance of dates and times when mockups will be constructed.
- 4. Obtain Architect's approval of mockups before starting insulation application.
- 5. Approval of mockups does not constitute approval of deviations from the Contract Documents contained in mockups unless Architect specifically approves such deviations in writing.
- Maintain mockups during construction in an undisturbed condition as a standard for judging the completed Work.
- 7. Demolish and remove mockups when directed.

1.5 DELIVERY, STORAGE, AND HANDLING

A. Packaging: Insulation material containers shall be marked by manufacturer with appropriate ASTM standard designation, type and grade, and maximum use temperature.

1.6 COORDINATION

- A. Coordinate sizes and locations of supports, hangers, and insulation shields specified in Division 23 Section "Hangers and Supports for HVAC Piping and Equipment."
- B. Coordinate clearance requirements with duct Installer for duct insulation application. Before preparing ductwork Shop Drawings, establish and maintain clearance requirements for installation of insulation and field-applied jackets and finishes and for space required for maintenance.
- C. Coordinate installation and testing of heat tracing.

1.7 SCHEDULING

- A. Schedule insulation application after pressure testing systems and, where required, after installing and testing heat tracing. Insulation application may begin on segments that have satisfactory test results.
- B. Complete installation and concealment of plastic materials as rapidly as possible in each area of construction.

PART 2 - PRODUCTS

2.1 FIRE-RATED INSULATION SYSTEMS

- A. Fire-Rated Blanket: High-temperature, flexible, blanket insulation with FSK jacket that is tested and certified to provide a [1] [2]-hour fire rating by an NRTL acceptable to authorities having jurisdiction.
 - 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. CertainTeed Corp.; FlameChek.
 - b. Johns Manville; Firetemp Wrap.
 - c. Nelson Fire Stop Products; Nelson FSB Flameshield Blanket.
 - d. Thermal Ceramics; FireMaster Duct Wrap.
 - e. 3M; Fire Barrier Wrap Products.
 - f. Unifrax Corporation; FyreWrap.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine substrates and conditions for compliance with requirements for installation tolerances and other conditions affecting performance of insulation application.

- 1. Verify that systems to be insulated have been tested and are free of defects.
- 2. Verify that surfaces to be insulated are clean and dry.
- B. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 PREPARATION

A. Surface Preparation: Clean and dry surfaces to receive insulation. Remove materials that will adversely affect insulation application.

3.3 GENERAL INSTALLATION REQUIREMENTS

- A. Install insulation materials, accessories, and finishes with smooth, straight, and even surfaces; free of voids throughout the length of ducts and fittings.
- B. Install insulation materials, vapor barriers or retarders, jackets, and thicknesses required for each item of duct system as specified in insulation system schedules.
- C. Install accessories compatible with insulation materials and suitable for the service. Install accessories that do not corrode, soften, or otherwise attack insulation or jacket in either wet or dry state.
- D. Install insulation with longitudinal seams at top and bottom of horizontal runs.
- E. Install multiple layers of insulation with longitudinal and end seams staggered.
- F. Keep insulation materials dry during application and finishing.
- G. Install insulation with tight longitudinal seams and end joints. Bond seams and joints with adhesive recommended by insulation material manufacturer.
- H. Install insulation with least number of joints practical.
- I. Where vapor barrier is indicated, seal joints, seams, and penetrations in insulation at hangers, supports, anchors, and other projections with vapor-barrier mastic.
 - 1. Install insulation continuously through hangers and around anchor attachments.
 - For insulation application where vapor barriers are indicated, extend insulation on anchor legs from point of attachment to supported item to point of attachment to structure. Taper and seal ends at attachment to structure with vapor-barrier mastic.
 - Install insert materials and install insulation to tightly join the insert. Seal insulation to insulation inserts with adhesive or sealing compound recommended by insulation material manufacturer.
- J. Apply adhesives, mastics, and sealants at manufacturer's recommended coverage rate and wet and dry film thicknesses.

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- K. Install insulation with factory-applied jackets as follows as per manufacturer's recommendations.
- L. Cut insulation in a manner to avoid compressing insulation more than 75 percent of its nominal thickness.
- M. Finish installation with systems at operating conditions. Repair joint separations and cracking due to thermal movement.
- N. Repair damaged insulation facings by applying same facing material over damaged areas.

3.4 FIRE-RATED INSULATION SYSTEM INSTALLATION

- A. Where fire-rated insulation system is indicated, secure system to ducts and duct hangers and supports to maintain a continuous fire rating.
- B. Insulate duct access panels and doors to achieve same fire rating as duct.
- C. Install firestopping at penetrations through fire-rated assemblies. Fire-stop systems are specified in Division 07 Section "Penetration Firestopping."

END OF SECTION 230713

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SECTION 23 07 19 - HVAC PIPING INSULATION

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. Section includes insulating the following HVAC piping systems:
 - 1. Condensate drain piping, indoors.
 - 2. Refrigerant suction and hot-gas piping, indoors and outdoors.
- B. Related Sections:
 - 1. Section 230713 "Duct Insulation."

1.3 ACTION SUBMITTALS

- A. Product Data: For each type of product indicated. Include thermal conductivity, water-vapor permeance thickness, and jackets (both factory and field applied if any).
- B. Samples: For each type of insulation and jacket indicated. Identify each Sample, describing product and intended use.
 - 1. Preformed Pipe Insulation Materials: 12 inches long by NPS 2.
 - 2. Jacket Materials for Pipe: 12 inches long by NPS 2.
 - 3. Manufacturer's Color Charts: For products where color is specified, show the full range of colors available for each type of finish material.

1.4 INFORMATIONAL SUBMITTALS

- A. Qualification Data: For qualified Installer.
- B. Material Test Reports: From a qualified testing agency acceptable to authorities having jurisdiction indicating, interpreting, and certifying test results for compliance of insulation materials, sealers, attachments, cements, and jackets, with requirements indicated. Include dates of tests and test methods employed.
- C. Field quality-control reports.

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1.5 QUALITY ASSURANCE

- A. Installer Qualifications: Skilled mechanics who have successfully completed an apprenticeship program or another craft training program certified by the Department of Labor, Bureau of Apprenticeship and Training.
- B. Surface-Burning Characteristics: For insulation and related materials, as determined by testing identical products according to ASTM E 84, by a testing and inspecting agency acceptable to authorities having jurisdiction. Factory label insulation and jacket materials and adhesive, mastic, tapes, and cement material containers, with appropriate markings of applicable testing agency.
 - 1. Insulation Installed Indoors: Flame-spread index of 25 or less, and smoke-developed index of 50 or less.
 - 2. Insulation Installed Outdoors: Flame-spread index of 75 or less, and smoke-developed index of 150 or less.

1.6 DELIVERY, STORAGE, AND HANDLING

A. Packaging: Insulation material containers shall be marked by manufacturer with appropriate ASTM standard designation, type and grade, and maximum use temperature.

1.7 COORDINATION

- A. Coordinate sizes and locations of supports, hangers, and insulation shields specified in Section 230529 "Hangers and Supports for HVAC Piping and Equipment."
- B. Coordinate clearance requirements with piping Installer for piping insulation application. Before preparing piping Shop Drawings, establish and maintain clearance requirements for installation of insulation and field-applied jackets and finishes and for space required for maintenance.
- C. Coordinate installation and testing of heat tracing.

1.8 SCHEDULING

- A. Schedule insulation application after pressure testing systems and, where required, after installing and testing heat tracing. Insulation application may begin on segments that have satisfactory test results.
- B. Complete installation and concealment of plastic materials as rapidly as possible in each area of construction.



PART 2 - PRODUCTS

2.1 INSULATION MATERIALS

- A. Comply with requirements in "Piping Insulation Schedule, General," "Indoor Piping Insulation Schedule," "Outdoor, Aboveground Piping Insulation Schedule," and "Outdoor, Underground Piping Insulation Schedule" articles for where insulating materials shall be applied.
- Products shall not contain asbestos, lead, mercury, or mercury compounds.
- C. Products that come in contact with stainless steel shall have a leachable chloride content of less than 50 ppm when tested according to ASTM C 871.
- D. Insulation materials for use on austenitic stainless steel shall be qualified as acceptable according to ASTM C 795.
- E. Foam insulation materials shall not use CFC or HCFC blowing agents in the manufacturing process.
- F. Mineral-Fiber, Preformed Pipe Insulation:
 - 1. Products: Subject to compliance with requirements, available products that may be incorporated into the Work include, but are not limited to, the following:
 - Fibrex Insulations Inc.; Coreplus 1200.
 - b. Johns Manville; Micro-Lok.
 - c. Knauf Insulation; 1000-Degree Pipe Insulation.
 - d. Manson Insulation Inc.; Alley-K.
 - e. Owens Corning; Fiberglas Pipe Insulation.
 - 2. Type I, 850 deg F Materials: Mineral or glass fibers bonded with a thermosetting resin. Comply with ASTM C 547, Type I, Grade A, with factory-applied ASJ-SSL. Factory-applied jacket requirements are specified in "Factory-Applied Jackets" Article.
- G. Flexible Elastomeric Insulation: Closed-cell, sponge- or expanded-rubber materials. Comply with ASTM C 534, Type I for tubular materials.
 - 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. Aeroflex USA, Inc.; Aerocel.
 - b. Armacell LLC; AP Armaflex.
 - c. K-Flex USA; Insul-Lock, Insul-Tube, and K-FLEX LS.



2.2 INSULATING CEMENTS

- A. Mineral-Fiber Insulating Cement: Comply with ASTM C 195.
 - 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. Ramco Insulation, Inc.; Super-Stik.

2.3 ADHESIVES

- A. Mineral-Fiber Adhesive: Comply with MIL-A-3316C, Class 2, Grade A.
 - 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. Childers Brand, Specialty Construction Brands, Inc., a business of H. B. Fuller Company; CP-127.
 - b. Eagle Bridges Marathon Industries; 225.
 - c. Foster Brand, Specialty Construction Brands, Inc., a business of H. B. Fuller Company; 85-60/85-70.
 - d. Mon-Eco Industries, Inc.; 22-25.
 - 2. For indoor applications, adhesive shall have a VOC content of 80 g/L or less when calculated according to 40 CFR 59, Subpart D (EPA Method 24).
- B. Flexible Elastomeric and Polyolefin Adhesive: Comply with MIL-A-24179A, Type II, Class 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. Aeroflex USA, Inc.; Aeroseal.
 - b. Armacell LLC; Armaflex 520 Adhesive.
 - c. Foster Brand, Specialty Construction Brands, Inc., a business of H. B. Fuller Company; 85-75.
 - d. K-Flex USA; R-373 Contact Adhesive.
 - 2. For indoor applications, adhesive shall have a VOC content of 50 g/L or less when calculated according to 40 CFR 59, Subpart D (EPA Method 24).
- C. ASJ Adhesive: Comply with MIL-A-3316C, Class 2, Grade A for bonding insulation jacket lap seams and joints.
 - 1. Products: Subject to compliance with requirements, available products that may be incorporated into the Work include, but are not limited to, the following:

- a. Childers Brand, Specialty Construction Brands, Inc., a business of H. B. Fuller Company; CP-82.
- b. Eagle Bridges Marathon Industries; 225.
- c. Foster Brand, Specialty Construction Brands, Inc., a business of H. B. Fuller Company, 85-50.
- d. Mon-Eco Industries, Inc.; 22-25.
- 2. For indoor applications, adhesive shall have a VOC content of 50 g/L or less when calculated according to 40 CFR 59, Subpart D (EPA Method 24).

2.4 MASTICS

- Materials shall be compatible with insulation materials, jackets, and substrates; comply with MIL-PRF-19565C, Type II.
 - 1. For indoor applications, use mastics that have a VOC content of 50 g/L or less when calculated according to 40 CFR 59, Subpart D (EPA Method 24).
- B. Vapor-Barrier Mastic: Water based; suitable for indoor use on below-ambient services.
 - 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. Foster Brand, Specialty Construction Brands, Inc., a business of H. B. Fuller Company; 30-80/30-90.
 - b. Vimasco Corporation; 749.
 - 2. Water-Vapor Permeance: ASTM E 96/E 96M, Procedure B, 0.013 at 43-mil dry film thickness.
 - 3. Service Temperature Range: Minus 20 to plus 180 deg.
 - 4. Solids Content: ASTM D 1644, 58 percent by volume and 70 percent by weight.
 - 5. Color: White.

2.5 LAGGING ADHESIVES

- A. Description: Comply with MIL-A-3316C, Class I, Grade A and shall be compatible with insulation materials, jackets, and substrates.
 - 1. For indoor applications, use lagging adhesives that have a VOC content of 50 g/L or less when calculated according to 40 CFR 59, Subpart D (EPA Method 24).
 - 2. Products: Subject to compliance with requirements, available products that may be incorporated into the Work include, but are not limited to, the following:
 - a. Childers Brand, Specialty Construction Brands, Inc., a business of H. B. Fuller Company; CP-50 AHV2.

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- b. Foster Brand, Specialty Construction Brands, Inc., a business of H. B. Fuller Company; 30-36.
- c. Vimasco Corporation; 713 and 714.
- 3. Fire-resistant, water-based lagging adhesive and coating for use indoors to adhere fire-resistant lagging cloths over pipe insulation.
- 4. Service Temperature Range: 0 to plus 180 deg F.
- 5. Color: White.

2.6 SEALANTS

A. Joint Sealants:

- 1. Joint Sealants for Cellular-Glass Products: Subject to compliance with requirements, available products that may be incorporated into the Work include, but are not limited to, the following:
 - a. Childers Brand, Specialty Construction Brands, Inc., a business of H. B. Fuller Company; CP-76.
 - b. Eagle Bridges Marathon Industries; 405.
 - c. Foster Brand, Specialty Construction Brands, Inc., a business of H. B. Fuller Company; 30-45.
 - d. Mon-Eco Industries, Inc.; 44-05.
 - e. Pittsburgh Corning Corporation; Pittseal 444.

B. ASJ Flashing Sealants:

- 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. Childers Brand, Specialty Construction Brands, Inc., a business of H. B. Fuller Company; CP-76.
- 2. Materials shall be compatible with insulation materials, jackets, and substrates.
- 3. Fire- and water-resistant, flexible, elastomeric sealant.
- 4. Service Temperature Range: Minus 40 to plus 250 deg F.
- 5. Color: White.
- 6. For indoor applications, sealants shall have a VOC content of 420 g/L or less when calculated according to 40 CFR 59, Subpart D (EPA Method 24).

2.7 FACTORY-APPLIED JACKETS

A. Insulation system schedules indicate factory-applied jackets on various applications. When factory-applied jackets are indicated, comply with the following:

 ASJ-SSL: ASJ with self-sealing, pressure-sensitive, acrylic-based adhesive covered by a removable protective strip; complying with ASTM C 1136, Type I.

2.8 FIELD-APPLIED JACKETS

- A. Field-applied jackets shall comply with ASTM C 921, Type I, unless otherwise indicated.
- B. Metal Jacket:
 - 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. Childers Brand, Specialty Construction Brands, Inc., a business of H. B. Fuller Company; Metal Jacketing Systems.
 - b. ITW Insulation Systems; Aluminum and Stainless Steel Jacketing.
 - c. RPR Products, Inc.; Insul-Mate.
 - Aluminum Jacket: Comply with ASTM B 209, Alloy 3003, 3005, 3105, or 5005, Temper H-14.
 - a. Factory cut and rolled to size.
 - b. Finish and thickness are indicated in field-applied jacket schedules.
 - c. Moisture Barrier for Indoor Applications: 1-mil-thick, heat-bonded polyethylene and kraft paper.
 - d. Factory-Fabricated Fitting Covers:
 - 1) Same material, finish, and thickness as jacket.
 - 2) Preformed 2-piece or gore, 45- and 90-degree, short- and long-radius elbows.
 - 3) Tee covers.
 - 4) Flange and union covers.
 - 5) End caps.
 - 6) Beveled collars.
 - 7) Valve covers.
 - Field fabricate fitting covers only if factory-fabricated fitting covers are not available.

2.9 TAPES

- ASJ Tape: White vapor-retarder tape matching factory-applied jacket with acrylic adhesive, complying with ASTM C 1136.
 - 1. Products: Subject to compliance with requirements, available products that may be incorporated into the Work include, but are not limited to, the following:
 - ABI, Ideal Tape Division; 428 AWF ASJ.

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- b. Avery Dennison Corporation, Specialty Tapes Division; Fasson 0836.
- c. Compac Corporation; 104 and 105.
- d. Venture Tape; 1540 CW Plus, 1542 CW Plus, and 1542 CW Plus/SQ.
- 2. Width: 3 inches.
- 3. Thickness: 11.5 mils.
- 4. Adhesion: 90 ounces force/inch in width.
- 5. Elongation: 2 percent.
- 6. Tensile Strength: 40 lbf/inch in width.
- 7. ASJ Tape Disks and Squares: Precut disks or squares of ASJ tape.
- B. Aluminum-Foil Tape: Vapor-retarder tape with acrylic adhesive.
 - 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. ABI, Ideal Tape Division; 488 AWF.
 - b. Avery Dennison Corporation, Specialty Tapes Division; Fasson 0800.
 - c. Compac Corporation; 120.
 - d. Venture Tape; 3520 CW.
 - 2. Width: 2 inches.
 - 3. Thickness: 3.7 mils.
 - 4. Adhesion: 100 ounces force/inch in width.
 - 5. Elongation: 5 percent.
 - 6. Tensile Strength: 34 lbf/inch in width.

2.10 SECUREMENTS

A. Bands:

- 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. ITW Insulation Systems; Gerrard Strapping and Seals.
 - p. RPR Products, Inc.; Insul-Mate Strapping, Seals, and Springs.
- 2. Aluminum: ASTM B 209, Alloy 3003, 3005, 3105, or 5005; Temper H-14, 0.020 inch thick, 1/2 inch wide with wing seal.
- B. Staples: Outward-clinching insulation staples, nominal 3/4-inch-wide, stainless steel or Monel.
- C. Wire: 0.062-inch soft-annealed, stainless steel.
 - 1. 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:



a. C & F Wire.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine substrates and conditions for compliance with requirements for installation tolerances and other conditions affecting performance of insulation application.
 - 1. Verify that systems to be insulated have been tested and are free of defects.
 - 2. Verify that surfaces to be insulated are clean and dry.
 - 3. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 PREPARATION

- A. Surface Preparation: Clean and dry surfaces to receive insulation. Remove materials that will adversely affect insulation application.
- B. Coordinate insulation installation with the trade installing heat tracing. Comply with requirements for heat tracing that apply to insulation.
- C. Mix insulating cements with clean potable water; if insulating cements are to be in contact with stainless-steel surfaces, use demineralized water.

3.3 GENERAL INSTALLATION REQUIREMENTS

- A. Install insulation materials, accessories, and finishes with smooth, straight, and even surfaces; free of voids throughout the length of piping including fittings, valves, and specialties.
- B. Install insulation materials, forms, vapor barriers or retarders, jackets, and thicknesses required for each item of pipe system as specified in insulation system schedules.
- C. Install accessories compatible with insulation materials and suitable for the service. Install accessories that do not corrode, soften, or otherwise attack insulation or jacket in either wet or dry state.
- D. Install insulation with longitudinal seams at top and bottom of horizontal runs.
- E. Install multiple layers of insulation with longitudinal and end seams staggered.
- F. Do not weld brackets, clips, or other attachment devices to piping, fittings, and specialties.
- G. Keep insulation materials dry during application and finishing.



- H. Install insulation with tight longitudinal seams and end joints. Bond seams and joints with adhesive recommended by insulation material manufacturer.
- I. Install insulation with least number of joints practical.
- J. Where vapor barrier is indicated, seal joints, seams, and penetrations in insulation at hangers, supports, anchors, and other projections with vapor-barrier mastic.
 - 1. Install insulation continuously through hangers and around anchor attachments.
 - 2. For insulation application where vapor barriers are indicated, extend insulation on anchor legs from point of attachment to supported item to point of attachment to structure. Taper and seal ends at attachment to structure with vapor-barrier mastic.
 - 3. Install insert materials and install insulation to tightly join the insert. Seal insulation to insulation inserts with adhesive or sealing compound recommended by insulation material manufacturer.
 - 4. Cover inserts with jacket material matching adjacent pipe insulation. Install shields over jacket, arranged to protect jacket from tear or puncture by hanger, support, and shield.
- K. Apply adhesives, mastics, and sealants at manufacturer's recommended coverage rate and wet and dry film thicknesses.
- L. Install insulation with factory-applied jackets as follows:
 - 1. Draw jacket tight and smooth.
 - Cover circumferential joints with 3-inch-wide strips, of same material as insulation jacket. Secure strips with adhesive and outward clinching staples along both edges of strip, spaced 4 inches o.c.
 - 3. Overlap jacket longitudinal seams at least 1-1/2 inches. Install insulation with longitudinal seams at bottom of pipe. Clean and dry surface to receive self-sealing lap. Staple laps with outward clinching staples along edge at 2 inches o.c.
 - a. For below-ambient services, apply vapor-barrier mastic over staples.
 - 4. Cover joints and seams with tape, according to insulation material manufacturer's written instructions, to maintain vapor seal.
 - 5. Where vapor barriers are indicated, apply vapor-barrier mastic on seams and joints and at ends adjacent to pipe flanges and fittings.
- M. Cut insulation in a manner to avoid compressing insulation more than 75 percent of its nominal thickness.
- N. Finish installation with systems at operating conditions. Repair joint separations and cracking due to thermal movement.
- O. Repair damaged insulation facings by applying same facing material over damaged areas. Extend patches at least 4 inches beyond damaged areas. Adhere, staple, and seal patches similar to butt joints.

- P. For above-ambient services, do not install insulation to the following:
 - 1. Vibration-control devices.
 - 2. Testing agency labels and stamps.
 - 3. Nameplates and data plates.
 - 4. Manholes.
 - 5. Handholes.
 - 6. Cleanouts.

3.4 PENETRATIONS

- A. Insulation Installation at Roof Penetrations: Install insulation continuously through roof penetrations.
 - 1. Seal penetrations with flashing sealant.
 - For applications requiring only indoor insulation, terminate insulation above roof surface and seal with joint sealant. For applications requiring indoor and outdoor insulation, install insulation for outdoor applications tightly joined to indoor insulation ends. Seal joint with joint sealant.
 - 3. Extend jacket of outdoor insulation outside roof flashing at least 2 inches below top of roof flashing.
 - 4. Seal jacket to roof flashing with flashing sealant.
- B. Insulation Installation at Aboveground Exterior Wall Penetrations: Install insulation continuously through wall penetrations.
 - 1. Seal penetrations with flashing sealant.
 - 2. For applications requiring only indoor insulation, terminate insulation inside wall surface and seal with joint sealant. For applications requiring indoor and outdoor insulation, install insulation for outdoor applications tightly joined to indoor insulation ends. Seal joint with joint sealant.
 - 3. Extend jacket of outdoor insulation outside wall flashing and overlap wall flashing at least 2 inches.
 - 4. Seal jacket to wall flashing with flashing sealant.
- C. Insulation Installation at Interior Wall and Partition Penetrations (That Are Not Fire Rated): Install insulation continuously through walls and partitions.
- D. Insulation Installation at Fire-Rated Wall and Partition Penetrations: Install insulation continuously through penetrations of fire-rated walls and partitions.
 - 1. Comply with requirements in Section 078413 "Penetration Firestopping" for firestopping and fire-resistive joint sealers.
- E. Insulation Installation at Floor Penetrations:
 - 1. Pipe: Install insulation continuously through floor penetrations.

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Seal penetrations through fire-rated assemblies. Comply with requirements in Section 078413 "Penetration Firestopping."

3.5 GENERAL PIPE INSULATION INSTALLATION

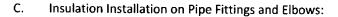
- A. Requirements in this article generally apply to all insulation materials except where more specific requirements are specified in various pipe insulation material installation articles.
- B. Insulation Installation on Fittings, Valves, Strainers, Flanges, and Unions:
 - 1. Install insulation over fittings, valves, strainers, flanges, unions, and other specialties with continuous thermal and vapor-retarder integrity unless otherwise indicated.
 - Insulate pipe elbows using preformed fitting insulation or mitered fittings made from same material and density as adjacent pipe insulation. Each piece shall be butted tightly against adjoining piece and bonded with adhesive. Fill joints, seams, voids, and irregular surfaces with insulating cement finished to a smooth, hard, and uniform contour that is uniform with adjoining pipe insulation.
 - 3. Insulate tee fittings with preformed fitting insulation or sectional pipe insulation of same material and thickness as used for adjacent pipe. Cut sectional pipe insulation to fit. Butt each section closely to the next and hold in place with tie wire. Bond pieces with adhesive.
 - 4. Insulate valves using preformed fitting insulation or sectional pipe insulation of same material, density, and thickness as used for adjacent pipe. Overlap adjoining pipe insulation by not less than two times the thickness of pipe insulation, or one pipe diameter, whichever is thicker. For valves, insulate up to and including the bonnets, valve stuffing-box studs, bolts, and nuts. Fill joints, seams, and irregular surfaces with insulating cement.
 - 5. Insulate strainers using preformed fitting insulation or sectional pipe insulation of same material, density, and thickness as used for adjacent pipe. Overlap adjoining pipe insulation by not less than two times the thickness of pipe insulation, or one pipe diameter, whichever is thicker. Fill joints, seams, and irregular surfaces with insulating cement. Insulate strainers so strainer basket flange or plug can be easily removed and replaced without damaging the insulation and jacket. Provide a removable reusable insulation cover. For below-ambient services, provide a design that maintains vapor barrier.
 - Insulate flanges and unions using a section of oversized preformed pipe insulation.
 Overlap adjoining pipe insulation by not less than two times the thickness of pipe insulation, or one pipe diameter, whichever is thicker.
 - 7. Cover segmented insulated surfaces with a layer of finishing cement and coat with a mastic. Install vapor-barrier mastic for below-ambient services and a breather mastic for above-ambient services. Reinforce the mastic with fabric-reinforcing mesh. Trowel the mastic to a smooth and well-shaped contour.
 - 8. For services not specified to receive a field-applied jacket except for flexible elastomeric and polyolefin, install fitted PVC cover over elbows, tees, strainers, valves, flanges, and unions. Terminate ends with PVC end caps. Tape PVC covers to adjoining insulation facing using PVC tape.

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- Stencil or label the outside insulation jacket of each union with the word "union." Match size and color of pipe labels.
- C. Insulate instrument connections for thermometers, pressure gages, pressure temperature taps, test connections, flow meters, sensors, switches, and transmitters on insulated pipes. Shape insulation at these connections by tapering it to and around the connection with insulating cement and finish with finishing cement, mastic, and flashing sealant.
- D. Install removable insulation covers at locations indicated. Installation shall conform to the following:
 - 1. Make removable flange and union insulation from sectional pipe insulation of same thickness as that on adjoining pipe. Install same insulation jacket as adjoining pipe insulation.
 - When flange and union covers are made from sectional pipe insulation, extend insulation from flanges or union long at least two times the insulation thickness over adjacent pipe insulation on each side of flange or union. Secure flange cover in place with stainless-steel or aluminum bands. Select band material compatible with insulation and jacket.
 - 3. Construct removable valve insulation covers in same manner as for flanges, except divide the two-part section on the vertical center line of valve body.
 - 4. When covers are made from block insulation, make two halves, each consisting of mitered blocks wired to stainless-steel fabric. Secure this wire frame, with its attached insulation, to flanges with tie wire. Extend insulation at least 2 inches over adjacent pipe insulation on each side of valve. Fill space between flange or union cover and pipe insulation with insulating cement. Finish cover assembly with insulating cement applied in two coats. After first coat is dry, apply and trowel second coat to a smooth finish.
 - 5. Unless a PVC jacket is indicated in field-applied jacket schedules, finish exposed surfaces with a metal jacket.

3.6 INSTALLATION OF FLEXIBLE ELASTOMERIC INSULATION

- A. Seal longitudinal seams and end joints with manufacturer's recommended adhesive to eliminate openings in insulation that allow passage of air to surface being insulated.
- B. Insulation Installation on Pipe Flanges:
 - 1. Install pipe insulation to outer diameter of pipe flange.
 - 2. Make width of insulation section same as overall width of flange and bolts, plus twice the thickness of pipe insulation.
 - 3. Fill voids between inner circumference of flange insulation and outer circumference of adjacent straight pipe segments with cut sections of sheet insulation of same thickness as pipe insulation.
 - Secure insulation to flanges and seal seams with manufacturer's recommended adhesive to eliminate openings in insulation that allow passage of air to surface being insulated.



- 1. Install mitered sections of pipe insulation.
- 2. Secure insulation materials and seal seams with manufacturer's recommended adhesive to eliminate openings in insulation that allow passage of air to surface being insulated.

D. Insulation Installation on Valves and Pipe Specialties:

- 1. Install preformed valve covers manufactured of same material as pipe insulation when available.
- 2. When preformed valve covers are not available, install cut sections of pipe and sheet insulation to valve body. Arrange insulation to permit access to packing and to allow valve operation without disturbing insulation.
- 3. Install insulation to flanges as specified for flange insulation application.
- 4. Secure insulation to valves and specialties and seal seams with manufacturer's recommended adhesive to eliminate openings in insulation that allow passage of air to surface being insulated.

3.7 INSTALLATION OF MINERAL-FIBER INSULATION

A. Insulation Installation on Straight Pipes and Tubes:

- 1. Secure each layer of preformed pipe insulation to pipe with wire or bands and tighten bands without deforming insulation materials.
- 2. Where vapor barriers are indicated, seal longitudinal seams, end joints, and protrusions with vapor-barrier mastic and joint sealant.
- 3. For insulation with factory-applied jackets on above-ambient surfaces, secure laps with outward-clinched staples at 6 inches o.c.
- 4. For insulation with factory-applied jackets on below-ambient surfaces, do not staple longitudinal tabs. Instead, secure tabs with additional adhesive as recommended by insulation material manufacturer and seal with vapor-barrier mastic and flashing sealant.

B. Insulation Installation on Pipe Flanges:

- 1. Install preformed pipe insulation to outer diameter of pipe flange.
- 2. Make width of insulation section same as overall width of flange and bolts, plus twice the thickness of pipe insulation.
- 3. Fill voids between inner circumference of flange insulation and outer circumference of adjacent straight pipe segments with mineral-fiber blanket insulation.
- 4. Install jacket material with manufacturer's recommended adhesive, overlap seams at least 1 inch, and seal joints with flashing sealant.

C. Insulation Installation on Pipe Fittings and Elbows:

 Install preformed sections of same material as straight segments of pipe insulation when available.

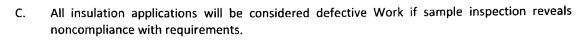
- 2. When preformed insulation elbows and fittings are not available, install mitered sections of pipe insulation, to a thickness equal to adjoining pipe insulation. Secure insulation materials with wire or bands.
- D. Insulation Installation on Valves and Pipe Specialties:
 - 1. Install preformed sections of same material as straight segments of pipe insulation when available.
 - 2. When preformed sections are not available, install mitered sections of pipe insulation to valve body.
 - 3. Arrange insulation to permit access to packing and to allow valve operation without disturbing insulation.
 - 4. Install insulation to flanges as specified for flange insulation application.

3.8 FINISHES

- A. Pipe Insulation with ASJ, Glass-Cloth, or Other Paintable Jacket Material: Paint jacket with paint system identified:
 - 1. Flat Acrylic Finish: Two finish coats over a primer that is compatible with jacket material and finish coat paint. Add fungicidal agent to render fabric mildew proof.
 - a. Finish Coat Material: Interior, flat, latex-emulsion size.
- B. Flexible Elastomeric Thermal Insulation: After adhesive has fully cured, apply two coats of insulation manufacturer's recommended protective coating.
- C. Color: Final color as selected by Architect. Vary first and second coats to allow visual inspection of the completed Work.
- D. Do not field paint aluminum or stainless-steel jackets.

3.9 FIELD QUALITY CONTROL

- Perform tests and inspections.
- B. Tests and Inspections:
 - Inspect pipe, fittings, strainers, and valves, randomly selected by Construction Manager, by removing field-applied jacket and insulation in layers in reverse order of their installation. Extent of inspection shall be limited to three locations of straight pipe, three locations of threaded fittings, three locations of welded fittings, two locations of threaded strainers, two locations of welded strainers, three locations of threaded valves, and three locations of flanged valves for each pipe service defined in the "Piping Insulation Schedule, General" Article.



3.10 PIPING INSULATION SCHEDULE, GENERAL

- A. Acceptable preformed pipe and tubular insulation materials and thicknesses are identified for each piping system and pipe size range. If more than one material is listed for a piping system, selection from materials listed is Contractor's option.
- B. Items Not Insulated: Unless otherwise indicated, do not install insulation on the following:
 - Drainage piping located in crawl spaces.

3.11 INDOOR PIPING INSULATION SCHEDULE

- A. Equipment Drain Water below 60 Deg F:
 - 1. All Pipe Sizes: Insulation shall be one of the following:
 - a. Flexible Elastomeric: 3/4 inch thick.
 - b. Mineral-Fiber, Preformed Pipe Insulation, Type I: 1/2 inch thick.
- B. Refrigerant Suction and Hot-Gas Flexible Tubing:
 - 1. All Pipe Sizes: Insulation shall be the following:
 - a. Flexible Elastomeric: 1 inch thick.

3.12 OUTDOOR, ABOVEGROUND PIPING INSULATION SCHEDULE

- A. Refrigerant Suction and Hot-Gas Piping:
 - 1. All Pipe Sizes: Insulation shall be the following:
 - a. Flexible Elastomeric: 2 inches thick.

END OF SECTION 230719

SECTION 230800 - COMMISSIONING OF HVAC

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. Section includes commissioning process requirements for HVAC&R systems, assemblies, and equipment.
- B. Related Sections:
 - 1. Section 019113 "General Commissioning Requirements" for general commissioning process requirements.

1.3 DEFINITIONS

- A. Commissioning Plan: A document that outlines the organization, schedule, allocation of resources, and documentation requirements of the commissioning process.
- B. CxA: Commissioning Authority.
- C. HVAC&R: Heating, Ventilating, Air Conditioning, and Refrigeration.
- D. Systems, Subsystems, Equipment, and Components: Where these terms are used together or separately, they shall mean "as-built" systems, subsystems, equipment, and components.

1.4 INFORMATIONAL SUBMITTALS

- Certificates of readiness.
- B. Certificates of completion of installation, prestart, and startup activities.

1.5 CONTRACTOR'S RESPONSIBILITIES

- A. Perform commissioning tests at the direction of the CxA.
- B. Attend construction phase controls coordination meeting.
- C. Attend testing, adjusting, and balancing review and coordination meeting.

- D. Participate in HVAC&R systems, assemblies, equipment, and component maintenance orientation and inspection as directed by the CxA.
- E. Provide information requested by the CxA for final commissioning documentation.
- F. Provide measuring instruments and logging devices to record test data, and provide data acquisition equipment to record data for the complete range of testing for the required test period.

1.6 CxA'S RESPONSIBILITIES

- A. Provide Project-specific construction checklists and commissioning process test procedures for actual HVAC&R systems, assemblies, equipment, and components to be furnished and installed as part of the construction contract.
- B. Direct commissioning testing.
- C. Verify testing, adjusting, and balancing of Work are complete.
- D. Provide test data, inspection reports, and certificates in Systems Manual.

1.7 COMMISSIONING DOCUMENTATION

- A. Provide the following information to the CxA for inclusion in the commissioning plan:
 - 1. Plan for delivery and review of submittals, systems manuals, and other documents and reports.
 - 2. Identification of installed systems, assemblies, equipment, and components including design changes that occurred during the construction phase.
 - 3. Process and schedule for completing construction checklists and manufacturer's prestart and startup checklists for HVAC&R systems, assemblies, equipment, and components to be verified and tested.
 - 4. Certificate of completion certifying that installation, prestart checks, and startup procedures have been completed.
 - 5. Certificate of readiness certifying that HVAC&R systems, subsystems, equipment, and associated controls are ready for testing.
 - 6. Test and inspection reports and certificates.
 - 7. Corrective action documents.
 - 8. Verification of testing, adjusting, and balancing reports.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION

3.1 TESTING PREPARATION

- A. Certify that HVAC&R systems, subsystems, and equipment have been installed, calibrated, and started and are operating according to the Contract Documents.
- B. Certify that HVAC&R instrumentation and control systems have been completed and calibrated, that they are operating according to the Contract Documents, and that pretest set points have been recorded.
- C. Certify that testing, adjusting, and balancing procedures have been completed and that testing, adjusting, and balancing reports have been submitted, discrepancies corrected, and corrective work approved.
- D. Set systems, subsystems, and equipment into operating mode to be tested (e.g., normal shutdown, normal auto position, normal manual position, unoccupied cycle, emergency power, and alarm conditions).
- E. Inspect and verify the position of each device and interlock identified on checklists.
- F. Check safety cutouts, alarms, and interlocks with smoke control and life-safety systems during each mode of operation.
- G. Testing Instrumentation: Install measuring instruments and logging devices to record test data as directed by the CxA.

3.2 TESTING AND BALANCING VERIFICATION

- A. Prior to performance of testing and balancing Work, provide copies of reports, sample forms, checklists, and certificates to the CxA.
- B. Notify the CxA at least 10 days in advance of testing and balancing Work, and provide access for the CxA to witness testing and balancing Work.
- C. Provide technicians, instrumentation, and tools to verify testing and balancing of HVAC&R systems at the direction of the CxA.
 - 1. The CxA will notify testing and balancing Subcontractor 10 days in advance of the date of field verification. Notice will not include data points to be verified.
 - 2. The testing and balancing Subcontractor shall use the same instruments (by model and serial number) that were used when original data were collected.
 - 3. Failure of an item includes, other than sound, a deviation of more than 10 percent. Failure of more than 10 percent of selected items shall result in rejection of final testing,

- adjusting, and balancing report. For sound pressure readings, a deviation of 3 dB shall result in rejection of final testing. Variations in background noise must be considered.
- 4. Remedy the deficiency and notify the CxA so verification of failed portions can be performed.

3.3 GENERAL TESTING REQUIREMENTS

- A. Provide technicians, instrumentation, and tools to perform commissioning test at the direction of the CxA.
- B. Scope of HVAC&R testing shall include entire HVAC&R installation, from central equipment for heat generation and refrigeration through distribution systems to each conditioned space. Testing shall include measuring capacities and effectiveness of operational and control functions.
- C. Test all operating modes, interlocks, control responses, and responses to abnormal or emergency conditions, and verify proper response of building automation system controllers and sensors.
- D. The CxA along with the HVAC&R Contractor, testing and balancing Subcontractor, and HVAC&R Instrumentation and Control Subcontractor shall prepare detailed testing plans, procedures, and checklists for HVAC&R systems, subsystems, and equipment.
- E. Tests will be performed using design conditions whenever possible.
- F. Simulated conditions may need to be imposed using an artificial load when it is not practical to test under design conditions. Before simulating conditions, calibrate testing instruments. Provide equipment to simulate loads. Set simulated conditions as directed by the CxA and document simulated conditions and methods of simulation. After tests, return settings to normal operating conditions.
- G. The CxA may direct that set points be altered when simulating conditions is not practical.
- H. The CxA may direct that sensor values be altered with a signal generator when design or simulating conditions and altering set points are not practical.
- 1. If tests cannot be completed because of a deficiency outside the scope of the HVAC&R system, document the deficiency and report it to the Owner. After deficiencies are resolved, reschedule tests.
- J. If the testing plan indicates specific seasonal testing, complete appropriate initial performance tests and documentation and schedule seasonal tests.
- 3.4 HVAC&R SYSTEMS, Subsystems, and Equipment Testing Procedures
 - A. Boiler Testing and Acceptance Procedures: Testing requirements are specified in HVAC boiler Sections. Provide submittals, test data, inspector record, and boiler certification to the CxA.

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- B. Refrigeration System Testing: Provide technicians, instrumentation, tools, and equipment to test performance of chillers, cooling towers, refrigerant compressors and condensers, heat pumps, and other refrigeration systems. The CxA shall determine the sequence of testing and testing procedures for each equipment item and pipe section to be tested.
- C. HVAC&R Distribution System Testing: Provide technicians, instrumentation, tools, and equipment to test performance of air and other distribution systems, including HVAC&R terminal equipment and unitary equipment.
- D. Vibration and Sound Tests: Provide technicians, instrumentation, tools, and equipment to test performance of vibration isolation and seismic controls.

END OF SECTION 230800

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SECTION 23 23 00 - REFRIGERANT PIPING

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. This Section includes refrigerant piping used for air-conditioning applications.

1.3 PERFORMANCE REQUIREMENTS

- A. Line Test Pressure for Refrigerant R-410A:
 - 1. Suction Lines for Air-Conditioning Applications: 300 psig.
 - 2. Hot-Gas and Liquid Lines: 535 psig.

1.4 ACTION SUBMITTALS

- A. Product Data: For each type of valve and refrigerant piping specialty indicated. Include pressure drop, based on manufacturer's test data, for the following:
 - 1. Thermostatic expansion valves.
 - 2. Solenoid valves.
 - 3. Hot-gas bypass valves.
 - 4. Filter dryers.
 - 5. Strainers.
 - Pressure-regulating valves.
- B. Shop Drawings: Show layout of refrigerant piping and specialties, including pipe, tube, and fitting sizes, flow capacities, valve arrangements and locations, slopes of horizontal runs, oil traps, double risers, wall and floor penetrations, and equipment connection details. Show interface and spatial relationships between piping and equipment.
 - 1. Shop Drawing Scale: 1/8 inch equals 1 foot.
 - Refrigerant piping indicated on Drawings is schematic only. Size piping and design actual piping layout, including oil traps, double risers, specialties, and pipe and tube sizes to accommodate, as a minimum, equipment provided, elevation difference between compressor and evaporator, and length of piping to ensure proper operation and compliance with warranties of connected equipment.

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- A. Welding certificates.
- B. Field quality-control test reports.

1.6 CLOSEOUT SUBMITTALS

A. Operation and Maintenance Data: For refrigerant valves and piping specialties to include in maintenance manuals.

1.7 QUALITY ASSURANCE

- A. Welding: Qualify procedures and personnel according to ASME Boiler and Pressure Vessel Code: Section IX, "Welding and Brazing Qualifications."
- B. Comply with ASHRAE 15, "Safety Code for Refrigeration Systems."
- C. Comply with ASME B31.5, "Refrigeration Piping and Heat Transfer Components."

1.8 PRODUCT STORAGE AND HANDLING

A. Store piping in a clean and protected area with end caps in place to ensure that piping interior and exterior are clean when installed.

1.9 COORDINATION

A. Coordinate size and location of roof curbs, equipment supports, and roof penetrations. These items are specified in Section 077200 "Roof Accessories."

PART 2 - PRODUCTS

2.1 COPPER TUBE AND FITTINGS

- A. Copper Tube: ASTM B 280, Type ACR.
- B. Wrought-Copper Fittings: ASME B16.22.
- C. Wrought-Copper Unions: ASME B16.22.
- D. Solder Filler Metals: ASTM B 32. Use 95-5 tin antimony or alloy HB solder to join copper socket fittings on copper pipe.

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Brazing Filler Metals: AWS A5.8.

F. Flexible Connectors:

- 1. Body: Tin-bronze bellows with woven, flexible, tinned-bronze-wire-reinforced protective jacket.
- End Connections: Socket ends.
- 3. Offset Performance: Capable of minimum 3/4-inch misalignment in minimum 7-inch-long assembly.
- 4. Pressure Rating: Factory test at minimum 500 psig.
- 5. Maximum Operating Temperature: 250 deg F.

2.2 VALVES AND SPECIALTIES

A. Diaphragm Packless Valves:

- 1. Body and Bonnet: Forged brass or cast bronze; globe design with straight-through or angle pattern.
- 2. Diaphragm: Phosphor bronze and stainless steel with stainless-steel spring.
- 3. Operator: Rising stem and hand wheel.
- 4. Seat: Nylon.
- 5. End Connections: Socket, union, or flanged.
- 6. Working Pressure Rating: 500 psig.
- 7. Maximum Operating Temperature: 275 deg F.

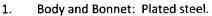
B. Check Valves:

- 1. Body: Ductile iron, forged brass, or cast bronze; globe pattern.
- 2. Bonnet: Bolted ductile iron, forged brass, or cast bronze; or brass hex plug.
- 3. Piston: Removable polytetrafluoroethylene seat.
- Closing Spring: Stainless steel.
- Manual Opening Stem: Seal cap, plated-steel stem, and graphite seal.
- 6. End Connections: Socket, union, threaded, or flanged.
- 7. Maximum Opening Pressure: 0.50 psig.
- 8. Working Pressure Rating: 500 psig.
- 9. Maximum Operating Temperature: 275 deg F.

C. Service Valves:

- 1. Body: Forged brass with brass cap including key end to remove core.
- 2. Core: Removable ball-type check valve with stainless-steel spring.
- 3. Seat: Polytetrafluoroethylene.
- 4. End Connections: Copper spring.
- 5. Working Pressure Rating: 500 psig.
- Solenoid Valves: Comply with ARI 760 and UL 429; listed and labeled by an NRTL.

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- 2. Solenoid Tube, Plunger, Closing Spring, and Seat Orifice: Stainless steel.
- 3. Seat: Polytetrafluoroethylene.
- 4. End Connections: Threaded.
- 5. Electrical: Molded, watertight coil in NEMA 250 enclosure of type required by location with 1/2-inch conduit adapter, and 24-V ac coil.
- 6. Working Pressure Rating: 400 psig.
- 7. Maximum Operating Temperature: 240 deg F.
- 8. Manual operator.

E. Safety Relief Valves: Comply with ASME Boiler and Pressure Vessel Code; listed and labeled by an NRTL.

- 1. Body and Bonnet: Ductile iron and steel, with neoprene O-ring seal.
- 2. Piston, Closing Spring, and Seat Insert: Stainless steel.
- 3. Seat Disc: Polytetrafluoroethylene.
- 4. End Connections: Threaded.
- 5. Working Pressure Rating: 400 psig.
- 6. Maximum Operating Temperature: 240 deg F.

F. Thermostatic Expansion Valves: Comply with ARI 750.

- 1. Body, Bonnet, and Seal Cap: Forged brass or steel.
- 2. Diaphragm, Piston, Closing Spring, and Seat Insert: Stainless steel.
- 3. Packing and Gaskets: Non-asbestos.
- 4. Capillary and Bulb: Copper tubing filled with refrigerant charge.
- 5. Suction Temperature: 40 deg F.
- 6. Superheat: Adjustable.
- 7. Reverse-flow option (for heat-pump applications).
- 8. End Connections: Socket, flare, or threaded union.
- 9. Working Pressure Rating: 700 psig.

G. Straight-Type Strainers:

- 1. Body: Welded steel with corrosion-resistant coating.
- 2. Screen: 100-mesh stainless steel.
- 3. End Connections: Socket or flare.
- 4. Working Pressure Rating: 500 psig.
- 5. Maximum Operating Temperature: 275 deg F.

H. Moisture/Liquid Indicators:

- 1. Body: Forged brass.
- 2. Window: Replaceable, clear, fused glass window with indicating element protected by filter screen.
- 3. Indicator: Color coded to show moisture content in ppm.
- 4. Minimum Moisture Indicator Sensitivity: Indicate moisture above 60 ppm.

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- 5. End Connections: Socket or flare.
- 6. Working Pressure Rating: 500 psig.
- 7. Maximum Operating Temperature: 240 deg F.
- I. Replaceable-Core Filter Dryers: Comply with ARI 730.
 - 1. Body and Cover: Painted-steel shell with ductile-iron cover, stainless-steel screws, and neoprene gaskets.
 - 2. Filter Media: 10 micron, pleated with integral end rings; stainless-steel support.
 - 3. Desiccant Media: Activated charcoal.
 - 4. End Connections: Socket.
 - Access Ports: NPS 1/4connections at entering and leaving sides for pressure differential measurement.
 - 6. Maximum Pressure Loss: 2 psig.
 - 7. Rated Flow: 5 tons
 - 8. Working Pressure Rating: 500 psig.
 - 9. Maximum Operating Temperature: 240 deg F.

J. Mufflers:

- 1. Body: Welded steel with corrosion-resistant coating.
- 2. End Connections: Socket or flare.
- 3. Working Pressure Rating: 500 psig.
- 4. Maximum Operating Temperature: 275 deg F.
- K. Receivers: Comply with ARI 495.
 - 1. Comply with ASME Boiler and Pressure Vessel Code; listed and labeled by an NRTL.
 - 2. Comply with UL 207; listed and labeled by an NRTL.
 - 3. Body: Welded steel with corrosion-resistant coating.
 - 4. Tappings: Inlet, outlet, liquid level indicator, and safety relief valve.
 - 5. End Connections: Socket or threaded.
 - 6. Working Pressure Rating: 500 psig.
 - 7. Maximum Operating Temperature: 275 deg F.
- L. Liquid Accumulators: Comply with ARI 495.
 - 1. Body: Welded steel with corrosion-resistant coating.
 - 2. End Connections: Socket or threaded.
 - 3. Working Pressure Rating: 500 psig.
 - Maximum Operating Temperature: 275 deg F.

2.3 REFRIGERANTS

A. Available Manufacturers: Subject to compliance with requirements, manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:

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- B. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
 - 1. Atofina Chemicals, Inc.
 - 2. DuPont Company; Fluorochemicals Div.
 - 3. Honeywell, Inc.; Genetron Refrigerants.
 - 4. INEOS Fluor Americas LLC.
- C. ASHRAE 34, R-410A: Pentafluoroethane/Difluoromethane.

PART 3 - EXECUTION

3.1 PIPING APPLICATIONS FOR REFRIGERANT R-410A

- A. Suction Lines for Conventional Air-Conditioning Applications: Copper, Type ACR, annealed-temper tubing and wrought-copper fittings with brazed or soldered joints.
- B. Hot-Gas and Liquid Lines: Copper, Type ACR, drawn-temper tubing and wrought-copper fittings with Alloy HB soldered joints.
- C. Safety-Relief-Valve Discharge Piping: Copper, Type ACR, drawn-temper tubing and wrought-copper fittings with Alloy HB soldered joints.

3.2 VALVE AND SPECIALTY APPLICATIONS

- A. Install diaphragm packless valves in suction and discharge lines of compressor.
- B. Install service valves for gage taps at inlet and outlet of hot-gas bypass valves and strainers if they are not an integral part of valves and strainers.
- C. Install a check valve at the compressor discharge and a liquid accumulator at the compressor suction connection.
- D. Except as otherwise indicated, install diaphragm packless valves on inlet and outlet side of filter dryers.
- E. Install thermostatic expansion valves as close as possible to distributors on evaporators.
 - 1. Install valve so diaphragm case is warmer than bulb.
 - 2. Secure bulb to clean, straight, horizontal section of suction line using two bulb straps. Do not mount bulb in a trap or at bottom of the line.
 - 3. If external equalizer lines are required, make connection where it will reflect suction-line pressure at bulb location.

- F. Install safety relief valves where required by ASME Boiler and Pressure Vessel Code. Pipe safety-relief-valve discharge line to outside according to ASHRAE 15.
- G. Install moisture/liquid indicators in liquid line at the inlet of the thermostatic expansion valve or at the inlet of the evaporator coil capillary tube.
- H. Install strainers upstream from and adjacent to the following unless they are furnished as an integral assembly for device being protected:
 - 1. Solenoid valves.
 - 2. Thermostatic expansion valves.
 - 3. Hot-gas bypass valves.
 - 4. Compressor.
- I. Install filter dryers in liquid line between compressor and thermostatic expansion valve, and in the suction line at the compressor.
- J. Install receivers sized to accommodate pump-down charge.
- K. Install flexible connectors at compressors.

3.3 PIPING INSTALLATION

- A. Drawing plans, schematics, and diagrams indicate general location and arrangement of piping systems; indicated locations and arrangements were used to size pipe and calculate friction loss, expansion, pump sizing, and other design considerations. Install piping as indicated unless deviations to layout are approved on Shop Drawings.
- B. Install refrigerant piping according to ASHRAE 15.
- C. Install piping in concealed locations unless otherwise indicated and except in equipment rooms and service areas.
- D. Install piping indicated to be exposed and piping in equipment rooms and service areas at right angles or parallel to building walls. Diagonal runs are prohibited unless specifically indicated otherwise.
- E. Install piping above accessible ceilings to allow sufficient space for ceiling panel removal.
- F. Install piping adjacent to machines to allow service and maintenance.
- G. Install piping free of sags and bends.
- H. Install fittings for changes in direction and branch connections.
- I. Select system components with pressure rating equal to or greater than system operating pressure.

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- J. Install piping as short and direct as possible, with a minimum number of joints, elbows, and fittings.
- K. Arrange piping to allow inspection and service of refrigeration equipment. Install valves and specialties in accessible locations to allow for service and inspection. Install access doors or panels as specified in Section 083113 "Access Doors and Frames" if valves or equipment requiring maintenance is concealed behind finished surfaces.
- L. Install refrigerant piping in protective conduit where installed belowground.
- M. Install refrigerant piping in rigid or flexible conduit in locations where exposed to mechanical injury.
- N. Slope refrigerant piping as follows:
 - Install horizontal hot-gas discharge piping with a uniform slope downward away from compressor.
 - 2. Install horizontal suction lines with a uniform slope downward to compressor.
 - 3. Install traps and double risers to entrain oil in vertical runs.
 - 4. Liquid lines may be installed level.
- O. When brazing or soldering, remove solenoid-valve coils and sight glasses; also remove valve stems, seats, and packing, and accessible internal parts of refrigerant specialties. Do not apply heat near expansion-valve bulb.
- P. Install piping with adequate clearance between pipe and adjacent walls and hangers or between pipes for insulation installation.
- Q. Identify refrigerant piping and valves according to Section 230553 "Identification for HVAC Piping and Equipment."
- R. Install sleeves for piping penetrations of walls, ceilings, and floors. Comply with requirements for sleeves specified in Section 230517 "Sleeves and Sleeve Seals for HVAC Piping."
- S. Install sleeve seals for piping penetrations of concrete walls and slabs. Comply with requirements for sleeve seals specified in Section 230517 "Sleeves and Sleeve Seals for HVAC Piping."
- T. Install escutcheons for piping penetrations of walls, ceilings, and floors. Comply with requirements for escutcheons as shown.

3.4 PIPE JOINT CONSTRUCTION

- A. Ream ends of pipes and tubes and remove burrs. Bevel plain ends of steel pipe.
- B. Remove scale, slag, dirt, and debris from inside and outside of pipe and fittings before assembly.

- C. Soldered Joints: Construct joints according to ASTM B 828 or CDA's "Copper Tube Handbook."
- D. Brazed Joints: Construct joints according to AWS's "Brazing Handbook," Chapter "Pipe and Tube."
 - Use Type BcuP, copper-phosphorus alloy for joining copper socket fittings with copper pipe.
 - 2. Use Type BAg, cadmium-free silver alloy for joining copper with bronze or steel.
- E. Threaded Joints: Thread steel pipe with tapered pipe threads according to ASME B1.20.1. Cut threads full and clean using sharp dies. Ream threaded pipe ends to remove burrs and restore full ID. Join pipe fittings and valves as follows:
 - 1. Apply appropriate tape or thread compound to external pipe threads unless dry-seal threading is specified.
 - Damaged Threads: Do not use pipe or pipe fittings with threads that are corroded or damaged. Do not use pipe sections that have cracked or open welds.
- F. Steel pipe can be threaded, but threaded joints must be seal brazed or seal welded.
- G. Welded Joints: Construct joints according to AWS D10.12/D10.12M.
- H. Flanged Joints: Select appropriate gasket material, size, type, and thickness for service application. Install gasket concentrically positioned. Use suitable lubricants on bolt threads.

3.5 HANGERS AND SUPPORTS

- A. Hanger, support, and anchor products are specified in Section 230529 "Hangers and Supports for HVAC Piping and Equipment."
- B. Install the following pipe attachments:
 - 1. Adjustable steel clevis hangers for individual horizontal runs less than 20 feet long.
 - 2. Roller hangers and spring hangers for individual horizontal runs 20 feet or longer.
 - 3. Pipe Roller: MSS SP-58, Type 44 for multiple horizontal piping 20 feet or longer, supported on a trapeze.
 - 4. Spring hangers to support vertical runs.
 - 5. Copper-clad hangers and supports for hangers and supports in direct contact with copper pipe.
- C. Install hangers for copper tubing with the following maximum spacing and minimum rod sizes:
 - 1. NPS 1/2: Maximum span, 60 inches; minimum rod size, 1/4 inch.
 - 2. NPS 5/8: Maximum span, 60 inches; minimum rod size, 1/4 inch.
 - 3. NPS 1: Maximum span, 72 inches; minimum rod size, 1/4 inch.
 - 4. NPS 1-1/4: Maximum span, 96 inches; minimum rod size, 3/8 inch.



D. Support multifloor vertical runs at least at each floor.

3.6 FIELD QUALITY CONTROL

- A. Perform tests and inspections and prepare test reports.
- B. Tests and Inspections:
 - 1. Comply with ASME B31.5, Chapter VI.
 - 2. Test refrigerant piping, specialties, and receivers. Isolate compressor, condenser, evaporator, and safety devices from test pressure if they are not rated above the test pressure.
 - 3. Test high- and low-pressure side piping of each system separately at not less than the pressures indicated in Part 1 "Performance Requirements" Article.
 - a. Fill system with nitrogen to the required test pressure.
 - b. System shall maintain test pressure at the manifold gage throughout duration of test.
 - c. Test joints and fittings with electronic leak detector or by brushing a small amount of soap and glycerin solution over joints.
 - d. Remake leaking joints using new materials, and retest until satisfactory results are achieved.

3.7 SYSTEM CHARGING

- A. Charge system using the following procedures:
 - 1. Install core in filter dryers after leak test but before evacuation.
 - 2. Evacuate entire refrigerant system with a vacuum pump to 500 micrometers. If vacuum holds for 12 hours, system is ready for charging.
 - 3. Break vacuum with refrigerant gas, allowing pressure to build up to 2 psig.
 - 4. Charge system with a new filter-dryer core in charging line.

3.8 ADJUSTING

- A. Adjust thermostatic expansion valve to obtain proper evaporator superheat.
- B. Adjust high- and low-pressure switch settings to avoid short cycling in response to fluctuating suction pressure.
- C. Adjust set-point temperature of air-conditioning or chilled-water controllers to the system design temperature.
- D. Perform the following adjustments before operating the refrigeration system, according to manufacturer's written instructions:

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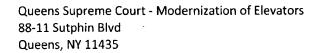
- 1. Open shutoff valves in condenser water circuit.
- 2. Verify that compressor oil level is correct.
- 3. Open compressor suction and discharge valves.
- 4. Open refrigerant valves except bypass valves that are used for other purposes.
- 5. Check open compressor-motor alignment and verify lubrication for motors and bearings.
- E. Replace core of replaceable filter dryer after system has been adjusted and after design flow rates and pressures are established.

END OF SECTION 232300

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SECTION 23 31 13 - METAL DUCTS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. Section Includes:

- 1. Single-wall rectangular ducts and fittings.
- 2. Sheet metal materials.
- 3. Duct liner.
- 4. Sealants and gaskets.
- 5. Hangers and supports.
- 6. Seismic-restraint devices.

B. Related Sections:

- 1. Section 230593 "Testing, Adjusting, and Balancing for HVAC" for testing, adjusting, and balancing requirements for metal ducts.
- 2. Section 233300 "Air Duct Accessories" for dampers, sound-control devices, duct-mounting access doors and panels, turning vanes, and flexible ducts.

1.3 PERFORMANCE REQUIREMENTS

- A. Duct Design Criteria: Duct construction, including sheet metal thicknesses, seam and joint construction, reinforcements, and hangers and supports, shall comply with SMACNA's "HVAC Duct Construction Standards Metal and Flexible" and performance requirements and design criteria indicated in "Duct Schedule" Article.
- B. Structural Performance: Duct hangers and supports and seismic restraints shall withstand the effects of gravity and seismic loads and stresses within limits and under conditions described in SMACNA's "HVAC Duct Construction Standards Metal and Flexible" and SMACNA's "Seismic Restraint Manual: Guidelines for Mechanical Systems."
 - Seismic Hazard Level B: Seismic force to weight ratio, 0.30.
- C. Airstream Surfaces: Surfaces in contact with the airstream shall comply with requirements in ASHRAE 62.1.

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1.4 ACTION SUBMITTALS

- A. Product Data: For each type of the following products:
 - 1. Liners and adhesives.
 - 2. Sealants and gaskets.
 - 3. Seismic-restraint devices.

B. Shop Drawings:

- 1. Fabrication, assembly, and installation, including plans, elevations, sections, components, and attachments to other work.
- 2. Factory- and shop-fabricated ducts and fittings.
- 3. Duct layout indicating sizes, configuration, liner material, and static-pressure classes.
- 4. Elevation of top of ducts.
- 5. Dimensions of main duct runs from building grid lines.
- 6. Fittings.
- 7. Reinforcement and spacing.
- 8. Seam and joint construction.
- 9. Penetrations through fire-rated and other partitions.
- 10. Equipment installation based on equipment being used on Project.
- 11. Locations for duct accessories, including dampers, turning vanes, and access doors and panels.
- 12. Hangers and supports, including methods for duct and building attachment, seismic restraints, and vibration isolation.

C. Equipment Submittal:

- 1. Sheet metal thicknesses.
- 2. Joint and seam construction and sealing.
- 3. Reinforcement details and spacing.
- 4. Materials, fabrication, assembly, and spacing of hangers and supports.
- Design Calculations: Calculations, including analysis data signed and sealed by the qualified professional engineer responsible for their preparation for selecting hangers and supports and seismic restraints.

1.5 INFORMATIONAL SUBMITTALS

- A. Coordination Drawings: Plans, drawn to scale, on which the following items are shown and coordinated with each other, using input from installers of the items involved:
 - Duct installation in congested spaces, indicating coordination with general construction, building components, and other building services. Indicate proposed changes to duct layout.
 - 2. Suspended ceiling components.
 - 3. Structural members to which duct will be attached.
 - 4. Size and location of initial access modules for acoustical tile.



- 6. Items penetrating finished ceiling including the following:
 - a. Lighting fixtures.
 - b. Air outlets and inlets.
 - c. Speakers.
 - d. Sprinklers.
 - e. Access panels.
 - f. Perimeter moldings.
- B. Welding certificates.
- C. Field quality-control reports.

1.6 QUALITY ASSURANCE

- A. Welding Qualifications: Qualify procedures and personnel according to the following:
 - 1. AWS D1.1/D1.1M, "Structural Welding Code Steel," for hangers and supports.
 - 2. AWS D9.1M/D9.1, "Sheet Metal Welding Code," for duct joint and seam welding.
- B. ASHRAE Compliance: Applicable requirements in ASHRAE 62.1, Section 5 "Systems and Equipment" and Section 7 "Construction and System Start-up."
- C. ASHRAE/IESNA Compliance: Applicable requirements in ASHRAE/IESNA 90.1, Section 6.4.4 "HVAC System Construction and Insulation."

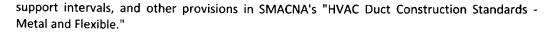
PART 2 - PRODUCTS

2.1 SINGLE-WALL RECTANGULAR DUCTS AND FITTINGS

- A. General Fabrication Requirements: Comply with SMACNA's "HVAC Duct Construction Standards Metal and Flexible" based on indicated static-pressure class unless otherwise indicated.
- B. Transverse Joints: Select joint types and fabricate according to SMACNA's "HVAC Duct Construction Standards Metal and Flexible," Figure 2-1, "Rectangular Duct/Transverse Joints," for static-pressure class, applicable sealing requirements, materials involved, duct-support intervals, and other provisions in SMACNA's "HVAC Duct Construction Standards Metal and Flexible."
- C. Longitudinal Seams: Select seam types and fabricate according to SMACNA's "HVAC Duct Construction Standards Metal and Flexible," Figure 2-2, "Rectangular Duct/Longitudinal Seams," for static-pressure class, applicable sealing requirements, materials involved, duct-

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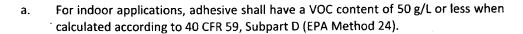
D. Elbows, Transitions, Offsets, Branch Connections, and Other Duct Construction: Select types and fabricate according to SMACNA's "HVAC Duct Construction Standards - Metal and Flexible," Chapter 4, "Fittings and Other Construction," for static-pressure class, applicable sealing requirements, materials involved, duct-support intervals, and other provisions in SMACNA's "HVAC Duct Construction Standards - Metal and Flexible."

2.2 SHEET METAL MATERIALS

- A. General Material Requirements: Comply with SMACNA's "HVAC Duct Construction Standards Metal and Flexible" for acceptable materials, material thicknesses, and duct construction methods unless otherwise indicated. Sheet metal materials shall be free of pitting, seam marks, roller marks, stains, discolorations, and other imperfections.
- B. Galvanized Sheet Steel: Comply with ASTM A 653/A 653M.
 - 1. Galvanized Coating Designation: G60.
 - 2. Finishes for Surfaces Exposed to View: Mill phosphatized.
- C. Reinforcement Shapes and Plates: ASTM A 36/A 36M, steel plates, shapes, and bars; black and galvanized.
- D. Tie Rods: Galvanized steel, 1/4-inch minimum diameter for lengths 36 inches or less; 3/8-inch minimum diameter for lengths longer than 36 inches.

2.3 DUCT LINER

- A. Flexible Elastomeric Duct Liner: Preformed, cellular, closed-cell, sheet materials complying with ASTM C 534, Type II, Grade 1; and with NFPA 90A or NFPA 90B.
 - 1. 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:
 - a. Aeroflex USA Inc.
 - b. Armacell LLC.
 - c. Rubatex International, LLC
 - 2. Surface-Burning Characteristics: Maximum flame-spread index of 25 and maximum smoke-developed index of 50 when tested according to UL 723; certified by an NRTL.
 - Liner Adhesive: As recommended by insulation manufacturer and complying with NFPA 90A or NFPA 90B.



B. Insulation Pins and Washers:

- 1. Cupped-Head, Capacitor-Discharge-Weld Pins: Copper- or zinc-coated steel pin, fully annealed for capacitor-discharge welding, 0.106-inch-diameter shank, length to suit depth of insulation indicated with integral 1-1/2-inch galvanized carbon-steel washer.
- 2. Insulation-Retaining Washers: Self-locking washers formed from 0.016-inch-thick galvanized steel; with beveled edge sized as required to hold insulation securely in place but not less than 1-1/2 inches in diameter.
- C. Shop Application of Duct Liner: Comply with SMACNA's "HVAC Duct Construction Standards Metal and Flexible," Figure 7-11, "Flexible Duct Liner Installation."
 - 1. Adhere a single layer of indicated thickness of duct liner with at least 90 percent adhesive coverage at liner contact surface area. Attaining indicated thickness with multiple layers of duct liner is prohibited.
 - 2. Apply adhesive to transverse edges of liner facing upstream that do not receive metal nosing.
 - 3. Butt transverse joints without gaps, and coat joint with adhesive.
 - 4. Fold and compress liner in corners of rectangular ducts or cut and fit to ensure buttededge overlapping.
 - 5. Do not apply liner in rectangular ducts with longitudinal joints, except at corners of ducts, unless duct size and dimensions of standard liner make longitudinal joints necessary.
 - Apply adhesive coating on longitudinal seams in ducts with air velocity of 2500 fpm.
 - 7. Secure liner with mechanical fasteners 4 inches from corners and at intervals not exceeding 12 inches transversely; at 3 inches from transverse joints and at intervals not exceeding 18 inches longitudinally.
 - 8. Secure transversely oriented liner edges facing the airstream with metal nosings that have either channel or "Z" profiles or are integrally formed from duct wall. Fabricate edge facings at the following locations:
 - a. Fan discharges.
 - b. Intervals of lined duct preceding unlined duct.
 - c. Upstream edges of transverse joints in ducts where air velocities are higher than 2500 fpm or where indicated.
 - Terminate inner ducts with buildouts attached to fire-damper sleeves, dampers, turning vane assemblies, or other devices. Fabricated buildouts (metal hat sections) or other buildout means are optional; when used, secure buildouts to duct walls with bolts, screws, rivets, or welds.

2.4 SEALANT AND GASKETS

- A. General Sealant and Gasket Requirements: Surface-burning characteristics for sealants and gaskets shall be a maximum flame-spread index of 25 and a maximum smoke-developed index of 50 when tested according to UL 723; certified by an NRTL.
- B. Water-Based Joint and Seam Sealant:
 - 1. Application Method: Brush on.
 - 2. Solids Content: Minimum 65 percent.
 - 3. Shore A Hardness: Minimum 20.
 - 4. Water resistant.
 - 5. Mold and mildew resistant.
 - 6. VOC: Maximum 75 g/L (less water).
 - 7. Maximum Static-Pressure Class: 10-inch wg, positive and negative.
 - 8. Service: Indoor or outdoor.
 - 9. Substrate: Compatible with galvanized sheet steel (both PVC coated and bare), stainless steel, or aluminum sheets.
- C. Flanged Joint Sealant: Comply with ASTM C 920.
 - 1. General: Single-component, acid-curing, silicone, elastomeric.
 - 2. Type: S.
 - 3. Grade: NS.
 - 4. Class: 25.
 - 5. Use: O.
 - 6. For indoor applications, sealant shall have a VOC content of 250 g/L or less when calculated according to 40 CFR 59, Subpart D (EPA Method 24).

2.5 HANGERS AND SUPPORTS

- A. Hanger Rods for Noncorrosive Environments: Cadmium-plated steel rods and nuts.
- B. Strap and Rod Sizes: Comply with SMACNA's "HVAC Duct Construction Standards Metal and Flexible," Table 5-1, "Rectangular Duct Hangers Minimum Size," and Table 5-2, "Minimum Hanger Sizes for Round Duct."
- C. Steel Cables for Galvanized-Steel Ducts: Galvanized steel complying with ASTM A 603.
- D. Steel Cable End Connections: Cadmium-plated steel assemblies with brackets, swivel, and bolts designed for duct hanger service; with an automatic-locking and clamping device.
- E. Duct Attachments: Sheet metal screws, blind rivets, or self-tapping metal screws; compatible with duct materials.
- F. Trapeze and Riser Supports:

1. Supports for Galvanized-Steel Ducts: Galvanized-steel shapes and plates.

2.6 SEISMIC-RESTRAINT DEVICES

- A. Manufacturers: Subject to compliance with requirements, manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:
 - 1. Cooper B-Line, Inc.; a division of Cooper Industries.
 - 2. Ductmate Industries, Inc.
 - 3. Hilti Corp.
 - 4. Kinetics Noise Control.
 - 5. Loos & Co.; Cableware Division.
 - 6. Mason Industries.
 - 7. TOLCO; a brand of NIBCO INC.
 - 8. Unistrut Corporation; Tyco International, Ltd.
- B. General Requirements for Restraint Components: Rated strengths, features, and applications shall be as defined in reports by an agency acceptable to authorities having jurisdiction.
 - Structural Safety Factor: Allowable strength in tension, shear, and pullout force of components shall be at least four times the maximum seismic forces to which they will be subjected.
- C. Channel Support System: Shop- or field-fabricated support assembly made of slotted steel channels rated in tension, compression, and torsion forces and with accessories for attachment to braced component at one end and to building structure at the other end. Include matching components and corrosion-resistant coating.
- D. Restraint Cables: ASTM A 603, galvanized-steel cables with end connections made of cadmium-plated steel assemblies with brackets, swivel, and bolts designed for restraining cable service; and with an automatic-locking and clamping device or double-cable clips.
- E. Hanger Rod Stiffener: Steel tube or steel slotted-support-system sleeve with internally bolted connections to hanger rod.
- F. Mechanical Anchor Bolts: Drilled-in and stud-wedge or female-wedge type. Select anchor bolts with strength required for anchor and as tested according to ASTM E 488.

PART 3 - EXECUTION

3.1 DUCT INSTALLATION

A. Drawing plans, schematics, and diagrams indicate general location and arrangement of duct system. Indicated duct locations, configurations, and arrangements were used to size ducts and calculate friction loss for air-handling equipment sizing and for other design

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considerations. Install duct systems as indicated unless deviations to layout are approved on Shop Drawings and Coordination Drawings.

- B. Install ducts according to SMACNA's "HVAC Duct Construction Standards Metal and Flexible" unless otherwise indicated.
- C. Install ducts in maximum practical lengths.
- D. Install ducts with fewest possible joints.
- E. Install factory- or shop-fabricated fittings for changes in direction, size, and shape and for branch connections.
- F. Unless otherwise indicated, install ducts vertically and horizontally, and parallel and perpendicular to building lines.
- G. Install ducts close to walls, overhead construction, columns, and other structural and permanent enclosure elements of building.
- H. Install ducts with a clearance of 1 inch, plus allowance for insulation thickness.
- Route ducts to avoid passing through transformer vaults and electrical equipment rooms and enclosures.
- J. Where ducts pass through non-fire-rated interior partitions and exterior walls and are exposed to view, cover the opening between the partition and duct or duct insulation with sheet metal flanges of same metal thickness as the duct. Overlap openings on four sides by at least 1-1/2 inches.
- K. Where ducts pass through fire-rated interior partitions and exterior walls, install fire dampers. Comply with requirements in Section 233300 "Air Duct Accessories" for fire and smoke dampers.
- L. Protect duct interiors from moisture, construction debris and dust, and other foreign materials. Comply with SMACNA's "IAQ Guidelines for Occupied Buildings Under Construction," Appendix G, "Duct Cleanliness for New Construction Guidelines."

3.2 INSTALLATION OF EXPOSED DUCTWORK

- A. Protect ducts exposed in finished spaces from being dented, scratched, or damaged.
- B. Trim duct sealants flush with metal. Create a smooth and uniform exposed bead. Do not use two-part tape sealing system.
- C. Grind welds to provide smooth surface free of burrs, sharp edges, and weld splatter.

- D. Maintain consistency, symmetry, and uniformity in the arrangement and fabrication of fittings, hangers and supports, duct accessories, and air outlets.
- E. Repair or replace damaged sections and finished work that does not comply with these requirements.

3.3 DUCT SEALING

- A. Seal ducts for duct static-pressure, seal classes, and leakage classes specified in "Duct Schedule" Article according to SMACNA's "HVAC Duct Construction Standards Metal and Flexible."
- B. Seal ducts to the following seal classes according to SMACNA's "HVAC Duct Construction Standards Metal and Flexible":
 - 1. Comply with SMACNA's "HVAC Duct Construction Standards Metal and Flexible."
 - Unconditioned Space, Supply-Air Ducts in Pressure Classes 2-Inch wg and Lower: Seal Class B.
 - 3. Unconditioned Space, Supply-Air Ducts in Pressure Classes Higher Than 2-Inch wg: Seal Class A.
 - 4. Unconditioned Space, Exhaust Ducts: Seal Class C.
 - 5. Unconditioned Space, Return-Air Ducts: Seal Class B.
 - 6. Conditioned Space, Supply-Air Ducts in Pressure Classes 2-Inch wg and Lower: Seal Class C.
 - 7. Conditioned Space, Supply-Air Ducts in Pressure Classes Higher Than 2-Inch wg: Seal Class B.
 - 8. Conditioned Space, Exhaust Ducts: Seal Class B.
 - 9. Conditioned Space, Return-Air Ducts: Seal Class C.

3.4 HANGER AND SUPPORT INSTALLATION

- A. Comply with SMACNA's "HVAC Duct Construction Standards Metal and Flexible," Chapter 5, "Hangers and Supports."
- B. Building Attachments: Concrete inserts, powder-actuated fasteners, or structural-steel fasteners appropriate for construction materials to which hangers are being attached.
 - 1. Where practical, install concrete inserts before placing concrete.
 - Install powder-actuated concrete fasteners after concrete is placed and completely cured.
 - 3. Use powder-actuated concrete fasteners for standard-weight aggregate concretes or for slabs more than 4 inches thick.
 - 4. Do not use powder-actuated concrete fasteners for lightweight-aggregate concretes or for slabs less than 4 inches thick.
 - 5. Do not use powder-actuated concrete fasteners for seismic restraints.

- C. Hanger Spacing: Comply with SMACNA's "HVAC Duct Construction Standards Metal and Flexible," Table 5-1, "Rectangular Duct Hangers Minimum Size," and Table 5-2, "Minimum Hanger Sizes for Round Duct," for maximum hanger spacing; install hangers and supports within 24 inches of each elbow and within 48 inches of each branch intersection.
- D. Hangers Exposed to View: Threaded rod and angle or channel supports.
- E. Support vertical ducts with steel angles or channel secured to the sides of the duct with welds, bolts, sheet metal screws, or blind rivets; support at each floor and at a maximum intervals of 16 feet.
- F. Install upper attachments to structures. Select and size upper attachments with pull-out, tension, and shear capacities appropriate for supported loads and building materials where used.

3.5 SEISMIC-RESTRAINT-DEVICE INSTALLATION

- A. Install ducts with hangers and braces designed to support the duct and to restrain against seismic forces required by applicable building codes. Comply with SMACNA's "Seismic Restraint Manual: Guidelines for Mechanical Systems."
 - 1. Space lateral supports a maximum of 40 feet o.c., and longitudinal supports a maximum of 80 feet o.c.
 - 2. Brace a change of direction longer than 12 feet.
- B. Select seismic-restraint devices with capacities adequate to carry present and future static and seismic loads.
- C. Install cables so they do not bend across edges of adjacent equipment or building structure.
- D. Install cable restraints on ducts that are suspended with vibration isolators.
- E. Install seismic-restraint devices using methods approved by an agency acceptable to authorities having jurisdiction.
- F. Attachment to Structure: If specific attachment is not indicated, anchor bracing and restraints to structure, to flanges of beams, to upper truss chords of bar joists, or to concrete members.
- G. Drilling for and Setting Anchors:
 - Identify position of reinforcing steel and other embedded items prior to drilling holes for anchors. Do not damage existing reinforcement or embedded items during drilling. Notify the Architect if reinforcing steel or other embedded items are encountered during drilling. Locate and avoid prestressed tendons, electrical and telecommunications conduit, and gas lines.
 - 2. Do not drill holes in concrete or masonry until concrete, mortar, or grout has achieved full design strength.

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- Wedge Anchors: Protect threads from damage during anchor installation. Heavy-duty sleeve anchors shall be installed with sleeve fully engaged in the structural element to which anchor is to be fastened.
- 4. Set anchors to manufacturer's recommended torque, using a torque wrench.
- 5. Install zinc-coated steel anchors for interior applications and stainless-steel anchors for applications exposed to weather.

3.6 CONNECTIONS

- A. Make connections to equipment with flexible connectors complying with Section 233300 "Air Duct Accessories."
- B. Comply with SMACNA's "HVAC Duct Construction Standards Metal and Flexible" for branch, outlet and inlet, and terminal unit connections.

3.7 FIELD QUALITY CONTROL

- A. Perform tests and inspections.
- B. Duct System Cleanliness Tests:
 - 1. Visually inspect duct system to ensure that no visible contaminants are present.
 - Test sections of metal duct system, chosen randomly by Owner, for cleanliness according to "Vacuum Test" in NADCA ACR, "Assessment, Cleaning and Restoration of HVAC Systems."
 - a. Acceptable Cleanliness Level: Net weight of debris collected on the filter media shall not exceed 0.75 mg/100 sq. cm.
- C. Duct system will be considered defective if it does not pass tests and inspections.
- D. Prepare test and inspection reports.

3.8 DUCT CLEANING

- A. Clean new duct system(s) before testing, adjusting, and balancing.
- B. Use service openings for entry and inspection.
 - Create new openings and install access panels appropriate for duct static-pressure class
 if required for cleaning access. Provide insulated panels for insulated or lined duct.
 Patch insulation and liner as recommended by duct liner manufacturer. Comply with
 Section 233300 "Air Duct Accessories" for access panels and doors.
 - 2. Disconnect and reconnect flexible ducts as needed for cleaning and inspection.
 - 3. Remove and reinstall ceiling to gain access during the cleaning process.

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C. Particulate Collection and Odor Control:

- 1. When venting vacuuming system inside the building, use HEPA filtration with 99.97 percent collection efficiency for 0.3-micron-size (or larger) particles.
- 2. When venting vacuuming system to outdoors, use filter to collect debris removed from HVAC system, and locate exhaust downwind and away from air intakes and other points of entry into building.

D. Clean the following components by removing surface contaminants and deposits:

- 1. Air outlets and inlets (registers, grilles, and diffusers).
- Supply, return, and exhaust fans including fan housings, plenums (except ceiling supply and return plenums), scrolls, blades or vanes, shafts, baffles, dampers, and drive assemblies.
- 3. Air-handling unit internal surfaces and components including mixing box, coil section, air wash systems, spray eliminators, condensate drain pans, humidifiers and dehumidifiers, filters and filter sections, and condensate collectors and drains.
- 4. Coils and related components.
- Return-air ducts, dampers, actuators, and turning vanes except in ceiling plenums and mechanical equipment rooms.
- 6. Supply-air ducts, dampers, actuators, and turning vanes.
- 7. Dedicated exhaust and ventilation components and makeup air systems.

E. Mechanical Cleaning Methodology:

- 1. Clean metal duct systems using mechanical cleaning methods that extract contaminants from within duct systems and remove contaminants from building.
- Use vacuum-collection devices that are operated continuously during cleaning. Connect vacuum device to downstream end of duct sections so areas being cleaned are under negative pressure.
- 3. Use mechanical agitation to dislodge debris adhered to interior duct surfaces without damaging integrity of metal ducts, duct liner, or duct accessories.
- Clean fibrous-glass duct liner with HEPA vacuuming equipment; do not permit duct liner to get wet. Replace fibrous-glass duct liner that is damaged, deteriorated, or delaminated or that has friable material, mold, or fungus growth.
- Clean coils and coil drain pans according to NADCA 1992. Keep drain pan operational. Rinse coils with clean water to remove latent residues and cleaning materials; comb and straighten fins.
- 6. Provide drainage and cleanup for wash-down procedures.
- 7. Antimicrobial Agents and Coatings: Apply EPA-registered antimicrobial agents if fungus is present. Apply antimicrobial agents according to manufacturer's written instructions after removal of surface deposits and debris.

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3.9 START UP

A. Air Balance: Comply with requirements in Section 230593 "Testing, Adjusting, and Balancing for HVAC."

3.10 DUCT SCHEDULE

- A. Fabricate ducts with galvanized sheet steel:
- B. Supply Ducts:
 - Ducts Connected to Fan Coil Units, Furnaces, Heat Pumps, and Terminal Units:
 - a. Pressure Class: Positive 3-inch wg.
 - b. Minimum SMACNA Seal Class: A.
 - c. SMACNA Leakage Class for Rectangular: 12.
 - 2. Ducts Connected to Constant-Volume Air-Handling Units:
 - a. Pressure Class: Positive 3-inch wg.
 - b. Minimum SMACNA Seal Class: A.
 - c. SMACNA Leakage Class for Rectangular: 12.
 - 3. Ducts Connected to Variable-Air-Volume Air-Handling Units:
 - a. Pressure Class: Positive 3-inch wg.
 - b. Minimum SMACNA Seal Class: A.
 - c. SMACNA Leakage Class for Rectangular: 6.
 - 4. Ducts Connected to Equipment Not Listed Above:
 - a. Pressure Class: Positive 3-inch wg.
 - b. Minimum SMACNA Seal Class: A.
 - c. SMACNA Leakage Class for Rectangular: 12.

C. Return Ducts:

- 1. Ducts Connected to Fan Coil Units, Furnaces, Heat Pumps, and Terminal Units:
 - a. Pressure Class: Positive 2-inch wg.
 - b. Minimum SMACNA Seal Class: B.
 - c. SMACNA Leakage Class for Rectangular: 12.
- 2. Ducts Connected to Air-Handling Units:
 - a. Pressure Class: Positive 2-inch wg.
 - b. Minimum SMACNA Seal Class: B.

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- c. SMACNA Leakage Class for Rectangular: 12.
- 3. Ducts Connected to Equipment Not Listed Above:
 - a. Pressure Class: Positive 2-inch wg.
 - b. Minimum SMACNA Seal Class: B.
 - c. SMACNA Leakage Class for Rectangular: 12.
- D. Exhaust Ducts:
 - Ducts Connected to Fans Exhausting (ASHRAE 62.1, Class 1 and 2) Air:
 - a. Pressure Class: Positive 2-inch wg.
 - b. Minimum SMACNA Seal Class: B.
 - c. SMACNA Leakage Class for Rectangular: 12.
 - 2. Ducts Connected to Air-Handling Units:
 - a. Pressure Class: Positive 2-inch wg.
 - b. Minimum SMACNA Seal Class: B.
 - c. SMACNA Leakage Class for Rectangular: 12.
 - 3. Ducts Connected to Equipment Not Listed Above:
 - Pressure Class: Positive 2-inch wg.
 - b. Minimum SMACNA Seal Class: B.
 - c. SMACNA Leakage Class for Rectangular: 12.
- E. Outdoor-Air (Not Filtered, Heated, or Cooled) Ducts:
 - 1. Ducts Connected to Fan Coil Units, Furnaces, Heat Pumps, and Terminal Units:
 - a. Pressure Class: Positive 2-inch wg.
 - b. Minimum SMACNA Seal Class: B.
 - c. SMACNA Leakage Class for Rectangular: 12.
 - 2. Ducts Connected to Air-Handling Units:
 - a. Pressure Class: Positive 2-inch wg.
 - b. Minimum SMACNA Seal Class: B.
 - c. SMACNA Leakage Class for Rectangular: 12.
 - 3. Ducts Connected to Equipment Not Listed Above:
 - a. Pressure Class: Positive 2-inch wg.
 - b. Minimum SMACNA Seal Class: B.
 - c. SMACNA Leakage Class for Rectangular: 12.

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F. Intermediate Reinforcement:

1. Galvanized-Steel Ducts: Galvanized steel.

G. Liner:

- 1. Supply Air Ducts: Flexible elastomeric, 1 inch thick.
- 2. Return Air Ducts: Flexible elastomeric, 1 inch thick.
- 3. Exhaust Air Ducts: Flexible elastomeric, 1 inch thick.
- 4. Supply Fan Plenums: Flexible elastomeric, 1 inch thick.
- 5. Return- and Exhaust-Fan Plenums: Flexible elastomeric, 1 inch thick.
- 6. Transfer Ducts: Flexible elastomeric, 1 inch thick.

H. Elbow Configuration:

- 1. Rectangular Duct: Comply with SMACNA's "HVAC Duct Construction Standards Metal and Flexible," Figure 4-2, "Rectangular Elbows."
 - a. Radius Type RE 1 with minimum 1.5 radius-to-diameter ratio.
 - b. Radius Type RE 3 with minimum 1.0 radius-to-diameter ratio and two vanes.
 - c. Mitered Type RE 2 with vanes complying with SMACNA's "HVAC Duct Construction Standards - Metal and Flexible," Figure 4-3, "Vanes and Vane Runners," and Figure 4-4, "Vane Support in Elbows."

I. Branch Configuration:

- 1. Rectangular Duct: Comply with SMACNA's "HVAC Duct Construction Standards Metal and Flexible," Figure 4-6, "Branch Connection."
 - a. Rectangular Main to Rectangular Branch: 45-degree entry.
 - b. Rectangular Main to Round Branch: Spin in.

END OF SECTION 233113

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SECTION 23 33 00 - AIR DUCT ACCESSORIES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. Section Includes:

- 1. Manual volume dampers.
- 2. Control dampers.
- 3. Combination fire and smoke dampers.
- 4. Flange connectors.
- 5. Turning vanes.
- .6. Remote damper operators.
- 7. Duct-mounted access doors.
- 8. Duct accessory hardware.

1.3 ACTION SUBMITTALS

- A. Product Data: For each type of product.
 - 1. For duct silencers, include pressure drop and dynamic insertion loss data. Include breakout noise calculations for high transmission loss casings.
- B. Shop Drawings: For duct accessories. Include plans, elevations, sections, details and attachments to other work.
 - 1. Detail duct accessories fabrication and installation in ducts and other construction. Include dimensions, weights, loads, and required clearances; and method of field assembly into duct systems and other construction. Include the following:
 - a. Special fittings.
 - b. Manual volume damper installations.
 - c. Control-damper installations.
 - d. Combination fire- and smoke-damper, ceiling, and corridor damper installations, including sleeves; and duct-mounted access doors and remote damper operators.
 - e. Wiring Diagrams: For power, signal, and control wiring.



1.4 INFORMATIONAL SUBMITTALS

- A. Coordination Drawings: Reflected ceiling plans, drawn to scale, on which ceiling-mounted access panels and access doors required for access to duct accessories are shown and coordinated with each other, using input from Installers of the items involved.
- B. Source quality-control reports.

1.5 CLOSEOUT SUBMITTALS

A. Operation and Maintenance Data: For air duct accessories to include in operation and maintenance manuals.

1.6 MAINTENANCE MATERIAL SUBMITTALS

- A. Furnish extra materials that match products installed and that are packaged with protective covering for storage and identified with labels describing contents.
 - 1. Fusible Links: Furnish quantity equal to 10 percent of amount installed.

PART 2 - PRODUCTS

2.1 ASSEMBLY DESCRIPTION

- A. Comply with NFPA 90A, "Installation of Air Conditioning and Ventilating Systems," and with NFPA 90B, "Installation of Warm Air Heating and Air Conditioning Systems."
- B. Comply with SMACNA's "HVAC Duct Construction Standards Metal and Flexible" for acceptable materials, material thicknesses, and duct construction methods unless otherwise indicated. Sheet metal materials shall be free of pitting, seam marks, roller marks, stains, discolorations, and other imperfections.

2.2 MATERIALS

- A. Galvanized Sheet Steel: Comply with ASTM A 653/A 653M.
 - 1. Galvanized Coating Designation: G60.
 - 2. Exposed-Surface Finish: Mill phosphatized.
- B. Reinforcement Shapes and Plates: Galvanized-steel reinforcement where installed on galvanized sheet metal ducts; compatible materials for aluminum and stainless-steel ducts.
- C. Tie Rods: Galvanized steel, 1/4-inch minimum diameter for lengths 36 inches or less; 3/8-inch minimum diameter for lengths longer than 36 inches.

2.3 MANUAL VOLUME DAMPERS

- A. Standard, Steel, Manual Volume Dampers:
 - 1. 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:
 - a. Air Balance Inc.; a division of Mestek, Inc.
 - b. American Warming and Ventilating; a division of Mestek, Inc.
 - c. Flexmaster U.S.A., Inc.
 - d. McGill AirFlow LLC.
 - e. Nailor Industries Inc.
 - f. Pottorff.
 - g. Ruskin Company.
 - h. Trox USA Inc.
 - Vent Products Company, Inc.
 - 2. Standard leakage rating.
 - 3. Suitable for horizontal or vertical applications.
 - 4. Frames:
 - a. Frame: Hat-shaped, 0.094-inch-thick, galvanized sheet steel.
 - b. Mitered and welded corners.
 - c. Flanges for attaching to walls and flangeless frames for installing in ducts.

5. Blades:

- a. Multiple or single blade.
- b. Parallel- or opposed-blade design.
- c. Stiffen damper blades for stability.
- d. Galvanized-steel, 0.064 inch thick.
- 6. Blade Axles: Galvanized steel.
- 7. Bearings:
 - a. Oil-impregnated bronze.
 - b. Dampers in ducts with pressure classes of 3-inch wg or less shall have axles full length of damper blades and bearings at both ends of operating shaft.
- 8. Tie Bars and Brackets: Galvanized steel.

B. Damper Hardware:

- 1. Zinc-plated, die-cast core with dial and handle made of 3/32-inch-thick zinc-plated steel, and a 3/4-inch hexagon locking nut.
- 2. Include center hole to suit damper operating-rod size.
- 3. Include elevated platform for insulated duct mounting.



2.4 CONTROL DAMPERS

- 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. American Warming and Ventilating; a division of Mestek, Inc.
 - 2. Arrow United Industries; a division of Mestek, Inc.
 - 3. Cesco Products; a division of Mestek, Inc.
 - 4. Greenheck Fan Corporation.
 - 5. Lloyd Industries, Inc.
 - 6. McGill AirFlow LLC.
 - 7. Metal Form Manufacturing, Inc.
 - 8. Nailor Industries Inc.
 - 9. NCA Manufacturing, Inc.
 - 10. Pottorff.
 - 11. Ruskin Company.
 - 12. Vent Products Company, Inc.
 - 13. Young Regulator Company.
- B. Low-leakage rating, with linkage outside airstream, and bearing AMCA's Certified Ratings Seal for both air performance and air leakage.

C. Frames:

- 1. Hat shaped.
- 2. 0.094-inch-thick, galvanized sheet steel.
- 3. Mitered and welded corners.

D. Blades:

- 1. Multiple blade with maximum blade width of 6 inches.
- 2. Opposed-blade design.
- 3. Galvanized-steel.
- 4. [0.064 inch thick single skin or 0.0747-inch-thick dual skin.
- 5. Blade Edging: Closed-cell neoprene.
- E. Blade Axles: 1/2-inch-diameter; galvanized steel; blade-linkage hardware of zinc-plated steel and brass; ends sealed against blade bearings.
 - 1. Operating Temperature Range: From minus 40 to plus 200 deg F.

F. Bearings:

- 1. Oil-impregnated bronze.
- 2. Dampers in ducts with pressure classes of 3-inch wg or less shall have axles full length of damper blades and bearings at both ends of operating shaft.
- 3. Thrust bearings at each end of every blade.

2.5 COMBINATION FIRE AND SMOKE DAMPERS

- A. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:
 - 1. Air Balance Inc.; a division of Mestek, Inc.
 - 2. Cesco Products; a division of Mestek, Inc.
 - 3. Greenheck Fan Corporation.
 - 4. Nailor Industries Inc.
 - Pottorff.
 - 6. Ruskin Company.
- B. Type: Dynamic; rated and labeled according to UL 555 and UL 555S by an NRTL.
- C. Closing rating in ducts up to 4-inch wg static pressure class and minimum 2000-fpm velocity.
- D. Fire Rating: 3 hours.
- E. Frame: Hat-shaped, 0.094-inch- thick, galvanized sheet steel, with mechanically attached corners and mounting flange.
- F. Heat-Responsive Device: Resettable, 165 deg F rated, fusible links.
- G. Smoke Detector: Integral, factory wired for single-point connection.
- H. Blades: Roll-formed, horizontal, overlapping, 0.063-inch-thick, galvanized sheet steel.
- I. Leakage: Class I.
- J. Rated pressure and velocity to exceed design airflow conditions.
- K. Mounting Sleeve: Factory-installed, 0.05-inch-thick, galvanized sheet steel; length to suit wall or floor application with factory-furnished silicone calking.
- L. Master control panel for use in dynamic smoke-management systems.
- M. Damper Motors: two-position action.
- N. Comply with NEMA designation, temperature rating, service factor, enclosure type, and efficiency requirements for motors specified in Section 230513 "Common Motor Requirements for HVAC Equipment."
 - 1. Motor Sizes: Minimum size as indicated. If not indicated, large enough so driven load will not require motor to operate in service factor range above 1.0.
 - 2. Controllers, Electrical Devices, and Wiring: Comply with requirements for electrical devices and connections as specified herein.
 - 3. Permanent-Split-Capacitor or Shaded-Pole Motors: With oil-immersed and sealed gear trains.

- 4. Spring-Return Motors: Equip with an integral spiral-spring mechanism where indicated. Enclose entire spring mechanism in a removable housing designed for service or adjustments. Size for running torque rating of 150 in. x lbf and breakaway torque rating of 150 in. x lbf.
- 5. Electrical Connection: 115 V, single phase, 60 Hz.

O. Accessories:

- 1. Auxiliary switches for signaling fan control or position indication.
- 2. Test and reset switches, remote mounted.

2.6 FLANGE CONNECTORS

- 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. Ductmate Industries, Inc.
 - 2. Nexus PDQ; Division of Shilco Holdings Inc.
 - 3. Ward Industries, Inc.; a division of Hart & Cooley, Inc.
- B. Description: Add-on, factory-fabricated, slide-on transverse flange connectors, gaskets, and components.
- C. Material: Galvanized steel.
- D. Gage and Shape: Match connecting ductwork.

2.7 TURNING VANES

- 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. Ductmate Industries, Inc.
 - 2. Duro Dyne Inc.
 - 3. Elgen Manufacturing.
 - 4. METALAIRE, Inc.
 - 5. SEMCO Incorporated.
 - 6. Ward Industries, Inc.; a division of Hart & Cooley, Inc.
- B. Manufactured Turning Vanes for Metal Ducts: Curved blades of galvanized sheet steel; support with bars perpendicular to blades set; set into vane runners suitable for duct mounting.
 - 1. Acoustic Turning Vanes: Fabricate airfoil-shaped aluminum extrusions with perforated faces and fibrous-glass fill.

- C. General Requirements: Comply with SMACNA's "HVAC Duct Construction Standards Metal and Flexible"; Figures 4-3, "Vanes and Vane Runners," and 4-4, "Vane Support in Elbows."
- D. Vane Construction: Single wall for ducts up to 48 inches wide and double wall for larger dimensions.

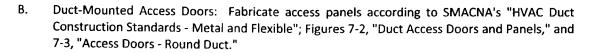
2.8 REMOTE DAMPER OPERATORS

- 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. Pottorff.
 - 2. Ventfabrics, Inc.
 - 3. Young Regulator Company.
- B. Description: Cable system designed for remote manual damper adjustment.
- C. Tubing: Aluminum.
- D. Cable: Steel.
- E. Wall-Box Mounting: Surface.
- F. Wall-Box Cover-Plate Material: Steel.
- G. Remote operators are to be wall mounted at eye level.

2.9 DUCT-MOUNTED ACCESS DOORS

- 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. American Warming and Ventilating; a division of Mestek, Inc.
 - Cesco Products; a division of Mestek, Inc.
 - 3. Ductmate Industries, Inc.
 - 4. Elgen Manufacturing.
 - 5. Flexmaster U.S.A., Inc.
 - 6. Greenheck Fan Corporation.
 - 7. McGill AirFlow LLC.
 - 8. Nailor Industries Inc.
 - 9. Pottorff.
 - 10. Ventfabrics, Inc.
 - 11. Ward Industries, Inc.; a division of Hart & Cooley, Inc.

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1. Door:

- a. Double wall, rectangular.
- b. Galvanized sheet metal with insulation fill and thickness as indicated for duct pressure class.
- c. Vision panel.
- d. Hinges and Latches: 1-by-1-inch butt or piano hinge and cam latches.
- e. Fabricate doors airtight and suitable for duct pressure class.
- 2. Frame: Galvanized sheet steel, with bend-over tabs and foam gaskets.
- 3. Number of Hinges and Locks:
 - a. Access Doors Less Than 12 Inches Square: No hinges and two sash locks.
 - b. Access Doors up to 18 Inches Square: Two hinges and two sash locks.
 - c. Access Doors up to 24 by 48 Inches: Continuous and two compression latches with outside and inside handles.
 - d. Access Doors Larger Than 24 by 48 Inches: Continuous and two compression latches with outside and inside handles.

2.10 DUCT ACCESS PANEL ASSEMBLIES

- 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. Ductmate Industries, Inc.
 - 2. Flame Gard, Inc.
 - 3. 3M.
- B. Labeled according to UL 1978 by an NRTL.
- C. Panel and Frame: Minimum thickness 0.0528-inch steel.
- D. Fasteners: Stainless steel. Panel fasteners shall not penetrate duct wall.
- E. Gasket: Comply with NFPA 96; grease-tight, high-temperature ceramic fiber, rated for minimum 2000 deg F.
- F. Minimum Pressure Rating: 10-inch wg, positive or negative.



2.11 DUCT ACCESSORY HARDWARE

- A. Instrument Test Holes: Cast iron or cast aluminum to suit duct material, including screw cap and gasket. Size to allow insertion of pitot tube and other testing instruments and of length to suit duct-insulation thickness.
- B. Adhesives: High strength, quick setting, neoprene based, waterproof, and resistant to gasoline and grease.

PART 3 - EXECUTION

3.1 INSTALLATION

- A. Install duct accessories according to applicable details in SMACNA's "HVAC Duct Construction Standards Metal and Flexible" for metal ducts and in NAIMA AH116, "Fibrous Glass Duct Construction Standards," for fibrous-glass ducts.
- B. Install duct accessories of materials suited to duct materials; use galvanized-steel accessories in galvanized-steel and fibrous-glass ducts, stainless-steel accessories in stainless-steel ducts, and aluminum accessories in aluminum ducts.
- C. Install control dampers at inlet of exhaust fans or exhaust ducts as close as possible to exhaust fan unless otherwise indicated.
- D. Install volume dampers at points on supply, return, and exhaust systems where branches extend from larger ducts. Where dampers are installed in ducts having duct liner, install dampers with hat channels of same depth as liner, and terminate liner with nosing at hat channel.
 - 1. Install steel volume dampers in steel ducts.
- E. Set dampers to fully open position before testing, adjusting, and balancing.
- F. Install test holes at fan inlets and outlets and elsewhere as indicated.
- G. Install fire and smoke dampers according to UL listing.
- H. Install duct access doors on sides of ducts to allow for inspecting, adjusting, and maintaining accessories and equipment at the following locations:
 - 1. On both sides of duct coils.
 - 2. At outdoor-air intakes and mixed-air plenums.
 - 3. At drain pans and seals.
 - 4. Downstream from manual volume dampers, control dampers, backdraft dampers, and equipment.

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- 5. Adjacent to and close enough to fire or smoke dampers, to reset or reinstall fusible links. Access doors for access to fire or smoke dampers having fusible links shall be pressure relief access doors and shall be outward operation for access doors installed upstream from dampers and inward operation for access doors installed downstream from dampers.
- 6. At each change in direction and at maximum 50-foot spacing.
- 7. Upstream and downstream from turning vanes.
- 8. Control devices requiring inspection.
- 9. Elsewhere as indicated.
- I. Install access doors with swing against duct static pressure.
- J. Access Door Sizes:
 - 1. One-Hand or Inspection Access: 8 by 5 inches.
 - 2. Two-Hand Access: 12 by 6 inches.
 - 3. Head and Hand Access: 18 by 10 inches.
 - 4. Head and Shoulders Access: 21 by 14 inches.
 - 5. Body Access: 25 by 14 inches.
 - 6. Body plus Ladder Access: 25 by 17 inches.
- K. Label access doors according to Section 230553 "Identification for HVAC Piping and Equipment" to indicate the purpose of access door.
- L. Install flexible connectors to connect ducts to equipment.
- M. For fans developing static pressures of 5-inch wg and more, cover flexible connectors with loaded vinyl sheet held in place with metal straps.
- N. Connect diffusers or light troffer boots to ducts directly.
- O. Install duct test holes where required for testing and balancing purposes.
- P. Install thrust limits at centerline of thrust, symmetrical on both sides of equipment. Attach thrust limits at centerline of thrust and adjust to a maximum of 1/4-inch movement during start and stop of fans.

3.2 FIELD QUALITY CONTROL

- A. Tests and Inspections:
 - 1. Operate dampers to verify full range of movement.
 - Inspect locations of access doors and verify that purpose of access door can be performed.
 - 3. Operate fire, smoke, and combination fire and smoke dampers to verify full range of movement and verify that proper heat-response device is installed.
 - 4. Inspect turning vanes for proper and secure installation.

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5. Operate remote damper operators to verify full range of movement of operator and damper.

END OF SECTION 233300

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SECTION 233713 - DIFFUSERS, REGISTERS, AND GRILLES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. Section Includes:
 - 1. Adjustable bar registers.
 - 2. Fixed face grilles.

B. Related Sections:

1. Section 233300 "Air Duct Accessories" for fire and smoke dampers and volume-control dampers not integral to diffusers, registers, and grilles.

1.3 ACTION SUBMITTALS

- A. Product Data: For each type of product indicated, include the following:
 - 1. Data Sheet: Indicate materials of construction, finish, and mounting details; and performance data including throw and drop, static-pressure drop, and noise ratings.
 - 2. Diffuser, Register, and Grille Schedule: Indicate drawing designation, room location, quantity, model number, size, and accessories furnished.
- B. Samples for Initial Selection: For registers, and grilles with factory-applied color finishes.
- C. Samples for Verification: For registers, and grilles, in manufacturer's standard sizes to verify color selected.

1.4 INFORMATIONAL SUBMITTALS

- A. Coordination Drawings: Reflected ceiling plans, drawn to scale, on which the following items are shown and coordinated with each other, using input from Installers of the items involved:
 - 1. Ceiling suspension assembly members.
 - 2. Method of attaching hangers to building structure.
 - 3. Duct access panels.



B. Source quality-control reports.

PART 2 - PRODUCTS

2.1 REGISTERS AND GRILLES

A. Adjustable Bar Register:

- 1. Basis-of-Design Product: Subject to compliance with requirements, provide product indicated on Drawings or comparable product by one of the following:
 - a. A-J Manufacturing Co., Inc.
 - b. Anemostat Products; a Mestek company.
 - c. Carnes.
 - d. Dayus Register & Grille Inc.
 - e. Hart & Cooley Inc.
 - f. Krueger.
 - g. METALAIRE, Inc.
 - h. Nailor Industries Inc.
 - i. Price Industries.
 - j. Titus.
 - k. Tuttle & Bailey.
- 2. Material: Steel.
- 3. Finish: Baked enamel, white.
- 4. Face Blade Arrangement: Horizontal spaced 1-1/4 inches apart.
- 5. Core Construction: Removeable.
- 6. Rear-Blade Arrangement: Vertical spaced 1-1/4 inch apart.
- 7. Frame: 2-11/16 inch wide.
- 8. Mounting Frame: Surface.
- 9. Mounting: Countersunk screw.
- 10. Damper Type: Adjustable opposed blade.

B. Fixed Face Grille:

- 1. Basis-of-Design Product: Subject to compliance with requirements, provide product indicated on Drawings or comparable product by one of the following:
 - a. A-J Manufacturing Co., Inc.
 - b. Anemostat Products; a Mestek company.
 - c. Carnes.
 - d. Dayus Register & Grille Inc.
 - e. Hart & Cooley Inc.
 - f. Krueger.
 - g. Nailor Industries Inc.
 - h. Price Industries.

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- i. Titus.
- j. Tuttle & Bailey.
- 2. Material: Steel.
- 3. Finish: Baked enamel, white.
- 4. Face Arrangement: 3/4-inch blade spacing with a 45° deflection.
- 5. Core Construction: Removable.
- 6. Frame: 1-1/8 inches wide.

2.2 SOURCE QUALITY CONTROL

A. Verification of Performance: Rate diffusers, registers, and grilles according to ASHRAE 70, "Method of Testing for Rating the Performance of Air Outlets and Inlets."

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine areas where registers, and grilles are to be installed for compliance with requirements for installation tolerances and other conditions affecting performance of equipment.
- B. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 INSTALLATION

- A. Install registers, and grilles level and plumb.
- B. Ceiling-Mounted Outlets and Inlets: Drawings indicate general arrangement of ducts, fittings, and accessories. Air outlet and inlet locations have been indicated to achieve design requirements for air volume, noise criteria, airflow pattern, throw, and pressure drop. Make final locations where indicated, as much as practical. For units installed in lay-in ceiling panels, locate units in the center of panel. Where architectural features or other items conflict with installation, notify Architect for a determination of final location.
- C. Install registers, and grilles with airtight connections to ducts and to allow service and maintenance of dampers, air extractors, and fire dampers.

3.3 ADJUSTING

A. After installation, adjust diffusers, registers, and grilles to air patterns indicated, or as directed, before starting air balancing.

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END OF SECTION 233713

SECTION 23 81 13 - PACKAGED TERMINAL AIR-CONDITIONERS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. Section includes packaged terminal air conditioners and their accessories and controls, in the following configurations:
 - 1. Through-the-wall air conditioners.
 - 2. Cooling-only units.

1.3 ACTION SUBMITTALS

- A. Product Data: For each type of product indicated. Include rated capacities, operating characteristics, furnished specialties, electrical characteristics, and accessories.
- B. Shop Drawings: For packaged terminal air conditioners. Include plans, elevations, sections, details for wall penetrations, seismic bracing, and attachments to other work.
 - Detail equipment assemblies and indicate dimensions, weights, loads, required clearances, method of field assembly, components, and location and size of each field connection.
 - 2. Wiring Diagrams: For power, signal, and control wiring.
- C. Color Samples: For unit cabinet, discharge grille, and exterior louver, and for each color and texture specified.

1.4 INFORMATIONAL SUBMITTALS

- A. Product Test Reports: Based on evaluation of comprehensive tests performed by manufacturer and witnessed by a qualified testing agency, for packaged terminal air conditioners.
- B. Field quality-control reports.
- C. Warranty: Sample of special warranty.

1.5 CLOSEOUT SUBMITTALS

A. Operation and Maintenance Data: For packaged terminal air conditioners to include in emergency, operation, and maintenance manuals.

1.6 QUALITY ASSURANCE

- A. Electrical Components, Devices, and Accessories: Listed and labeled as defined in NFPA 70, by a qualified testing agency, and marked for intended location and application.
- B. ASHRAE Compliance: Applicable requirements in ASHRAE 62.1, Section 4 "Outdoor Air Quality," Section 5 "Systems and Equipment," Section 6 "Ventilation Rate Procedures," and Section 7 "Construction and Startup."
- C. ASHRAE/IESNA Compliance: Applicable requirements in ASHRAE/IESNA 90.1.

1.7 COORDINATION

A. Coordinate layout and installation of packaged terminal air conditioners and wall construction with other construction that penetrates walls or is supported by them.

1.8 WARRANTY

- A. Special Warranty: Manufacturer's standard form in which manufacturer agrees to repair or replace components of packaged terminal air conditioners that fail in materials or workmanship within specified warranty period.
 - 1. Warranty Period for Sealed Refrigeration System: Manufacturer's standard, but not less than one years from date of Substantial Completion, including components and labor.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

- A. Basis-of-Design Product: Subject to compliance with requirements, provide product indicated on Drawings or comparable product by one of the following:
 - 1. Carrier Corporation; a United Technologies company.
 - 2. ClimateMaster, Inc.
 - 3. Friedrich Air Conditioning Co.
 - 4. General Electric Company; GE Consumer & Industrial Appliances.
 - 5. McQuay International.
 - 6. Suburban Manufacturing Company; a subsidiary of AIRXCEL, Inc.
 - 7. Trane; a business of American Standard Companies.

2.2 MANUFACTURED UNITS

A. Description: Factory-assembled and -tested, self-contained, packaged terminal air conditioner with room cabinet, electric refrigeration system, and temperature controls; fully charged with refrigerant and filled with oil; with hardwired chassis.

2.3 CHASSIS

- A. Cabinet: 0.052-inch- thick steel with removable front panel with concealed latches.
 - 1. Mounting: Wall with wall sleeve.
 - 2. Discharge Grille: Punched-louver discharge grille allowing four-way discharge-air pattern.
 - 3. Louvers: Extruded aluminum with enamel finish;.
 - 4. Finish: Baked enamel.
 - 5. Access Door: Hinged door in top of cabinet for access to controls.
 - 6. Cabinet Extension: Matching cabinet in construction and finish, allowing diversion of airflow to adjoining room; with grille.
 - 7. Finish of Interior Surfaces: Surfaces in contact with the airstream shall comply with requirements in ASHRAE 62.1.
 - 8. Wall Sleeves: Galvanized steel with polyester finish.
- B. Refrigeration System: Direct-expansion indoor coil with capillary restrictor; and hermetically sealed scroll compressor with vibration isolation and overload protection.
 - 1. Indoor and Outdoor Coils: Seamless copper tubes mechanically expanded into aluminum fins.
- C. Indoor Fan: Forward curved, centrifugal; with motor and positive-pressure ventilation damper with electric operator.
- D. Filters: Washable polyurethane in molded plastic frame.
- E. Condensate Drain: Drain pan to direct condensate to outdoor coil for re-evaporation.
 - 1. Comply with ASHRAE 62.1 for drain pan construction and connections.
- F. Outdoor Fan: Forward curved, centrifugal type driven by indoor fan motor.
 - Indoor and Outdoor Fan Motors: Three speed; comply with NEMA designation, temperature rating, service factor, enclosure type, and efficiency requirements for motors specified in Section 230513 "Common Motor Requirements for HVAC Equipment."
 - a. Fan Motors: Permanently lubricated split capacitor.
 - b. Motor Sizes: Minimum size as indicated. If not indicated, large enough so driven load will not require motor to operate in service factor range above 1.0.



c. Controllers, Electrical Devices, and Wiring: Comply with requirements for electrical devices and connections specified in electrical Sections.

2.4 CONTROLS

- A. Control Module: Unit-mounted digital panel with touchpad temperature control and with touchpad for heating, cooling, and fan operation. Include the following features:
 - 1. Low Ambient Lockout Control: Prevents cooling-cycle operation below 40 deg F outdoor air temperature.
 - 2. Building Automation System Interface: Allows remote on-off control with setback temperature control.
 - 3. Reverse-Cycle Defrost: Solid-state sensor monitors frost buildup on [indoor] [outdoor] coil and reverses unit to melt frost.
- B. Remote Control: Standard unit-mounted controls with remote-mounted, low-voltage adjustable thermostat with heat anticipator, cool-off-auto switch, and on-auto fan switch.
- C. Outdoor Air: Motorized intake damper. Open intake when unit indoor air fan runs.

2.5 CAPACITIES AND CHARACTERISTICS

- A. Airflow: 283 cfm.
- B. Cooling Capacity:
 - 1. Total: 8,000 Btu/h.
 - 2. Energy-Efficiency Ratio: 9.4.
 - 3. Outdoor Coil Entering-Air Temperature: 95 deg F.

C. Electrical Characteristics:

- 1. Volts: 115.
- 2. Phase: Single.
- 3. Hertz: 60.
- 4. Full-Load Amperes: 8.
- Maximum Overcurrent Protection: 10A.

2.6 SOURCE QUALITY CONTROL

- A. Sound-Power Level Ratings: Factory test to comply with ARI 300, "Sound Rating and Sound Transmission Loss of Packaged Terminal Equipment."
- B. Unit Performance Ratings: Factory test to comply with ARI 310/380/CSA C744, "Packaged Terminal Air-Conditioners and Heat Pumps."

PART 3 - EXECUTION

3.1 INSTALLATION

- A. Install units level and plumb, maintaining manufacturer's recommended clearances and tolerances.
- B. Install wall sleeves in finished wall assembly; seal and weatherproof. Joint-sealant materials and applications are specified in Section 079200 "Joint Sealants."
- C. Install and anchor wall sleeves to withstand, without damage to equipment and structure, seismic forces required by building code.

3.2 FIELD QUALITY CONTROL

- A. Manufacturer's Field Service: Engage a factory-authorized service representative to inspect, test, and adjust components, assemblies, and equipment installations, including connections.
- B. Perform tests and inspections.
 - Manufacturer's Field Service: Engage a factory-authorized service representative to inspect components, assemblies, and equipment installations, including connections, and to assist in testing.

C. Tests and Inspections:

- 1. Inspect for and remove shipping bolts, blocks, and tie-down straps.
- 2. After installing packaged terminal air conditioners and after electrical circuitry has been energized, test for compliance with requirements.
- 3. Operational Test: After electrical circuitry has been energized, start units to confirm proper motor rotation and unit operation.
- 4. Test and adjust controls and safeties. Replace damaged and malfunctioning controls and equipment.
- D. Packaged terminal air conditioners will be considered defective if they do not pass tests and inspections.
- E. Prepare test and inspection reports.

3.3 STARTUP SERVICE

- A. Perform startup service.
- B. After installation, verify the following:
 - Unit is level on base and is flashed in exterior wall.

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- 2. Unit casing has no visible damage.
- 3. Compressor, air-cooled condenser coil, and fans have no visible damage.
- 4. Labels are clearly visible.
- 5. Controls are connected and operable.
- 6. Shipping bolts, blocks, and tie-down straps are removed.
- 7. Filters are installed and clean.
- 8. Drain pan and drain line are installed correctly.
- 9. Electrical wiring installation complies with manufacturer's submittal and installation requirements in electrical Sections.
- 10. Installation. Perform startup checks according to manufacturer's written instructions, including the following:
 - a. Lubricate bearings on fan.
 - b. Check fan-wheel rotation for correct direction without vibration and binding.
- C. After startup service and performance test, change filters.

3.4 ADJUSTING

- A. Adjust initial temperature set points.
- B. Set field-adjustable switches and circuit-breaker trip ranges as indicated.

3.5 DEMONSTRATION

A. Train Owner's maintenance personnel to adjust, operate, and maintain packaged terminal air conditioners.

END OF SECTION 238113

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SECTION 23 81 26 - SPLIT-SYSTEM AIR-CONDITIONERS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. Section includes split-system air-conditioning and heat-pump units consisting of separate evaporator-fan and compressor-condenser components.

1.3 ACTION SUBMITTALS

- A. Product Data: For each type of product indicated. Include rated capacities, operating characteristics, and furnished specialties and accessories. Include performance data in terms of capacities, outlet velocities, static pressures, sound power characteristics, motor requirements, and electrical characteristics.
- B. Shop Drawings: Include plans, elevations, sections, details, and attachments to other work.
 - Detail equipment assemblies and indicate dimensions, weights, loads, required clearances, method of field assembly, components, and location and size of each field connection.
 - 2. Wiring Diagrams: For power, signal, and control wiring.
- C. Samples for Initial Selection: For units with factory-applied color finishes.

1.4 INFORMATIONAL SUBMITTALS

- Field quality-control reports.
- B. Warranty: Sample of special warranty.

1.5 CLOSEOUT SUBMITTALS

A. Operation and Maintenance Data: For split-system air-conditioning units to include in emergency, operation, and maintenance manuals.



1.6 MAINTENANCE MATERIAL SUBMITTALS

- A. Furnish extra materials that match products installed and that are packaged with protective covering for storage and identified with labels describing contents.
 - 1. Filters: One set(s) for each air-handling unit.
 - 2. Gaskets: One set(s) for each access door.
 - 3. Fan Belts: One set(s) for each air-handling unit fan.

1.7 QUALITY ASSURANCE

- A. Electrical Components, Devices, and Accessories: Listed and labeled as defined in NFPA 70, by a qualified testing agency, and marked for intended location and application.
- B. ASHRAE Compliance:
 - Fabricate and label refrigeration system to comply with ASHRAE 15, "Safety Standard for Refrigeration Systems."
 - ASHRAE Compliance: Applicable requirements in ASHRAE 62.1, Section 4 "Outdoor Air Quality," Section 5 - "Systems and Equipment," Section 6 - " Procedures," and Section 7 -"Construction and System Start-up."
- C. ASHRAE/IESNA Compliance: Applicable requirements in ASHRAE/IESNA 90.1.

1.8 COORDINATION

A. Coordinate sizes and locations of roof curbs, equipment supports, and roof penetrations with actual equipment provided.

1.9 WARRANTY

- A. Special Warranty: Manufacturer's standard form in which manufacturer agrees to repair or replace components of split-system air-conditioning units that fail in materials or workmanship within specified warranty period.
 - 1. Warranty Period:
 - a. For Compressor: Five year(s) from date of Substantial Completion.
 - b. For Parts: Five year(s) from date of Substantial Completion.
 - c. For Labor: Five year(s) from date of Substantial Completion.



2.1 MANUFACTURERS

- A. Basis-of-Design Product: Subject to compliance with requirements, provide product indicated on Drawings or comparable product by one of the following:
 - 1. Carrier Corporation; Home Comfort and HVAC Building & Industrial Systems.
 - 2. Coleman Company Inc. (The).
 - 3. First Operations LP.
 - 4. Friedrich Air Conditioning Company.
 - 5. Koldwave, Inc.; a Mestek company.
 - 6. Lennox International Inc.
 - 7. Mitsubishi Electric & Electronics USA, Inc.; HVAC Advanced Products Division.
 - 8. Mitsubishi Electric Sales Canada Inc.
 - 9. Mitsubishi Heavy Industries America, Inc.
 - 10. SANYO North America Corporation; SANYO Fisher Company.
 - 11. Trane; a business of American Standard companies.
 - 12. YORK; a Johnson Controls company.

2.2 INDOOR UNITS (5 TONS OR LESS)

- A. Concealed Evaporator-Fan Components:
 - 1. Chassis: Galvanized steel with flanged edges, removable panels for servicing, and insulation on back of panel.
 - 2. Insulation: Faced, glass-fiber duct liner.
 - Refrigerant Coil: Copper tube, with mechanically bonded aluminum fins and thermalexpansion valve. Comply with ARI 206/110.
 - 4. Electric Coil: Helical, nickel-chrome, resistance-wire heating elements; with refractory ceramic support bushings, automatic-reset thermal cutout, built-in magnetic contactors, manual-reset thermal cutout, airflow proving device, and one-time fuses in terminal box for overcurrent protection.
 - 5. Fan: Forward-curved, double-width wheel of galvanized steel; directly connected to motor.
 - 6. Fan Motors:
 - Comply with NEMA designation, temperature rating, service factor, enclosure type, and efficiency requirements specified in Section 230513 "Common Motor Requirements for HVAC Equipment."
 - b. Multitapped, multispeed with internal thermal protection and permanent lubrication.
 - c. Wiring Terminations: Connect motor to chassis wiring with plug connection.
 - 7. Airstream Surfaces: Surfaces in contact with the airstream shall comply with requirements in ASHRAE 62.1.



- 8. Filters: Permanent, cleanable.
- 9. Condensate Drain Pans:
 - a. Fabricated with two percent slope in at least two planes to collect condensate from cooling coils (including coil piping connections, coil headers, and return bends) and humidifiers, and to direct water toward drain connection.
 - 1) Length: Extend drain pan downstream from leaving face to comply with ASHRAE 62.1.
 - 2) Depth: A minimum of 2 inches deep.
 - b. Single-wall, galvanized-steel sheet.
 - c. Drain Connection: Located at lowest point of pan and sized to prevent overflow. Terminate with threaded nipple on both ends of pan.
 - 1) Minimum Connection Size: NPS 1.
 - d. Pan-Top Surface Coating: Asphaltic waterproofing compound.
 - e. Units with stacked coils shall have an intermediate drain pan to collect condensate from top coil.

2.3 OUTDOOR UNITS (5 TONS OR LESS)

- A. Air-Cooled, Compressor-Condenser Components:
 - Casing: Steel, finished with baked enamel in color selected by Architect, with removable panels for access to controls, weep holes for water drainage, and mounting holes in base. Provide brass service valves, fittings, and gage ports on exterior of casing.
 - Compressor: Hermetically sealed with crankcase heater and mounted on vibration isolation device. Compressor motor shall have thermal- and current-sensitive overload devices, start capacitor, relay, and contactor.
 - a. Compressor Type: Scroll.
 - b. Two-speed compressor motor with manual-reset high-pressure switch and automatic-reset low-pressure switch.
 - c. Refrigerant Charge: R-410A.
 - d. Refrigerant Coil: Copper tube, with mechanically bonded aluminum fins and liquid subcooler. Comply with ARI 206/110.
 - 3. Fan: Aluminum-propeller type, directly connected to motor.
 - 4. Motor: Permanently lubricated, with integral thermal-overload protection.
 - 5. Mounting Base: Polyethylene.
 - 6. Provide low ambient kit suitable for 0°F.

2.4 ACCESSORIES

- A. Thermostat: Low voltage with subbase to control compressor and evaporator fan.
- B. Thermostat: Wireless infrared functioning to remotely control compressor and evaporator fan, with the following features:
 - 1. Compressor time delay.
 - 2. 24-hour time control of system stop and start.
 - 3. Liquid-crystal display indicating temperature, set-point temperature, time setting, operating mode, and fan speed.
 - 4. Fan-speed selection including auto setting.
- C. Automatic-reset timer to prevent rapid cycling of compressor.
- D. Drain Hose: For condensate.

PART 3 - EXECUTION

3.1 INSTALLATION

- A. Install units level and plumb.
- B. Install evaporator-fan components using manufacturer's standard mounting devices securely fastened to building structure.
- C. Equipment Mounting:
 - 1. Refer to structural documents for equipment mounting.
 - 2. Comply with requirements for vibration isolation and seismic control devices specified in Section 230548 "Vibration and Seismic Controls for HVAC."
- D. Install and connect precharged refrigerant tubing to component's quick-connect fittings. Install tubing to allow access to unit.

3.2 CONNECTIONS

- A. Piping installation requirements are specified in other Sections. Drawings indicate general arrangement of piping, fittings, and specialties.
- B. Duct Connections: Duct installation requirements are specified in Section 233113 "Metal Ducts." Drawings indicate the general arrangement of ducts. Connect supply and return ducts to split-system air-conditioning units with flexible duct connectors. Flexible duct connectors are specified in Section 233300 "Air Duct Accessories."

- J. Support cables above accessible ceiling, using spring metal clips or metal cable ties to support cables from structure.
- K. Use suitable cable fittings and connectors.
- L. Neatly train and lace wiring inside boxes, equipment, and panelboards.
- M. Clean conductor surfaces before installing lugs and connectors.
- N. Make splices, taps, and terminations to carry full ampacity of conductors with no perceptible temperature rise.
- O. Terminate reconnected, existing aluminum conductors with tin-plated aluminum-bodied compression connectors only. Fill with anti-oxidant compound before installing conductor.
- P. Use suitable reducing connectors or mechanical connector adapters for reconnecting copper conductors to aluminum conductors or bus bars.
- Q. Use split bolt connectors for copper conductor splices and taps, 6 AWG and larger. Tape uninsulated conductors and connector with electrical tape to 150 percent of insulation rating of conductor.
- R. Use solderless pressure connectors with insulating covers for copper conductor splices and taps, 8 AWG and smaller.

3.5. CONNECTIONS

- A. Tighten electrical connectors and terminals according to manufacturer's published torque-tightening values. If manufacturer's torque values are not indicated, use those specified in UL 486A and UL 486B.
- B. Make splices and taps that are compatible with conductor material and that possess equivalent or better mechanical strength and insulation ratings than unspliced conductors. Delete subparagraph below unless aluminum conductors are specified.
- C. Wiring at Outlets: Install conductor at each outlet, with at least 6 inches of slack.

3.6 FIELD QUALITY CONTROL

D. Testing: On installation of wires and cables and before electrical circuitry has been energized, demonstrate product capability and compliance with requirements.

END OF SECTION 26 05 19

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SECTION 26 05 26 - GROUNDING AND BONDING FOR ELECTRICAL SYSTEMS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General Conditions Division 1 Specifications, apply to this Section.

1.2 SUMMARY

A. This Section includes grounding of electrical systems and equipment. Grounding requirements specified in this Section may be supplemented by special requirements of systems described in other Sections.

1.3 SUBMITTALS

- A. Product Data: For the grounding connectors.
- B. Qualification Data: For firms and persons specified in "Quality Assurance" Article.
- C. Field Test Reports: Provide overall resistance to ground for each electric and fire alarm panels.

1.4 QUALITY ASSURANCE

- A. Electrical Components, Devices, and Accessories: UL Listed and labeled as defined in NFPA 70, Article 100, and marked for intended use.
 - 1. Comply with UL 467 Grounding and Bonding Equipment.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

- A. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
 - 1. Grounding Conductors, Cables and Connectors:
 - a. O-Z/Gedney Co.; a business of the EGS Electrical Group.
 - b. Thomas & Betts, Electrical.



- c. Heary Brothers Lightning Protection Co.
- d. Or approved equal.

2.2 GROUNDING CONDUCTORS

- A. For insulated conductors, comply with Section 26 05 19 "Low-Voltage Electrical Power Conductors and Cables".
- B. Material: Copper.
- C. Equipment Grounding Conductors: Insulated with green-colored insulation.
- D. Grounding Conductors shall be sized in accordance with tables 250-66 or 250-122 of the National Electrical Code unless otherwise noted.
- E. Grounding Bus: Bare, annealed copper bars of rectangular cross section, with fiberglass insulators.
- F. Copper Bonding Conductors: As follows:
 - Bonding Cable: 28 kcmil, 14 strands of No. 17 AWG copper conductor, and ¼ inch in diameter.
 - 2. Bonding Conductor: No. 4 or No. 6 AWG, stranded copper conductor.
 - 3. Bonding Jumper: Bare copper tape, braided bare copper conductors, terminated with copper ferrules; 1-5/8 inches wide and 1/16 inch thick.
 - 4. Tinned Bonding Jumper: Tinned-copper tape, braided copper conductors, terminated with copper ferrules; 1-5/8 inches) wide and 1/16 inch thick.

2.3 CONNECTOR PRODUCTS

- A. Comply with UL 467; listed for use for specific types, sizes, and combinations of conductors and connected items.
- B. Bolted Connectors: Bolted-pressure-type connectors, or compression type.
- C. Welded Connectors: Exothermic-welded type, in kit form, and selected per manufacturer's written instructions.

PART 3 - EXECUTION

3.1 APPLICATION

A. Use only copper conductors for both insulated and bare grounding conductors in direct contact with earth, concrete, masonry, crushed stone, and similar materials.

- B. In raceways, use insulated equipment grounding conductors.
- C. Exothermic-Welded Connections: Use for connections to structural steel and for underground connections, except those at test wells.
- D. Equipment Grounding Conductor Terminations: Use bolted pressure clamps.

3.2 EQUIPMENT GROUNDING CONDUCTORS

- A. Comply with NFPA 70, Article 250, for types, sizes, and quantities of equipment grounding conductors, unless specific types, larger sizes, or more conductors than required by NFPA 70 are indicated.
- B. Install equipment grounding conductors in all feeders and circuits.
- C. Install insulated equipment grounding conductor with circuit conductors for the following items, in addition to those required by NEC:
 - 1. Feeders and branch circuits.
 - 2. Receptacle circuits.
 - 3. Flexible raceway runs.

3.3 INSTALLATION

A. Bond interior conduits and other metal enclosures.

3.4 CONNECTIONS

- A. General: Make connections so galvanic action or electrolysis possibility is minimized. Select connectors, connection hardware, conductors, and connection methods so metals in direct contact will be galvanically compatible.
- B. Exothermic-Welded Connections: Comply with manufacturer's written instructions. Welds that are puffed up or that show convex surfaces indicating improper cleaning are not acceptable.
- C. Equipment Grounding Conductor Terminations: For No. 8 AWG and larger, use pressure-type grounding lugs. No. 10 AWG and smaller grounding conductors may be terminated with winged pressure-type connectors.
- D. Tighten screws and bolts for grounding and bonding connectors and terminals according to manufacturer's published torque-tightening values. If manufacturer's torque values are not indicated, use those specified in UL 486A/B.

3.5 FIELD QUALITY CONTROL

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- A. Inspect grounding and bonding system conductors and connections for tightness and proper installation.
- B. Use suitable test instrument to measure resistance to ground of system. Perform testing in accordance with test instrument manufacturer's recommendations using the fall-of-potential method.

END OF SECTION 26 05 26



SECTION 26 05 33 - RACEWAYS AND BOXES FOR ELECTRICAL SYSTEMS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. The Contract Terms and Conditions apply to this Section.
- B. Provide all labor, materials, tools, equipment, and services necessary to install rigid metal conduit, fittings and for the provision of pull, junction, splice and terminal boxes as indicated.

1.3 SUBMITTALS

A. Product Data

- 1. Submit manufacturer's descriptive data for all boxes.
- 2. Identify manufacturer, size, type of service, and installation location.
- B. Shop Drawings: Submit shop drawings for power system and signal and communication systems, indicating manufacturer, size, type of service, and installation location.

PART 2 - PRODUCTS

2.01 MATERIALS

- A. Rigid Galvanized Steel Conduit:
 - 1. Standard: ANSI C80.1, Specification for Rigid Steel Conduit, Zinc Coated; hot-dip galvanized inside and out with galvanized threads; UL approved and labeled.
 - 2. Sources: Subject to compliance with requirements, provide rigid galvanized steel conduit as manufactured by one of the following:
 - a. Allied Tube and Conduit Corp.
 - b. Alcan Pipe Co., U.S.A.

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- c. National Pipe Co., U.S.A.
- d. Triangle PWC Inc.
- e. Or approved equal.
- B. FMC: Flexible metal Zink- coated steel conduit for equipment connections.
 - 1. Sources: Subject to compliance with requirements, provide flexible metal conduit as manufactured by one of the following:
 - a. Anaconda American Brass Company., U.S.A.
 - b. Electric-Flex Company.
 - c. Or approved equal
- C. Fittings, Bushings, and Conduit Bodies:
 - Fittings and conduit bodies shall be in accordance with NEMA for rigid galvanized steel conduit; threaded type, galvanized malleable iron, for use with rigid galvanized steel conduit.
 - 2. Bushings shall be insulated, malleable iron, with thermosetting inner lining.
 - 3. Sources: Subject to compliance with requirements, provide fittings, bushing, and conduit boxes, as manufactured by one of the following:
 - a. Appleton Electric Company
 - b. Crouse-Hinds Company
 - c. O.Z./Gedney Company Division of General Signal Corporation
 - d. RACO incorporated
 - e. City Division of Midland Ross Corporation
 - f. Thomas & Betts Company (T&B)
 - g. Or approved equal.
 - D. Pull Sleeves and Expansion Fittings
 - Pull sleeves consist of two malleable iron end units with insulated bushing. Two
 end units fitted to an oversize sleeve provide intermediate pulling points in a
 rigid metal conduit system.
 - 2. Provide expansion fittings for expansion or contraction in a run of rigid steel metal conduit crossing expansion joints, or every four hundred feet, which ever is less. Expansion joints shall have internal grounding jumpers.
 - 3. Sources: Subject to compliance with requirements, provide pull sleeves and expansion fittings, as manufactured by one of the following:
 - a. O.Z./Gedney Company Division of General Signal Corporation

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- b. Appleton Electric Company
- c. Crouse-Hinds Company
- d. Or approved equal.

E. Three-Piece Conduit Couplings

- Three-piece conduit coupling (Ericson coupling) permits conduit coupling
 without rotating either conduit. Bushing and case of malleable iron, ring of steel
 and malleable iron. Standard Finish: Electro-zinc plated and chromate coated
 conforms to NEMA and UL514.
- 2. Sources: Subject to compliance with requirements, provide 3 -piece conduit couplings, as manufactured by one of the following:
 - a. O.Z. Gedney
 - b. Thomas & Betts Company
 - c. Appleton Electric Company
 - d. Or approved equal.

F. Miscellaneous Materials:

- 1. Thread coating: Thomas and Betts Company, Kopr/Shield, or approved equal.
- 2. Galvanizing rust-inhibiting paint: CRC-Zinc-It, or approved equal.
- 3. Embedded conduit coating: Koppers #50, Bitumastic paint, or approved equal.
- G. Drag Line: 1/4 inch polypropylene utility rope.
- H. Fire Seal: Provide fire protective seals of types listed below, and of manufacturer indicated, or approved equal.
 - 1. Type I (Silicon Foam): Chase Technology Corporation, CTC PR-885.
 - 2. Type 2 (Epoxy Mix): Hysol Div. Dexter Corporation, Hyson Fire-Stop Compound.
 - 3. Type 3 (Retardant/Mineral Wool Stuffing): Lenclean, Incorporated, Fire Plug Pillow.
 - 4. Type 4 (Expanding Plug): OZ/Gedney Company, Type CFS, CFSI; Thunderline Corporation, High Temperature Link Seal.
 - 5. Type 5 (Mortar Seal): International Protective Coating Corporation, Type KBS.



7. Routing:

- a. Route conduit so as not to interfere with removal and reinstallation of lighting fixtures, and equipment of other trades.
- b. Reserve space for future conduit runs where indicated on Drawings.
- c. Provide 3-inch separation where conduit runs parallel to or crosses steam, hot water, or condensate pipes.
- d. Install exposed conduit and conduit above suspended ceilings with vertical runs plumb, and horizontal runs level and parallel or perpendicular to principal structural features.
- e. Install expansion joints at building expansion joints, and at 200 foot intervals
- f. Install 3-piece conduit couplings where turning of conduit is otherwise impossible.

8. Provisions for concealed conduit:

- a. Firmly support, and secure in place conduit installed in concrete or masonry.
- b. Make joints buried in masonry, concrete, fill, or existing finished walls watertight.
- 9. Install drag line in conduits left empty. Provide 2 feet of drag line outside of each box and termination of rigid conduit.
- 10. Provide fire seals for all conduits (empty or with wires) where conduits run outside of fire rated rooms, or different fire zones. Seal conduits inside of switchgear, equipment or at nearest junction of pull boxes.
- B. Provide sufficient supports for mounting of pull and junction boxes.
- C. Locate pull and junction boxes as shown on drawings and as specified or as directed by the Engineer.

3.02 EXISTING CONDUIT

A. Remove existing conduits, conduit fittings and supports as shown on the drawings.

3.03 CLEAN-UP

A. At completion of work remove tools and equipment. Clean-up and remove debris everyday.

END OF SECTION 26 05 33



PART 1. - GENERAL

1.1 SUMMARY:

A. This Section includes electrical identification materials and devices required to comply with ANSI C2, NFPA 70, OSHA standards, and authorities having jurisdiction.

1.2 SUBMITTALS:

- A. Product Data: For each electrical identification product indicated.
- B. Schedule of Nomenclature: An index of electrical equipment and system components used in identification signs and labels.

1.3 QUALITY ASSURANCE:

- A. Comply with ANSI C2.
- B. Comply with NFPA 70.
- C. Comply with ANSI A13.1 and NFPA 70 for color-coding.

PART 2. - PRODUCTS

2.1 RACEWAY AND CABLE LABELS:

- A. Comply with ANSI A13.1, Table 3, for minimum size of letters for legend and for minimum length of color field for each raceway and cable size.
 - 1. Color: Black letters on orange field.
 - 2. Legend: Indicates voltage and service.
- B. Pretensioned, Wraparound Plastic Sleeves: Flexible, preprinted, color-coded, acrylic band sized to suit the diameter of the line it identifies and arranged to stay in place by pretensioned gripping action when placed in position.
- C. Aluminum, Wraparound Marker Bands: Bands cut from 0.014-inch thick aluminum sheet, with stamped or embossed legend, and fitted with slots or ears for permanently securing around wire or cable jacket or around groups of conductors.



- D. Aluminum-Faced, Card-Stock Tags: Weather-resistant, 18-point minimum card stock faced on both sides with embossable aluminum sheet, 0.002 inch thick, laminated with moisture-resistant acrylic adhesive, punched for fasteners, and preprinted with legends to suit each application.
- E. Brass or Aluminum Tags: 2 by 2 by 0.05-inch metal tags with stamped legend, punched for fastener.

2.2 NAMEPLATES AND SIGNS:

- Safety Signs: Comply with OSHA 29 CFR (Code of Federal Regulations), Chapter XVII, Part 1910.145.
- B. Engraved Plastic Nameplates and Signs: Engraving stock, melamine plastic laminate, minimum 1/16 inch thick for signs up to 20 sq. in. and 1/8 inch thick for larger sizes.
 - 1. Engraved legend with black letters on white face.
 - 2. Punched or drilled for mechanical fasteners.
- C. Baked-Enamel Signs for Interior Use: Preprinted aluminum signs, punched or drilled for fasteners, with colors, legend, and size required for the application. ¼ inch grommets in corners for mounting.
- Fasteners for Nameplates and Signs: Self-tapping, stainless-steel screws or
 No. 10/32, stainless-steel machine screws with nuts and flat and lock washers.

2.3 MISCELLANEOUS IDENTIFICATION PRODUCTS:

- A. Cable Ties: Fungus-inert, self-extinguishing, one-piece, self-locking, Type 6/6 nylon cable ties.
 - 1. Minimum Width: 3/16 inch.
 - 2. Tensile Strength: 50 lb minimum.
 - 3. Temperature Range: Minus 40 to plus 185 deg F (Minus 40 to plus 85 deg C).
 - 4. Color: According to color-coding.



3.1 INSTALLATION:

- A. Identification Materials and Devices: Install at locations for most convenient viewing without interference with operation and maintenance of equipment.
- B. Lettering, Colors, and Graphics: Coordinate names, abbreviations, colors, and other designations with corresponding designations in the Contract or with those required by codes and standards. Use consistent designations throughout Project.
- C. Sequence of Work: If identification is applied to surfaces that require finish, install identification after completing finish work.
- D. Caution Labels for Indoor Boxes and Enclosures for Power and Lighting: Install pressure-sensitive, self-adhesive labels identifying system voltage with black letters on orange background. Install on exterior of door or cover.
- E. Secondary Service, Feeder, and Branch-Circuit Conductors: Color-code throughout the secondary electrical system.
 - 1. Color-code 208/120-V system as follows:
 - a. Phase A: Black.
 - b. Phase B: Red.
 - c. Phase C: Blue.
 - d. Neutral: White.
 - e. Ground: Green.
- F. Power-Circuit Identification: Metal tags or aluminum, wraparound marker bands for cables, feeders, and power circuits in pull and junction boxes, and electrical rooms.
 - 1. Legend: ¼ inch steel letter and number stamping or embossing with legend corresponding to indicated circuit designations.
 - 2. Tag Fasteners: Nylon cable ties.
 - 3. Band Fasteners: Integral ears.
- I. Apply identification to conductors as follows:
 - Multiple Power Circuits in the Same Enclosure: Identify each conductor with source, voltage, circuit number, and phase. Use color-coding to identify circuits' voltage and phase.

- 2. Multiple Control and Communication Circuits in the Same Enclosure: Identify each conductor by its system and circuit designation. Use a consistent system of tags, color-coding, or cable marking tape.
- J. Apply warning, caution, and instruction signs as follows:
 - Warnings, Cautions, and Instructions: Install to ensure safe operation and maintenance of electrical systems and of items to which they connect. Install engraved plastic-laminated instruction signs with approved legend where instructions are needed for system or equipment operation. Install metal-backed butyrate signs for outdoor items.
 - 2. Emergency Operation: Install engraved laminated signs with white legend on red background with minimum 3/8-inch high lettering for emergency instructions on power transfer, load shedding, and other emergency operations.
- K. Equipment Identification Labels: Engraved plastic laminate. Install on each unit of equipment, including central or master unit of each system. This includes power, lighting, communication, signal, and alarm systems, unless units are specified with their own self-explanatory identification. Unless otherwise indicated, provide a single line of text with ½ inch high lettering on 1-1/2 inch high label; where two lines of text are required, use labels 2 inches high. Use white lettering on black field. Apply labels for each unit of the following categories of equipment using mechanical fasteners:
 - 1. Panelboards, electrical cabinets, and enclosures.
 - 2. Access doors and panels for concealed electrical items.
 - 3. Emergency system boxes and enclosures.
 - 4. Disconnect switches.
 - 5. Enclosed circuit breakers.
 - 6. Push-button stations.

END OF SECTION 26 05 53



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SECTION 26 24 16 - PANELBOARDS

PART 1 - GENERAL

1.1 SUMMARY

A. This Section includes distribution panelboards and lighting and appliance branch-circuit panelboards.

1.2 SUBMITTALS

- A. Product Data: For each type of panelboard, overcurrent protective device, accessory, and component indicated. Include dimensions and manufacturers' technical data on features, performance, electrical characteristics, ratings, and finishes.
- B. Shop Drawings: For each panelboard and related equipment.
 - 1. Dimensioned plans, elevations, sections, and details. Show tabulations of installed devices, equipment features, and ratings. Include the following:
 - a. Enclosure types and details for types other than NEMA 250, Type 12.
 - b. Bus configuration, current, and voltage ratings.
 - c. Short-circuit current rating of panelboards and overcurrent protective devices.
 - d. UL listing for series rating of installed devices.
 - e. Features, characteristics, ratings, and factory settings of individual overcurrent protective devices and auxiliary components.
 - 2. Wiring Diagrams: Power, signal, and control wiring.
 - 3. Field quality-control test reports.
 - 4. Operation and maintenance data.

1.3 QUALITY ASSURANCE

- A. Electrical Components, Devices, and Accessories: Listed and labeled as defined in NFPA 70, Article 100, by a testing agency acceptable to authorities having jurisdiction, and marked for intended use.
- B. Comply with NEMA PB 1.
- C. Comply with NFPA 70.



PART 2 - PRODUCTS

2.1 MANUFACTURERS

- A. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
 - 1. Panelboards, Overcurrent Protective Devices, Controllers, Contactors, and Accessories:
 - a. Eaton Corporation; Cutler-Hammer Products.
 - b. General Electric Co.: Electrical Distribution & Protection Div.
 - c. Siemens Energy & Automation, Inc.
 - d. Square D.

2.2 MANUFACTURED UNITS

- A. Enclosures: surface mounted cabinets. NEMA PB 1, Type 12.
 - 1. Rated for environmental conditions at installed location.
 - a. Wet or Damp Indoor Locations: NEMA 250, Type 4.
 - 2. Front: Secured to box with concealed trim clamps. For surface-mounted fronts, match box dimensions; for flush-mounted fronts, overlap box.
 - 3. Hinged Front Cover: Entire front trim hinged to box and with standard door within hinged trim cover.
- B. Phase and Ground Buses: Hard-drawn copper, 98 percent conductivity
- C. Conductor Connectors: Suitable for use with conductor material.
 - 1. Ground Lugs and Bus Configured Terminators: Compression type.
- D. Service Equipment Label: UL labeled for use as service equipment for panelboards with main service disconnect switches.
- E. Future Devices: Mounting brackets, bus connections, and necessary appurtenances required for future installation of devices.
- F. Panelboard Short-Circuit Rating:
 - 1. Fully rated to interrupt symmetrical short-circuit current available as indicated on the panel schedule.

2.3 DISTRIBUTION PANELBOARDS

A. Doors: Secured with vault-type latch with tumbler lock; keyed alike

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- B. Main Overcurrent Protective Devices: Molded case circuit breaker.
- C. Branch Overcurrent Protective Devices: Bolt-on circuit breakers;

2.4 LIGHTING AND APPLIANCE BRANCH-CIRCUIT PANELBOARDS

- A. Branch Overcurrent Protective Devices: Bolt-on circuit breakers, replaceable without disturbing adjacent units.
- B. Doors: Concealed hinges; secured with flush latch with tumbler lock; keyed alike.

2.5 OVERCURRENT PROTECTIVE DEVICES

- A. Molded-Case Circuit Breaker: UL 489, with interrupting capacity to meet available fault currents.
 - 1. Thermal-Magnetic Circuit Breakers: Inverse time-current element for low-level overloads, and instantaneous magnetic trip element for short circuits.
 - 2. Molded-Case Circuit-Breaker Features and Accessories: Standard frame sizes, trip ratings, and number of poles.
 - Lugs: Mechanical style, suitable for number, size, trip ratings, and conductor materials.
 - Application Listing: Appropriate for application; Type SWD for switching fluorescent lighting loads; Type HACR for heating, air-conditioning, and refrigerating equipment.

2.6 ACCESSORY COMPONENTS AND FFATURES

- A. Furnish accessory set including tools and miscellaneous items required for overcurrent protective device test, inspection, maintenance, and operation.
- B. Furnish portable test set to test functions of solid-state trip devices without removal from panelboard.
- C. Fungus Proofing: Permanent fungicidal treatment for panelboard interior, including overcurrent protective devices and other components.

PART 3 - EXECUTION

3.1 INSTALLATION

A. Install panelboards and accessories according to NEMA PB 1.1.

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2.2 RECEPTACLES

- A. Convenience Receptacles, 125 V, 20 A: Comply with NEMA WD 1, NEMA WD 6 configuration 5-20R, and UL 498.
 - 1. Products: Subject to compliance with requirements, provide one of the following:
 - a. Cooper; 5351 (single), 5352 (duplex).
 - b. Hubbell; HBL5351 (single), CR5352 (duplex).
 - c. Leviton; 5891 (single), 5352 (duplex).
 - d. Pass & Seymour; 5381 (single), 5352 (duplex).
 - e. Or approved equial
- GFI Receptacles, 125 V, 20 A. Comply with NEMA WD 1, NEMA WD 6 configuration 5-20R, and UL 498.
 - 1. Products: Subject to compliance with requirements, provide one of the following:
 - a. Cooper; GF20.
 - b. Pass & Seymour; 2084
 - c. Or approved equal.

PART 3 - EXECUTION

3.1 INSTALLATION

- A. Comply with NECA 1, including the mounting heights listed in that standard, unless otherwise
- B. Coordination with Other Trades:
 - Take steps to insure that devices and their boxes are protected. Do not place wall finish
 materials over device boxes and do not cut holes for boxes with routers that are guided
 by riding against outside of the boxes.
 - 2. Keep outlet boxes free of plaster, drywall joint compound, mortar, cement, concrete, dust, paint, and other material that may contaminate the raceway system, conductors, and cables.
 - 3. Install device boxes in brick or block walls so that the cover plate does not cross a joint unless the joint is troweled flush with the face of the wall.
 - 4. Install wiring devices after all wall preparation, including painting, is complete.

C. Conductors:

 Do not strip insulation from conductors until just before they are spliced or terminated on devices.

WIRING DEVICES 26 27 26 - 2

- Strip insulation evenly around the conductor using tools designed for the purpose.
 Avoid scoring or nicking of solid wire or cutting strands from stranded wire.
- 3. The length of free conductors at outlets for devices shall meet provisions of NFPA 70, Article 300, without pigtails.
- 4. Existing Conductors:
 - a. Cut back and pigtail, or replace all damaged conductors.
 - b. Straighten conductors that remain and remove corrosion and foreign matter.
 - Pigtailing existing conductors is permitted provided the outlet box is large enough,

D. Device Installation:

- 1. Replace all devices that have been in temporary use during construction or that show signs that they were installed before building finishing operations were complete.
- 2. Keep each wiring device in its package or otherwise protected until it is time to connect conductors.
- 3. Do not remove surface protection, such as plastic film and smudge covers, until the last possible moment.
- 4. Connect devices to branch circuits using pigtails that are not less than 6 inches in length.
- 5. When there is a choice, use side wiring with binding-head screw terminals. Wrap solid conductor tightly clockwise, 2/3 to 3/4 of the way around terminal screw.
- 6. Use a torque screwdriver when a torque is recommended or required by the manufacturer.
- 7. When conductors larger than No. 12 AWG are installed on 15 or 20 A circuits, splice No. 12 AWG pigtails for device connections.
- 8. Tighten unused terminal screws on the device.
- 9. When mounting into metal boxes, remove the fiber or plastic washers used to hold device mounting screws in yokes, allowing metal-to-metal contact.

E. Receptacle Orientation:

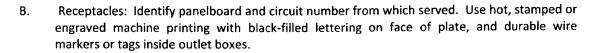
- 1. Install ground pin of vertically mounted receptacles down, and on horizontally mounted receptacles to the left.
- F. Device Plates: Do not use oversized or extra-deep plates. Repair wall finishes and remount outlet boxes when standard device plates do not fit flush or do not cover rough wall opening.
- G. Arrangement of Devices: Unless otherwise indicated, mount flush, with long dimension vertical and with grounding terminal of receptacles on top. Group adjacent switches under single, multi-gang wall plates.

3.2 IDENTIFICATION

A. Comply with Section 260553 "Identification For Electrical Systems".

WIRING DEVICES 26 27 26 - 3

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3.3 FIELD QUALITY CONTROL

- A. Perform tests and inspections and prepare test reports.
 - 1. Test Instruments: Use instruments that comply with UL 1436.
 - 2. Test Instrument for Convenience Receptacles: Digital wiring analyzer with digital readout or illuminated LED indicators of measurement.
- B. Tests for Convenience Receptacles:
 - 1. Line Voltage: Acceptable range is 105 to 132 V.
 - 2. Percent Voltage Drop under 15A Load: A value of 5 percent or higher is not acceptable.
 - 3. Ground Impedance: Values of up to 25 ohms are acceptable.
 - 4. GFCI Trip: Test for tripping values specified in UL 1436 and UL 943.
 - 5. Using the test plug, verify that the device and its outlet box are securely mounted.
 - 6. The tests shall be diagnostic, indicating damaged conductors, high resistance at the circuit breaker, poor connections, inadequate fault current path, defective devices, or similar problems. Correct circuit conditions, remove malfunctioning units and replace with new, and retest as specified above.

END OF SECTION 26 27 26

26 27 26 - 4



SECTION 26 28 16 - ENCLOSED SWITCHES AND CIRCUIT BREAKERS

PART 1 - GENERAL

1.1 SUMMARY

- A. This Section includes the following individually mounted, enclosed switches and circuit breakers:
 - 1. Non-fusible switches.
 - 2. Enclosed molded case circuit breakers.
 - 3. Enclosures.

1.2 SUBMITTALS

- A. Product Data: For each type of enclosed switch, accessory, and component indicated.
- B. Shop Drawings: Diagram power, signal, and control wiring.
- C. Field quality-control test reports.
- D. Operation and maintenance data.

1.3 QUALITY ASSURANCE

- A. Electrical Components, Devices, and Accessories: Listed and labeled as defined in NFPA 70, Article 100, by a testing agency acceptable to authorities having jurisdiction, and marked for intended use.
- B. Comply with NFPA 70.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

- A. Available Manufacturers: Subject to compliance with requirements, manufacturers offering disconnect switches and circuit breakers that may be incorporated into the Work include, but are not limited to, the following:
 - 1. Non-fusible Switches:
 - a. Eaton Corp: Cutler-Hammer Products.
 - b. General Electric Co: Electrical Distribution and Control Division.

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- Siemens Energy & Automation, Inc.
- d. Square D Co.

2. Molded-Case Circuit Breakers:

- a. Eaton Corp.; Cutler-Hammer Products.
- b. General Electric Co.; Electrical Distribution and Control Division.
- c. Siemens Energy & Automation, Inc.
- d. Square D Co

2.2 NONFUSIBLE SWITCHES

A. Manufacturers:

- 1. Eaton Corporation; Cutler-Hammer Products.
- 2. General Electric Co.; Electrical Distribution & Control Division.
- 3. Siemens Energy & Automation, Inc.
- 4. Square D/Group Schneider.
- B. Non-fusible Switch, 600 A and Smaller: NEMA KS 1, Type HD, lockable handle with capability to accept two padlocks, and interlocked with cover in closed position.

C. Accessories:

- 1. Equipment Ground Kit: Internally mounted and labeled for copper and aluminum ground conductors.
- Neutral Kit: Internally mounted; insulated, capable of being grounded, and bonded; and labeled for copper and aluminum neutral conductors.
- 3. Auxiliary Contact Kit: Auxiliary set of contacts arranged to open before switch blades open.

2.3 ENCLOSURES

- A. NEMA AB 1 and NEMA KS 1 to meet environmental conditions of installed location.
 - 1. Outdoor Locations: NEMA 250, Type 3R.
 - 2. Indoor locations: NEMA Type 12

PART 3 - EXECUTION

3.1 INSTALLATION

A. Coordinate size and location of concrete bases. Verify structural requirements with structural engineer.



SECTION 26 28 16 - ENCLOSED SWITCHES AND CIRCUIT BREAKERS

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- C. Field quality-control test reports.
- D. Operation and maintenance data.

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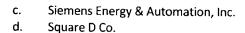
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- B. Comply with NFPA 70.

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 - b. General Electric Co: Electrical Distribution and Control Division.

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2. Molded-Case Circuit Breakers:

- a. Eaton Corp.; Cutler-Hammer Products.
- b. General Electric Co.; Electrical Distribution and Control Division.
- c. Siemens Energy & Automation, Inc.
- d. Square D Co

2.2 NONFUSIBLE SWITCHES

A. Manufacturers:

- 1. Eaton Corporation; Cutler-Hammer Products.
- 2. General Electric Co.; Electrical Distribution & Control Division.
- 3. Siemens Energy & Automation, Inc.
- 4. Square D/Group Schneider.
- B. Non-fusible Switch, 600 A and Smaller: NEMA KS 1, Type HD, lockable handle with capability to accept two padlocks, and interlocked with cover in closed position.

C. Accessories:

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- 2. Neutral Kit: Internally mounted; insulated, capable of being grounded, and bonded; and labeled for copper and aluminum neutral conductors.
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- A. NEMA AB 1 and NEMA KS 1 to meet environmental conditions of installed location.
 - 1. Outdoor Locations: NEMA 250, Type 3R.
 - 2. Indoor locations: NEMA Type 12

PART 3 - EXECUTION

3.1 INSTALLATION

A. Coordinate size and location of concrete bases. Verify structural requirements with structural engineer.

- B. Comply with applicable portions of NECA 1, NEMA PB 1.1, and NEMA PB 2.1 for installation of enclosed switches and circuit breakers.
- C. Mount individual wall-mounting switches and circuit breakers with tops at uniform height, unless otherwise indicated. Anchor floor-mounting switches to concrete base.
- D. Temporary Lifting Provisions: Remove temporary lifting eyes, channels, and brackets and temporary blocking of moving parts from enclosures and components.
- E. Identify field-installed conductors, interconnecting wiring, and components; provide warning signs as specified in Division 16 Section Basic Electrical Materials and Methods.

3.2 FIELD QUALITY CONTROL

- A. Prepare for acceptance testing as follows:
 - 1. Inspect mechanical and electrical connections.
 - 2. Verify switch and relay type and labeling verification.
 - 3. Verify rating of installed fuses.
- B. Perform the following field tests and inspections and prepare test reports:
 - Perform each electrical test and visual and mechanical inspection stated in NETA ATS, Section 7.5 for switches and Section 7.6 for molded-case circuit breakers. Certify compliance with test parameters.
 - 2. Correct malfunctioning units on-site, where possible, and retest to demonstrate compliance; otherwise, replace with new units and retest.

END OF SECTION 26 28 16

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SECTION 26 41 13 - LIGHTNING PROTECTION FOR STRUCTURES

PART 1 - GENERAL

1.1 SUMMARY

A. Section includes lightning protection for building site components.

1.2 ACTION SUBMITTALS

- A. Product Data: For each type of product indicated.
- B. Shop Drawings: For air terminals and mounting accessories.
 - 1. Layout of the lightning protection system, along with details of the components to be used in the installation.
 - Include indications for use of raceway, data on how concealment requirements will be met, and calculations required by NFPA 780 for bonding of grounded and isolated metal bodies.

1.3 INFORMATIONAL SUBMITTALS

A. Field quality-control reports.

1.4 QUALITY ASSURANCE

- A. Installer Qualifications: Certified by UL, trained and approved for installation of units required for this Project.
- B. System Certificate:
 - 1. UL Master Label.
 - UL Master Label Recertification.
- C. Electrical Components, Devices, and Accessories: Listed and labeled as defined in NFPA 780, "Definitions" Article.



PART 2 - PRODUCTS

2.1 LIGHTNING PROTECTION SYSTEM COMPONENTS

- A. Comply with UL 96 and NFPA 780.
- B. Roof-Mounted Air Terminals: NFPA 780, Class II, aluminum unless otherwise indicated.
 - 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:
 - a. East Coast Lightning Equipment Inc.
 - b. ERICO International Corporation.
 - c. Harger.
 - d. Heary Bros. Lightning Protection Co. Inc.
 - e. Or Approved equal.
 - 2. Air Terminals More than 24 Inches Long: With brace attached to the terminal at not less than half the height of the terminal.
- C. Main and Bonding Conductors: Aluminum.
- D. Ground Loop Conductor: The same size and type as the main conductor except tinned.

PART 3 - EXECUTION

3.1 INSTALLATION

- Install lightning protection components and systems according to UL 96A and NFPA 780.
- B. Cable Connections: Use crimped or bolted connections for all conductor splices and connections between conductors and other components.
- C. Bond extremities of vertical metal bodies exceeding 60 feet in length to lightning protection components.

3.2 CORROSION PROTECTION

- A. Do not combine materials that can form an electrolytic couple that will accelerate corrosion in the presence of moisture unless moisture is permanently excluded from junction of such materials.
- B. Use conductors with protective coatings where conditions cause deterioration or corrosion of conductors.

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3.3 FIELD QUALITY CONTROL

- A. Notify Architect at least 48 hours in advance of inspection before concealing lightning protection components.
- B. UL Inspection: Meet requirements to obtain a UL Master Label for system.

END OF SECTION 26 41 13

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SECTION 26 51 00 - INTERIOR LIGHTING

PART 1 - GENERAL

1.1 SUMMARY

- A. This Section includes the following:
 - 1. Interior lighting fixtures, lamps, and ballasts.
 - 2. Lighting fixture supports.
 - Retrofit kits for fluorescent lighting fixtures.
- B. See Section 262726 "Wiring Devices" for manual wall-box dimmers for incandescent lamps.

1.2 SUBMITTALS

- A. Product Data: For each type of lighting fixture, arranged in order of fixture designation. Include data on features, accessories, finishes.
- B. Shop Drawings: Show details of nonstandard or custom lighting fixtures. Indicate dimensions, weights, methods of field assembly, components, features, and accessories.
- C. Product Certificates: For each type of ballast for bi-level and dimmer-controlled fixtures, signed by product manufacturer.
- D. Field quality-control test reports.

1.3 QUALITY ASSURANCE

- A. Electrical Components, Devices, and Accessories: Listed and labeled as defined in NFPA 70, Article 100, by a testing agency acceptable to authorities having jurisdiction, and marked for intended use.
- B. Comply with NFPA 70.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. In Interior Lighting Fixture Schedule where titles below are column or row headings that introduce lists, the following requirements apply to product selection:

INTERIOR LIGHTING 26 51 00 - 1

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1. Available Manufacturers: Subject to compliance with requirements, manufacturers offering products that may be incorporated into the Work include, but are not limited to, manufacturers specified in the lighting fixtures schedule..

2.2 LIGHTING FIXTURES AND COMPONENTS, GENERAL REQUIREMENTS

- A. Incandescent Fixtures: Comply with UL 1598. Where LER is specified, test according to NEMA LE 5A.
- B. Fluorescent Fixtures: Comply with UL 1598. Where LER is specified, test according to NEMA LE 5 and NEMA LE 5A as applicable.
- C. Metal Parts: Free of burrs and sharp corners and edges.
- D. Sheet Metal Components: Steel, unless otherwise indicated. Form and support to prevent warping and sagging.
- E. Doors, Frames, and Other Internal Access: Smooth operating, free of light leakage under operating conditions, and designed to permit relamping without use of tools. Designed to prevent doors, frames, lenses, diffusers, and other components from falling accidentally during relamping and when secured in operating position.
- F. Reflecting surfaces shall have minimum reflectance as follows, unless otherwise indicated:
 - 1. White Surfaces: 85 percent.
 - 2. Specular Surfaces: 83 percent.
 - 3. Diffusing Specular Surfaces: 75 percent.
 - 4. Laminated Silver Metallized Film: 90 percent.
- G. Plastic Diffusers, Covers, and Globes:
 - 1. Acrylic Lighting Diffusers: 100 percent virgin acrylic plastic. High resistance to yellowing and other changes due to aging, exposure to heat, and UV radiation.
 - Lens Thickness: At least 0.125 inch minimum unless different thickness is indicated.
 - b. UV stabilized.
 - 2. Glass: Annealed crystal glass, unless otherwise indicated.

2.3 BALLASTS

A. Electronic Ballasts for Linear Fluorescent Lamps: Comply with ANSI C82.11; instant start type, unless otherwise indicated, and designed for type and quantity of lamps served. Ballasts shall be designed for full light output unless dimmer or bi-level control is indicated.

INTERIOR LIGHTING 26 51 00 - 2

- 1. Sound Rating: A.
- 2. Total Harmonic Distortion Rating: Less than 20 percent.

2.4 LAMPS

A. T8 Rapid-Start low-mercury Fluorescent Lamps: Rated 32 W maximum, nominal length 48 inches, 2800 initial lumens (minimum), CRI 75 (minimum), color temperature 3500 K, and average rated life 20,000 hours, unless otherwise indicated.

2.5 LIGHTING FIXTURE SUPPORT COMPONENTS

- A. Single-Stem Hangers: 1/2-inch steel tubing with swivel ball fittings and ceiling canopy. Finish same as fixture.
- B. Twin-Stem Hangers: Two, 1/2-inch steel tubes with single canopy designed to mount a single fixture. Finish same as fixture.
- C. Wires: ASTM A 641/A 641M, Class 3, soft temper, zinc-coated steel, 12 gage
- D. Wires for Humid Spaces: ASTM A 580/A 580M, Composition 302 or 304, annealed stainless steel, 12 gage
- E. Rod Hangers: 3/16-inch minimum diameter, cadmium-plated, threaded steel rod.
- F. Hook Hangers: Integrated assembly matched to fixture and line voltage and equipped with threaded attachment, cord, and locking-type plug.

PART 3 - EXECUTION

3.1 INSTALLATION

- A. Lighting fixtures: Set level, plumb, and square with ceilings and walls. Install lamps in each fixture.
- B. Comply with NFPA 70 for minimum fixture supports.
- C. Suspended Lighting Fixture Support:
 - 1. Pendants and Rods: Where longer than 48 inches, brace to limit swinging.
- D. Connect wiring according to Section 260519 "Low-Voltage Electrical Power Conductors and Cables"

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3.2 FIELD QUALITY CONTROL

- A. Test for Emergency Lighting: Interrupt power supply to demonstrate proper operation. Verify transfer from normal power to battery and retransfer to normal.
- B. Prepare a written report of tests, inspections, observations, and verifications indicating and interpreting results. If adjustments are made to lighting system, retest to demonstrate compliance with standards.

END OF SECTION 26 51 00

26 51 00 - 4

SECTION 270526 - GROUNDING AND BONDING FOR COMMUNICATION SYSTEMS

PART 1 - GENERAL

1.1 SCOPE OF WORK (SOW)

A. Work covered by this Section shall consist of furnishing labor, equipment, supplies, materials, and testing unless otherwise specified, and in performing the following operations recognized as necessary for the installation, termination, and labeling of grounding and bonding infrastructure as described on the Drawings and/or required by these specifications.

1.2 RELATED SECTIONS

- A. Division 27, Section 270528 Pathways for Communication Systems.
- B. Division 27, Section 270553 Identification for Communication Systems.

1.3 SUBMITTALS

- A. Product Data: For features, ratings, and performance of each component specified.
- B. Shop Drawings:
 - 1. Component List: List manufacturer, part number, and quantity of each component.

1.4 GLOSSARY

- A. TBC (Telecommunications Bonding Conductor) The bonding conductor installed from the building's grounding electrode system to the TMGB. This bonding conductor shall be sized the same as the TBB.
- B. BC (Bonding Conductor) Typical bonding conductor installed from any telecommunications grounding bus bar (TMGB or TGB) to telecommunications equipment and/or raceway.
- C. TBB (Telecommunications Bonding Backbone) Continuous bonding conductor installed from the TMGB to the furthest telecommunications room. All TGBs shall attach to the TBB.
- D. TMGB (Telecommunications Main Grounding Busbar) The main telecommunications grounding bar located where the Outside Plant cables enter the telecommunications room.
- E. TGB (Telecommunications Grounding Busbar) The telecommunications grounding bar located in every telecommunications room that does not contain the TMGB.

1.5 DEFINITIONS

- A. Throughout the specifications, abbreviations may be used. The following are brief definitions of many of those abbreviations.
 - 1. Approved / Approval
- Written permission to use a material or system.

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- G. Installation of Bonding Conductors
 - 1. Shall be routed so to minimize bends and length.
 - 2. Shall be a minimum of #6 AWG.
 - 3. Bonding Conductors shall maintain a horizontal or downward path to the TMGB or TGB. No bend shall form an included angle of more than 90 degrees or have a radius of less than 6".
 - 4. Use Panduit HTAP kit to bond the TBB to the TMGB or TGB.

END OF SECTION 270526



SECTION 270528 - PATHWAYS FOR COMMUNICATIONS SYSTEMS

PART 1 - GENERAL

1.1 SCOPE OF WORK (SOW)

- A. The work required under this section consists of providing conduits, boxes, raceways, etc., for telecommunications wiring included in this project. Telecommunications wiring includes cables for Data, Voice, Video, Audio, Security and future signal requirements.
- B. Furnish and install conduit stubs in walls and floors for cable routes.

1.2 RELATED SECTIONS

- A. Division 27, Section 270526 Grounding and Bonding
- B. Division 27, Section 270553 Identification for Communication Systems.

1.3 SUBMITTALS

- A. Product Data: For features, ratings, and performance of each component specified.
- B. Submit manufacturer's instructions for storage, handling, protection, examination, preparation, operation, and installation of products. Include application conditions or limitations of use stipulated by any product testing agency. Submit for the following:
 - 1. Wall Boxes
 - 2. Raceway
 - 3. Conduit
 - 4. Conduit Bushings

C. Shop Drawings:

- 1. Component List: List manufacturer, part number, and quantity of each component.
- 2. Include dimensioned plan and elevation views of equipment rooms, labeling each individual component. Show raceway assemblies, method of field assembly, workspace requirements, and access for cable connections.

PART 2 - PRODUCTS

2.1 TELECOM OUTLETS (TO)

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PART 3: EXECUTION

3.1 GENERAL REQUIREMENTS

- A. The intention of the telecommunications conduits is to provide a route between ER and TR rooms, routes from the TRs throughout building floors to hallways, and routes from hallway distribution systems into rooms to individual TOs for telecommunications cabling.
- B. Installation of new pathways shall not interfere with existing pathways in such a way that installation of new cables within the existing pathway is made more difficult.

END OF SECTION 270528

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SECTION 270553 - IDENTIFICATION FOR COMMUNICATION SYSTEMS

PART 1 - GENERAL

1.1 SCOPE OF WORK

A. Work covered by this Section shall consist of furnishing labor, equipment, supplies, materials, and testing unless otherwise specified, and in performing the following operations recognized as necessary for the labeling of the telecommunications infrastructure as described on the Drawings and/or required by these specifications.

1.2 RELATED SECTIONS

- A. Division 27, Section 270528 Pathways for Communication Systems.
- B. Division 27, Section 270526 Grounding and Bonding.

1.3 REFERENCE STANDARDS

- A. Comply with the following unless indicated otherwise:
 - 1. NFPA 130

1.4 SUBMITTALS

- A. Product Data: For features, ratings, and performance of each component specified.
- B. Submit manufacturer's instructions for storage, handling, protection, examination, preparation, operation, and installation of products. Include application conditions or limitations of use stipulated by any product testing agency. Submit for the following:
 - 1. Wall Boxes
 - 2. Raceway
 - 3. Conduit
 - 4. Conduit Bushings

C. Labeling Plan:

- 1. Component List: List manufacturer, part number of each label to be used.
- 2. Submit labeling plan to DDC review and approval prior to commencing labeling.

PART 2 - PRODUCTS

2.1 LABELS

A. Copper, Fiber, and Coax Riser Cable Labels in TRs

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- 1. Brady part #WML-1231-292 or Panduit #LS7-75NL-1
- B. Copper, Fiber, and Coax Horizontal Cable Labels in TRs
 - 1. Brady part #WML-317-292 or Panduit #LS7-75NL-1
- C. Copper, Fiber, and Coax Horizontal Cable Labels at the Workstation Outlet
 - 1. Brady part #WML-317-292 or Panduit #LS7-75NL-1
- D. Telephone 110-Block Labels in TRs
 - 1. Brady part #CL-111-619 or Panduit #LS7-38-1
- E. Faceplate Labels at the Workstation Outlet
 - 1. Brady part #CL-111-619 or Panduit #LS7-38-1
- F. Patch Panel Labels in TRs
 - 1. Brady part #CL-111-619 or Panduit #LS7-38-1

PART 3: EXECUTION

3.1 LABELING INSTALLATION

- A. Horizontal Cable Labeling:
- 1. All horizontal cables shall be labeled with self-laminating marking tape, Brady ID-Pro labeler, Panduit LS7 labeler, or DDC approved equal labeling system.
 - a. Place label on a visible part of cable within 12" of termination point for ease of identification after termination.

Size of letters and numbers shall be no less than 5/16" high by 1/8" wide.

This shall be visible by removing outlet cover plate. For rooms with multiple outlet locations, identification would begin with the first receptacle to the left of the main entrance to the room and continuing clockwise around the room. Size of letters and numbers shall be as indicated above.

b. At the ER and TR, cables shall be labeled at each end with the information indicating termination of the opposite end of the cables. This shall include Cable system, Room number, and cable number at opposite end. Place label on a visible part of cable 12" from end of cable for ease of identification after termination.

Size of letters and numbers shall be no less than 5/16" high by 1/8" wide.

c. At the rooms, cables shall be labeled 4" from termination with the following: ER/TR TR Room # - Jack.

Size of letters and numbers shall be as indicated above.

- B. Copper Riser Cable Labeling:
 - 1. All riser cables shall be labeled with self-laminating marking tape, Brady IDPro labeler, Panduit LS7 labeler, or IT Telecommunications approved equal labeling system. Identification shall be as follows:

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a. At the ER and TR, the copper riser cables shall be labeled at each end with the information indicating termination of the opposite end of the cables. This shall include building acronym and cable number and room location. Place label on a visible part of cable close to wiring block for ease of identification after termination.

Size of letters and numbers shall be no less than 5/16" high by 1/8" wide.

The cable label along with the pair count shall be labeled at each end of the wiring blocks.

C. Fiber Riser Cable Labeling:

1. NOT USED

D. Copper Riser 110-Block Labeling:

1. At the ER and TR, voice riser cables are terminated on their respective 110 blocks or patch panels per the Drawings. Label only 1st and last pairs on each row of 110 blocks. Place cable number of riser cable on wiring block label in center of label.

E. Coax Riser Labeling

1. At the ER and TR, riser cables shall be labeled at each end with the information indicating termination of the opposite end of the cables.

F. Horizontal 110-Block Labeling (Telephone):

1. At the TR, voice horizontal cables are terminated on their respective S110 blocks, with pairs on the blocks labeled in ascending room number order. All horizontal cables from same room should be terminated in sequential order on S110 blocks. Single 4-pair cables will be labeled with a room location and a jack designation. e.g. 1113-1 = a single telephone jack in Room 1113.

Place label on jacket of cable within 3" of the wiring block.

G. Horizontal Patch Panel Labeling (Data):

 At the TR, data horizontal cables are terminated on their respective patch panels, with jacks on the panels labeled in ascending room number order. All horizontal cables from same room should be terminated in sequential order at the patch panels.

H. Faceplate Labeling:

At the rooms, the jacks will be labeled on the faceplates using the plastic insert to cover a printed identification tag with room number and proper jack designation as shown on the Drawings.

END OF SECTION 270553

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28 13 16 SECURITY AND DATABASE MANAGEMENT SYSTEM

PART 1 - GENERAL

Not Used

PART 2 - PRODUCTS

2.01 GENERAL

- A. The Security Management System shall be implemented through network appliance architecture with a three-tiered modular hardware hierarchy and embedded three-tier software architecture.
 - The network appliance shall be capable of running on an existing TCP/IP network and shall be accessible, configurable, and manageable from any network-connected PC with a browser
 - Browser access for configuration and administration of the system shall be possible from a
 PC on the same subnet, through routers and gateways from other subnets, and from the
 Internet. Control and management of the system shall therefore be geographically
 independent.
 - 3. Security of the data communicated over the network to and from the browser, Network Controller, and nodes is protected by encryption (SSL 128-bit) or authentication (SHA-1).
 - 4. The top hardware tier is the Network Controller. Embedded on the Network Controller are an operating system, a web server, security application software, and the database of personnel and system activity.
 - 5. The middle hardware tier is the Network Node. The Network Node shall make and manage access control decisions with data provided by the Network Controller, and it shall manage the communication between the Network Controller and Application blades connected to the system's inputs, outputs, and readers. This modular design makes it possible, even during network downtime, for the system to continue to manage access control and store system activity logs. When network connectivity is re-established, the system activity logs are automatically re-integrated.
 - 6. The bottom hardware tier is the Application Blades. Four unique Application blades shall be available:
 - a. Access Control Blade: shall support two readers, four supervised inputs, and four relay outputs.
 - b. Alarm Input Blade: shall support eight supervised inputs.
 - c. Relay Output Blade: shall support eight relay outputs.
 - d. Temperature Blade: shall support eight analog temperature sensor inputs.
- B. The system shall integrate, within a browser interface, access control, alarm monitoring, video monitoring, and temperature monitoring applications. These applications shall be embedded in a three-tier software architecture.
 - The database tier shall use PostgreSQL. PostgreSQL is a full featured, high performance database management system that supports ODBC. This shall provide a small footprint, low administration, and a high reliability relational database that is embedded without requiring the use of a separate PC server.
 - 2. The web server tier shall be based on an Apache embedded web server. This shall provide a graphically rich security management application through a standard web browser.
 - 3. The web browser shall provide UL 1076 compliant browser-based monitoring and incorporate asynchronous Javascript™ and XML technology (AJAX) for a faster user experience.

- 4. The security application software tier contains the business logic. This application shall also be embedded on the network device and requires no additional memory or processing power.
- This three tiered embedded software design runs within an embedded Linux Ubuntu operating system and shall require no client-side software other than a web browser.
- C. All equipment and materials used shall be standard components, regularly manufactured, and regularly utilized in the manufacturer's system.
- D. All systems and components shall have been thoroughly tested and proven in actual use.
- E. All systems and components shall be provided with an explicit manufacturer warranty of one year for software and two years for hardware.

2.02 OVERALL SYSTEM CAPABILITY

- A. The Security Management System shall meet the requirements of business and government access control systems. The system shall monitor and control facility access, and shall perform alarm monitoring, camera and video monitoring, communications loss monitoring, and temperature monitoring. The system shall also maintain a database of system activity, personnel access control information, and system user passwords and user role permissions. The system shall be controlled from a web browser and require no software installation or client licenses. The system shall provide control and access to users on Local Area Networks (LAN), Wide Area Networks (WAN), wireless networks, and the Internet. The system shall provide email and/or text message alerts for all alarm conditions and threats.
- B. Widget Desktop: The system shall provide a widget-based user interface that enables users to create custom monitoring layouts by selecting and arranging widgets on a desktop.
 - 1. Each widget shall provide easy access to a frequently used function—allowing users to, for example, view an activity log, a camera view, or real-time web content.
 - System administrators can save custom layouts for subsequent call up by users, who can then arrange the widgets as desired on their desktops. The administrator shall determine which widgets are available in a layout and the extent to which users can customize the layout.
 - 3. When composing layouts, system administrators shall have the ability to display a grid overlay on the Widget Desktop background. Whenever a widget is moved or resized, it will align with (or "snap to") the nearest intersection of lines in the grid. If the grid is saved with the layout, it will appear in the background when users view the layout.
 - 4. The widgets that shall be available for layouts are: Activity Log, Camera View, Clock, Duty Log Entry, Events, Explorer, Floorplans, Intrusion Panel, Passback Grace, PhotoID History, Portal Status, Portal Unlock, Statistics Block, Status, and Threat Level.
 - 5. In addition, when the alarm workflow feature is enabled for the system, an Alarm Workflow widget shall become available for layouts. This widget shall allow operators to monitor and resolve alarms within the alarm workflow implemented for the system.
- C. System Partitioning: The system administrator shall have the ability to divide the system into partitions, allowing subsets of the overall population and/or resources to be managed separately.
 - 1. From the default Master partition, one or more additional partitions can be created.
 - 2. Each partition shall contain some number of administrators, card holders with their credentials, and resources.
 - 3. When performing administrative functions, the administrator of a partition shall have the ability to affect only the cardholders and resources in that partition. However, resources can be shared across partitions through the mapping of access levels from one partition to another.
 - System partitioning shall have a precision feature that allows administrators in one or more partitions to view and perform edit functions on person records that belong to another partition.

- Administrators shall have the ability to search for person records across all partitions to which
 they have access. The system administrator shall have the ability to make such crosspartition searches the default for users who have access to multiple partitions.
- 6. After finding a person record located in another partition, an administrator shall be able to click a button to switch to that partition directly from the person record—and possibly edit the record, depending on his or her access rights in that partition.
- D. The system shall provide the following Access Control capabilities:
 - 1. Login throttling, which can be enabled for the system to limit the number of login attempts from the same IP address in a given period of time.
 - 2. Integrated photo ID creation capability with video verification.
 - 3. User interface secured access under encrypted password control.
 - 4. System-wide timed anti-passback function.
 - 5. Regional anti-passback with mustering and roll call functions.
 - 6. Region occupancy counting and control.
 - 7. "First-in-unlock" rule enforcement.
 - 8. Multiple access levels and cards per person.
 - 9. 128-bit card support for Wiegand card readers.
 - 10. Detailed time specifications.
 - 11. Simultaneous support for multiple card data formats.
 - 12. Elevator control.
 - 13. Access privileges variable by threat level.
 - 14. Scheduled portal unlock by time and threat level.
 - 15. Card format decoder quickly discovers unknown card formats.
 - Card enrollment by reader or keyboard.
 - 17. Compatibility with various input devices, including biometric readers.
 - 18. Activation/expiration date/time by person with one minute resolution.
 - 19. Access level disable for immediate lockdown.
 - 20. Use of Threat Levels to alter security system behavior globally.
 - 21. Duress PINs, which can be enabled for the system to allow a valid user to raise an alarm if compelled under duress to use his or her credentials (card and PIN) to allow access for another person.
 - 22. Multiple holiday schedules.
 - 23. Timed unlock schedules.
 - 24. Scheduled actions for arming inputs, activating outputs, and locking and unlocking portals.
 - 25. Optional two-man access restriction for portals, requiring two valid card reads from two separate cardholders for portal entry.
 - 26. Card enrollment reader support.
 - 27. Dual-reader portal support.
 - 28. Wiegand Reader support.
 - 29. Magnetic-stripe reader support with cards using ABA Track 2 format for up to 200 bits.
 - 30. Wiegand keypad PIN support for 4-digit or 6-digit PINs.
 - 31. 8-bit and 4-bit burst keypad support for 4-digit or 6-digit PINs.
 - 32. Integration with supported alarm panels.

- 33. DMP intrusion panel high-level TCP/IP integration.
- 34. Optional storage and recall of ID photos and personal/emergency data.
- 35. Up to 60,000 person records.
- E. The system shall provide the following Monitoring capabilities:
 - 1. Common alarm panel integration for disarm on access, and arm on egress.
 - 2. Integrated alarm monitoring and event management with alarm panels.
 - 3. Support for the direct viewing of IP cameras.
 - 4. Integrated real-time IP, DVR, and NVR systems with stored video replay for events.
 - 5. Provides alarms on video loss, video motion detection, and video restore events.
 - 6. Virtual inputs for video loss and building-occupancy-limits-exceeded.
 - 7. Provides alarms on communication loss and temperature variation.
 - 8. Support for the creation of custom sets of alarm event actions.
 - 9. Provides the ability to record video and link to video for alarm events.
 - 10. Available video control and playback through the System user interface.
 - 11. Provides the ability to assign threat levels to various alarms according to severity.
 - 12. Provides the ability to select up to 20 levels of priority for event actions.
 - 13. Provides the ability to enter a duty log comment into the Activity Log, or to append a unique or preset comment to a particular log entry while viewing the Activity Log.
 - 14. Support for the display of Activity Log entries that include both the time the event occurred on the node and the time it was reported to the controller.
 - 15. Support for electronic supervision of alarm inputs.
 - 16. Support for the use of output relays for enabling circuits under alarm event control.
 - 17. A monitoring desktop that integrates video, system activity logs, floorplans, ID photos, and alarm notifications.
 - 18. Support for the creation of unlimited customized monitoring layouts through the use of widgets.
 - 19. Graphic floorplans with active icons of security system resources.
 - System user permissions to grant whole or partial access to system resources, commands, and personal data.
 - 21. Secure access to the user interface under encrypted password control.
 - 22. Delivery of alerts via browsers, email, and text messages.
- F. The system shall provide the following Video Management capabilities:
 - 1. Real-time video monitoring displays, including unlimited cameras simultaneously.
 - 2. Playback of event-related video.
 - 3. Video switching and video widget pop-ups based on access activity or event activation.
 - 4. Integrated alarm inputs from the video management system.
 - 5. Digital playback of video events.
 - 6. Linking of video and events based on triggers provided by the system or video system.
 - 7. Support for multiple DVR and NVR systems.
 - 8. Multiple pre-programmed supported cameras.
 - 9. Recall of photo ID and real-time image for comparison.
 - 10. Monitoring and control through a web browser interface.

- System user permissions to grant whole or partial access to system cameras and video resources.
- G. The system shall provide the following Security Database capabilities:
 - Maintain data of system activity, personnel access control information, system user passwords and custom user role permissions for whole or partial access to system resources and data.
 - 2. Partitions: It shall be possible to partition the system to create independent, virtual security management systems for multiple populations.
 - 3. Support for the sharing of access levels and user privileges across partitions in a system.
 - 4. Built-in Open Database Connectivity (ODBC) compliant database for personal data.
 - 5. LDAP integration for single-user logon authentication.
 - 6. Unlimited person records.
 - 7. Network-secure API for external application integration.
 - 8. Extensive and easy to use custom report generator.
 - 9. User-defined data fields in personnel records.
 - 10. Record recall by vehicle tag, name, or card.
 - 11. ODBC compliant Database.
 - 12. An API for adding to, deleting from, and modifying the database.
 - 13. Storage of system user passwords and permissions.
 - 14. Storage and recall of ID photos and emergency personal information.
 - 15. Pre-defined reports on system configuration, system activity history, and people.
 - 16. An Audit Trail report that shows changes made to the security database over a specified period of time.
 - a. For each transaction listed in the report results, information is available on when the transaction occurred, who made the changes, the fields that were modified, and the original and new values.
 - b. Search criteria can be applied to filter the report results, either by the person whose record was changed or by the area of the system configuration that was modified.
 - 17. A Credential Audit report that shows all existing access cards by their current status settings. The report also shows for each card the name of the person to whom it was issued and the card number.
 - 18. A Duty Log report shows duty log comments residing in the current security database, including archives.
 - a. For each duty log comment included in the report results, information is available on when the comment was entered, who entered it, the date and time of the logged event associated with the comment, the name of the logged event, and the specific comment text.
 - b. Search criteria can be applied to filter the report results, either by Operator (the user who entered the duty log comment) or by Event type.
 - 19. English-based query language for instant custom reports.
 - Custom report writer interface that allows the interactive creation of custom reports. Reports
 may be saved for later reuse. No third party software (such as Crystal Reports) shall be
 necessary.
 - 21. Periodic backup to on-board flash ROM and optional network attached storage (NAS), including FTP servers.

- 22. Periodic archive creation for historical custom reporting and improved on-board database performance.
- 23. Email and text messaging (SMS) alert notifications.

2.03 HARDWARE REQUIREMENTS

- A. The Security Management System shall employ a modular hardware concept that enables simple system expansion and utilizes a three-tiered hardware hierarchy:
 - 1. At the top tier is the Network Controller, which shall contain the database engine, web server, application software, and configuration data. It is at this level that System Users, through a browser interface, shall interact with the system, set configurations, monitor activities, run reports, and manage alarms.
 - 2. At the second tier is the Network Node, an intelligent device with native TCP/IP support, which shall make and manage access control decisions.
 - 3. At the third tier are the application extension blades. Each of these blades shall connect to and manage a set of inputs, outputs, readers, cameras, or temperature monitoring points.
 - 4. The network device shall run on existing building TCP/IP networks and shall be configurable for access from separate subnets, through gateways and routers, and from the Internet.
 - 5. A MicroNode shall also be available that combines an Access Control blade and a Network Node.
- B. The Network Controller shall contain the operating system, database engine, web server, application software, and configuration data.

C.

D. A solid-state Network Controller shall consist of a blade-style, circuit card that also combines a Network Node on the card. The Network Controller portion of the card shall contain a processor, flash memory, and a network switch. The Network Controller shall be supplied with 12V DC at a minimum of 3 amps. Internal battery backup shall supply sufficient power to provide for an orderly shutdown of the system in case of loss of external power. External battery backup shall be used to provide uninterrupted operation in the event of external power loss. The Network Node portion shall contain a serial port for communication with the Application blades and a network interface port. A solid-state Network Controller shall have the following capabilities:

1.	Nodes/MicroNodes:	32
2.	Access control portals:	32
3.	Access cards:	60,000
4.	Access levels:	512
5.	Card formats:	32
6.	Alarm input points:	500
7.	Control point outputs:	500
8.	Temperature monitor points:	500
9.	Elevators	20
10	Floors	100
11	IP, DVR, and NVR cameras:	Limited only by license
12	Online event history log	up to 10 million records
13	Ethernet ports:	2
14	Time specifications	512
15	Time spec groups	64
16	Time specs per group	8

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17.	Threat Levels	8
18.	Threat Level Groups	32
19.	Holidays	30
20.	Access levels per person	32
21.	Cards per person	100
22.	Report Groups	50
23.	Camera Groups	50
24.	Concurrent system users	2

E. The Network Controller shall be available in wall-mount or 2RU rack-mount enclosure. It shall contain a motherboard with an Intel processor and solid-state disk drive. An Ethernet connector shall be provided for network connection. The Network Controller shall have the following capabilities:

 Nodes/MicroNodes 	64
2. Access control portals	256
Access cards	150,000
Access levels	512 per partition
Concurrent system us	ers 10
Alarm input points	2000
7. Control point outputs	2000
8. Temperature monitor p	points: 500
9. IP, DVR, and NVR car	meras: Limited only by license
10. Online event history lo	g: up to 40 Million records
11. Ethernet switch ports:	1
12. Time specifications	512 per partition
13. Time spec groups	64 per partition
14. Time specs per group	8 per partition
15. Threat Levels	8 per partition

16. Threat Level Groups
17. Holidays
18. Access levels per person
19. Cards per person
20. Report Groups
21. Camera Groups
32 per partition
30 per partition
32
50
50

F. The Enterprise Network Controller shall consist of a 1U rack-mounted Controller with additional processing power and memory, disk drive, serial port and network connections. The Enterprise Select Network Controller shall have the following capabilities:

1.	Nodes/MicroNodes	128
2.	Access control readers	1792
3.	Access cards	unlimited
4.	Access levels	512 per partition
5.	Concurrent system users	25
6.	Alarm input points	2000

G.

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7.	Control point outputs	2000
8.	Temperature monitor points:	500
9.	IP, DVR, and NVR cameras:	Limited only by license
10.	Online event history log:	up to 400,000,000 records
	Ethernet switch ports:	1
	Time specifications	512 per partition
	Time spec groups	64 per partition
	Time specs	8 per group
	Threat Levels	8 per partition
16.	Threat Level Groups	32 per partition
	. Holidays	30 per partition
	Access Levels per person	32
	. Credentials per person	100
	Report Groups	50
	. Camera Groups	50
	terprise Select Platform Attributes	
1.	Physical	
	a. Dimensions (w, h, d)	19" x 1.7" x 19.6 (1U)
	b. Weight	7.28 Kg (16 lbs)
	c. Power	300W, 100 – 240VAC
	d. Heat Output	1024 BTU
2.	Platform	
	a. Processor	Intel Quad Core 2 2.6GHz
	b. Ram	2G DDR2
	c. Storage	32G SLC SSD
	d. DVD-R/W	Yes
	e. Ethernet Port	1 (10, 100, 1,000)
	f. MTBF	52,560 hrs
3.	Environmental	
	a. Operating Temperature	0°C - 40°C (32°F - 104°F)
	b. Storage Temperature	-20°C - 60°C (-4°F - 140°F)
	c. Relative Humidity	10 to 85% at 40° (104°F) non-condensing
4.	Certifications	
	a. Electrical	CE, UL60950-1, FCC
	b. Environmental	RoHS
5.	Application Features	
	a. Capacity Rating	30
	b. Portals (Nodes) supported	1,792 (128)
	c. Inputs (Outputs) supported	2,000 (2,000)
	d. Online Historical Transactions	160,000,000
	e. Simultaneous Users	25

H. The Ultra Network Controller shall consist of a 2U rack-mounted controller with additional processing power and memory, RAID-1 disk drive array, serial port and network connections. The Ultra Network Controller shall have the following capabilities:

35

1. Nodes/MicroNodes 512

2. Access control readers 7168

3. Access cards unlimited

4. Access levels 512 per partition

Concurrent system users

6. Alarm input points 4000

7. Control point outputs 4000

8. Temperature monitor points: 500

9. IP, DVR, and NVR cameras: Limited only by license

10. Online event history log: up to 400,000,000 records

11. Ethernet switch ports:

12. Time specifications 512 per partition

13. Time spec groups 64 per partition

14. Time specs 8 per group

15. Threat Levels 8 per partition

16. Threat Level Groups 32 per partition

17. Holidays 30 per partition

18. Access Levels per person 32

40. One does that

19. Credentials per person 100

20. Report Groups 50

21. Camera Groups 50

Enterprise Ultra Platform Attributes

1. Physical

a. Dimensions (w, h, d) 19" x 3.46" x 18.9 (2U)

b. Weight 13.57 Kg (30 lbs)

c. Power 300W, 100 – 240VAC

d. Heat Output 1024 BTU

2. Platform

a. Processor Intel Quad Core 2 3.0GHz

b. Ram 4G DDR2

c. Storage 2 – 32G SLC SSD

d. DVD-R/W Yes

e. Ethernet Port 1 (10, 100, 1,000)

f. MTBF 52,560 hrs

Environmental

a. Operating Temperature 0°C - 40°C (32°F - 104°F)

b. Storage Temperature $-20^{\circ}\text{C} - 60^{\circ}\text{C} (-4^{\circ}\text{F} - 140^{\circ}\text{F})$

c. Relative Humidity 10 to 85% at 40° (104°F) non-condensing

4. Certifications

5.

a.	Electrical	CE, UL60950-1, FCC
b.	Environmental	RoHS
Аp	plication Features	
a.	Capacity Rating	96
b.	Portals (Nodes) supported	7,168 (512)
C.	Inputs (Outputs) supported	2,000 (2,000)
d.	Online Historical Transactions	160,000,000

e. Simultaneous Users 35

J. The Network Node shall make and manage access control decisions with data provided by the Network Controller, and it shall manage the communication between the Controller and Application blades connected to the system's inputs, outputs, and readers. The Node shall be supplied with 12V DC at a minimum of 3 amps. The Node blade shall supply all Application blades in the node with power. The Network Node shall be available in three configurations: a combined Network Controller/Network Node blade; a standalone Network Node blade, and a MicroNode with included Access Control blade. Each Network Node shall support up to seven Application blades except for the MicroNodes. Communications between the node and Network Controller shall be encrypted and authenticated (SHA-1). Each Network Node shall have the following capabilities:

1.	Application blades	7
2.	Access control readers	14
3.	Access Levels	512
4.	Portals	14
5.	Portal Groups	64
6.	Readers	14
7.	Reader Groups	128
8.	Supervised Inputs	56
9.	Input Groups	64
10.	Relay Outputs	56
11.	Output Groups	64
12.	Temperature Monitor Inputs	56
13.	Elevators	14
14.	Floors	52
15.	Floor Groups	64
16.	Credential storage	20,000
17.	Activity Log records	27,000

- K. The Application blades shall interface with the Network Controller through the Network Node. The Application blades shall be blade-style circuit cards. There shall be four types of Application blades:
 - 1. Access Control blade: shall support 2 readers (input devices such as keypads, RFID devices or Biometric readers), 4 supervised inputs and 4 relay outputs.
 - 2. Supervised Input blade: shall support 8 supervised inputs. Supervised input connectors are 2-pin. The system shall support a wide variety of input supervision types including normally-open circuit and normally-closed circuits, and zero, one or two resistor configurations.

- 3. Relay Output blade: shall support 8 relay outputs. Relay output connectors are 3-pin. Both normally-open circuit and normally-closed circuit output devices are supported. The relay outputs shall support any output devices that operate on the following maximum electrical ratings: 30 Volts DC or AC, 2.5 Amps inductive or 5.0 Amps non-inductive.
- 4. Temperature blade: shall support 8 analog temperature sensor inputs. Temperature range shall be 32° to 158° F (0° to 70° C). Temperature precision within that range shall be ±1.0° F (±0.5° C).
- L. The MicroNode shall combine a Network Node and an Application blade capability in one enclosure. The Access Control blade portion of the MicroNode shall support two readers, one temperature input, four supervised inputs and four relay outputs. A MicroNode shall utilize 12VDC power at 3 Amps or Power over Ethernet (PoE) at the 802.3AF standard and be capable of supplying direct power to 2 readers. 2 motion REXs, and 2 door strikes.

2.04 HARDWARE PACKAGING REQUIREMENTS

- A. The Security Management System shall have various hardware enclosures and configurations available to support different installation requirements. Enclosures shall be available for wall or rack mounting. The wall-mount enclosures shall have a lock requiring a key, and a cabinet door tamper switch.
- B. The Wall-Mount enclosure supports one solid-state Network Controller/Node blade or a standalone Network Node blade and seven Application blades. The dimensions are: 17" (432 mm) H x 15" (381 mm) W x 6.75" (171.5 mm) D.
- C. The 4U Rack-Mount enclosure supports one solid-state Network Controller/Node blade or a standalone Network Node blade and seven Application blades. The dimensions are: 19" (483 mm) W x 7" (178 mm) H (4U) x 15" (381 mm) D.
- D. The Extreme Network Controller wall-mount units shall be housed in an enclosure with dimensions of: 12" (304.8 mm) W x 14" (355.6 mm) H x 3.5" (88.9 mm) D. The rack-mount unit dimensions shall be 2U rack x 12" (304.8 mm) D.
- Enterprise Network Controllers shall be housed in a 1U rack-mount enclosure with dimensions of 19" (483 mm) W (including the mounting brackets) x 1.75" (0.7 mm) H x 16.75" (425 mm) D.
- F. The MicroNode enclosure shall support a solid-state Node, its Access Control blade, and one temperature point.
 - 1. It shall be a wall-mount enclosure with dimensions of 7" (178 mm) H x 7" (178 mm) W x 3.5" (89 mm) D.
 - 2. It shall be possible to power the MicroNode with a 12VDC power source at no less than 2 Amps, or with PoE that conforms to the IEEE 802.3af standard. This provides nominal 48VDC at a maximum of 400mA.
- G. The solid-state Controllers shall be powered by either 100-240V AC at 50-60 Hz, or by 12VDC at 3 amps. Power must come from a separate circuit with an isolated earth ground. If AC power is supplied it must be connected to the internal power supply. If DC power is supplied the internal power supply shall be bypassed. It shall be possible to backup power supplied to the system with an Uninterruptible Power Supply (UPS). It shall also be possible to place within the wall-mount enclosure an SLA battery backup sufficient for an orderly shutdown in case of external power loss.
- H. Enterprise and Enterprise Ultra controllers shall be powered by 100-240V AC at 50-60 Hz. Power must come from a separate circuit with an isolated earth ground and it must be connected to the internal power supply. It shall be possible to backup power supplied to the rack-mounted Enterprise and Enterprise Ultra controllers with an Uninterruptible Power Supply (UPS).

2.05 Not Used

2.06 SOFTWARE REQUIREMENTS

- A. Operating System and Application Software:
 - The embedded operating system for the solid-state Network Controller shall be the Linux Ubuntu operating system. The system application software shall be embedded in the system. The database shall be an embedded PostgreSQL relational database requiring a small footprint and provides high reliability. The web server shall be based on an embedded Apache web server enabling users to access and operate the system using a standard web browser.
- B. SSoftware Licensing:
 - Software licensing shall be based upon the number of readers, cameras, and select features
 for one Network Controller. Software license upgrades shall be available if system reader and
 camera capacity must be raised. The user license shall be valid in perpetuity and shall
 include one year of software updates from the date of shipment from the factory.
 - 2. Licensing shall be controlled by a Product Key and an Activation Key. The Product Key contains the licensed system features and limits. To upgrade your system license to enable more cameras or more doors you will need a new Product Key. The Activation Key contains the warranty expiration date. The keys are locked to the system license number. The system license number shall be viewable on-screen on the Support: About page
- C. Software Upgrades: Software upgrades shall be possible from a browser on any network-connected PC, by uploading a software update to the Controller. Controllers shall automatically upgrade all connected nodes. No client software installation shall be necessary.
- D. Online Help and Documentation: The system shall be provided with complete embedded documentation. The online documentation shall include:
 - Context-sensitive online Help. (The Help displayed is specifically relevant to the current screen.) The online Help system shall provide explanations and procedures for all monitoring, administrative, and system configuration and maintenance functions. The Help system shall have linked table of contents, a linked index, and frequently asked questions pages. Each topic shall also have links to related topics. Each Help topic shall be printable.
 - 2. Technical Support Notes: These documents shall be in PDF format, shall be printable, and shall be linked to from the Help system table of contents, index, and related topics.
 - Installation Guides: These documents shall be in PDF format, shall be printable, and shall be linked to from the Help system table of contents, index, and related topics.
 - 4. Video Integration Guides: These documents shall be in PDF format, shall be printable, and shall be linked to from the Help system table of contents; index, and related topics.
 - 5. System Administration Guide: This document shall be in PDF format, shall be printable, and shall be linked to from the Help system table of contents, index, and related topics
- E. Language Support: The system shall be provided with multiple language support. The ability to switch from one language to another shall be accomplished through the user interface. Translation of the user interface, online help and documentation into other languages shall be available. The languages supported shall include:
 - 1. English
 - 2. Spanish
- F. Date Formats: The system shall support global date formats as follows:
 - 1. mm/dd/yyyy
 - 2. dd/mm/yyyy
 - 3. yyyy/mm/dd

- G. Floorplans: The system shall provide graphic floorplan capability including graphic display of links to other floorplans, alarms, system resources such as portals, IP video cameras, inputs, outputs, and temperature monitoring points.
 - 1. The Network Administrator holding at least a 'Setup' user role shall be able to graphically configure device icons onto the floorplan images, and to upload additional floorplan images. JPEG images shall be supported, and the maximum size for a floorplan image shall be 256K.
 - 2. It shall be possible to create floorplan groups for the purpose of assigning or withholding assignment of these groups to system user permissions known as Custom User Roles. If a floorplan group is assigned to a particular system user then the floorplans in that group shall be viewable by that system user.
- H. Personnel Data: The system shall maintain person data relating to access control, system user privileges, photo identification, system activity, and contact information.
 - 1. All person data in the system shall be integrated onto one tabbed page for viewing, editing, and deletion by system users.
 - 2. A system user holding at least an 'Administer' user role shall be able to create, delete, and modify person records, including access levels.
- I. Data Import and Export: A Data Management Tool shall be provided that supports, via an API, the import and export of personnel data. This tool shall make possible the pre-populating, and ongoing populating, of cardholders into the system database. Data that shall be importable and exportable shall include:
 - 1. LASTNAME
 - 2. FIRSTNAME
 - 3. MIDDLENAME
 - 4. ACTDATE (activation date)
 - 5. EXPDATE (expiration date)
 - 6. NOTES
 - 7. TEXT1...TEXT20 (user defined fields 1 through 20)
 - 8. ACCESSLEVEL1...ACCESSLEVEL32
 - 9. PERSONID
 - 10. PIN
 - 11. ENCODEDNUM1...ENCODEDNUM10
 - 12. HOTSTAMPNUM1...HOTSTAMPNUM10
 - 13. CARDFORMAT1...CARDFORMAT10
 - 14. BADGELAYOUT
 - 15. JPEG ID PHOTO
 - 16. CONTACT PHONE
 - 17. CONTACT EMAIL
 - 18. CONTACT SMS EMAIL
 - 19. CONTACT LOCATION
 - 20. OTHER CONTACT NAME
 - 21. OTHER CONTACT TELEPHONE
 - 22. OTHER CONTACT TELEPHONE2
 - 23. VEHICLE 1 COLOR
 - 24. VEHICLE 1 MAKE

- 25. VEHICLE 1 MODEL
- 26. VEHICLE 1 STATE
- 27. VEHICLE 1 LICENSE#
- 28. VEHICLE 1 TAG#
- 29. VEHICLE 2 COLOR
- 30. VEHICLE 2 MAKE
- 31. VEHICLE 2 MODEL
- 32. VEHICLE 2 STATE
- 33. VEHICLE 2 LICENSE#
- 34. VEHICLE 2 TAG#
- 35. LASTMOD
- J. Data Security:
 - Communication between the Network Controller and the browser shall be secured using SSL.
 In addition, administrative access to the security management application and the personnel
 data shall be password protected and controlled by roles-based authorizations.
 - 2. Communication between the Network Controller and the Network Nodes shall be encrypted and authentication/tamper detection shall be done using the SHA-1 algorithm.
 - Communication between the Network Controller and other systems (when using the API) shall be secured using SSL and authentication/tamper detection shall be done using the SHA-1 algorithm.
- K. Data Backups: It shall be possible to configure regular automatic database backups.
 - 1. It shall be possible to back up a solid-state Network Controller to an on-board compact flash.
 - 2. It shall be possible to back up an Enterprise Network Controller and Ultra Network Controller to a built-in hard drive.
 - It shall also be possible to save backups from any controller to separate network attached storage (NAS) and file transfer protocol (FTP) servers.
 - 4. It shall also be possible to setup regular automatic creation of database archive files.
- Con-board Data Management: Each night the system shall truncate a sufficient number of the oldest records held on-board to reduce the database to its set limit, if required. This shall create the needed storage space for additional system activity records. Truncation will be performed on a First-in, First-out (FIFO) basis.
- M. Partitions: It shall be possible to create multiple partitions for the management of multiple security systems or multiple populations.
 - 1. It shall be possible to limit access to the data and resources of one partition to those with permissions for that partition.
 - 2. It shall be possible for each partition to have its own population, resources, rules, events, video management, log data, reports and network resources.
 - 3. It shall be possible to grant Monitor, Administer, and Setup privileges for multiple partitions to the same user. It shall also be possible to create custom user roles for each partition.
 - 4. A node can reside in only one partition. It shall be possible to create partitions without nodes.
- N. User Roles and Permissions: There shall be four pre-programmed levels of User Roles, and a total of 16 possible Custom User Roles that can be configured in the system with different permissions for each user:
 - 1. Master Partition Monitor: These users may use the functions in the Monitor menu only within the Master (default) partition. Monitor functions shall include viewing the activity log, cameras, and floorplans.

- Master Partition Administer: These users may use the functions of both the Administration and Monitor menus only within the Master (default) partition. Administrative functions shall include adding and editing person information in the enrollment database, issuing and revoking cards, generating reports, and performing database backups.
- 3. Master Partition Setup: These users may use the functions of the Setup, Administration, and Monitor menus only within the Master (default) partition. Setup functions shall include defining access control, alarm event behavior, camera settings, floorplan images and configurations, holiday and time specifications. Setup functions shall also include: designation of network resources such as time and DNS servers, email and network storage settings; performance of system maintenance such as database backup and restore, software updates and file cleanups; designation of time zone, daily backup schedule and enrollment readers.
- 4. Full System Setup: These users may use the functions of all menus in all partitions.
- Custom User Roles: In addition to the roles above the system shall also support the creation
 of detailed user permissions regarding which cameras, floorplans, elevators, events, access
 levels, portals, reports, and personal data fields the system user may see, edit, delete, or
 control.
- O. Alarm Panels: The system shall be capable of integrating with alarm panels, arming the panels, disarming the panels, and triggering events based upon alarm panel status.
- P. DMP Intrusion Panels: The system shall be capable of integrating with Digital Monitoring Products (DMP) XR500 Command Processor Panels.
 - Security administrators can use events on a DMP panel, such as a zone going into an alarm state, to trigger events in the system. They can also use events in the system to control operations on the DMP panel, such as the arming or disarming of an area.
 - Monitors can use the Intrusion Panel widget to view configuration and status information for a DMP panel. They can also arm and disarm areas, bypass and reset zones, and activate and deactivate outputs associated with the panel.
- Q. Alarm Events: The system shall be capable of managing alarm events.
 - 1. It shall be possible to delay an input's change to the Alarm state by a specified number of seconds. The range of delay options shall be .5 seconds or 1-120 seconds.
 - 2. It shall be possible to associate specific actions with each alarm event. These actions may include, but are not limited to:
 - a. Lock and Unlock portals.
 - b. Activate and Deactivate relay outputs.
 - c. Arm and Disarm input groups.
 - d. Pulse outputs or output groups.
 - e. Arm and Disarm alarm panels.
 - f. Send emails and SMS messages.
 - g. Move cameras to preset positions.
 - h. Switch to a video monitor.
 - i. Record video.
 - j. Momentarily unlock portals.
 - k. Display ID photos.
 - I. Change the threat level for a location, and (optionally) for its sub-locations.
 - m. Make entries in the activity log.
 - n. Play a digital sound file.
 - o. Display alarms in different colors.

- p. Set a priority for an alarm (one of 20 levels, with 1 being the highest).
- q. Require a duty log entry.
- r. Clear alarm automatically or require an acknowledgement.
- 3. A system user holding at least a "Setup" user role shall be able to create, delete, and modify alarm system inputs, input groups, outputs, output groups, alarm panels, and events.
- 4. It shall be possible to trigger events based on system activity such as:
 - a. Failed login attempts.
 - b. Video motion detection.
 - c. Camera failure and camera restore events.
 - d. Valid or Invalid card reads.
 - e. Portals held or forced open.
 - f. Valid card reads with a specified access level.
 - g. Inputs entering an alarm state.
 - h. High and low temperature events.
 - i. Alarm panel arming failures.
 - Alarm panel zone faults.
 - k. Tailgating and passback violations.
 - Occupancy limit violations.
 - m. Zone empty violations.
 - n. Node power failure, communication failure, timeout, and tamper events.

R. Activity Monitoring:

- The system shall support a Monitoring Desktop that integrates video, system activity logs, floorplans, ID photos, and alarm notifications.
- 2. Activity Log viewing includes one-click navigation to person records.
- 3. The system shall support a Widget Desktop that allows the creation of custom monitoring layouts. Within a custom layout, widgets display live video, system activity logs, alarm notifications, ID photos, floorplans, duty log entries, portal status displays, and DMP intrusion panels.
- 4. Many widgets support multiple partition viewing and filtering. For example, the Activity Log widget can display data from multiple partitions and data filtered by event type or reader group, and/or based on the text content of the event.
- 5. It shall also be possible to view cameras, activity logs, and floorplans on separate monitoring pages within the application.
- S. Network-based Camera and Video Surveillance: The system shall provide live IP video surveillance capability. The number of supported cameras shall be limited only by license. The system's video capabilities shall include video monitor switching based on access activity. The system shall provide monitoring, configuration, and administration of IP video. Cameras can be separately monitored or monitored in groups.
 - 1. Presets: The system shall support the creation, deletion, and editing of camera preset positions in the system. It shall also be possible to save changes in preset positions directly to a camera website.
 - 2. Views: The system shall support the creation, deletion, and editing of multiple camera views, specifically Quad views (four cameras). The application shall provide a drop down pick list for selecting current views or naming of new views.
- T. Access Control:

- 1. The system shall be able to make access control decisions, define a variety of access levels and time specifications, write system activity into a log file, maintain a personnel enrollment database, receive signals from input devices such as door switch monitors, card readers and motion detectors, energize devices such as door locks and alarms via outputs.
- 2. Time Specifications: The system shall be capable of storing up to 512 time specifications. Each time specification must be assigned a unique alphanumeric name of up to 64 characters. The definition of a time specification shall require the assignment of both a start time and an end time. Each day of the week shall be individually assignable for inclusion in time specifications. Up to three holiday groups shall be assignable for inclusion in time specifications. If no holidays are assigned to a time specification then no holiday access shall be allowed.
 - a. Time specifications shall be assignable to access levels, output groups, portal groups, input groups, and alarm events.
 - Time specifications shall function appropriately per node for the time zone specified for that node.
- 3. Card Formats: The system shall support the use of readers that use the Wiegand Reader Interface. The system shall default to the Wiegand 26 bit format unless a different bit length format is created in the system. The system shall support but not require the use of the card facility code. The system shall also support the use of the Magnetic Stripe ABA track 2 card data formats.
 - a. It shall be possible to create new card formats, designate start bits and bit lengths for facility codes and card ID numbers, as well as designate parity bits. The system shall support up to 32 different card formats. The system shall support card formats up to 128 bits.
 - b. It shall be possible to reverse the read order of the bits in the facility code and/or card ID portions of a card format.
 - c. It shall be possible to view and change the default parity bit definitions for a card format.
 - d. The system shall support the use of the FIPS 201 (Federal Information Processing Standard Publication 201) 75 bit card format.
 - e. Administrators shall be able to specify a specific number of days of non-use that will be allowed before unused cards will be disabled. Administrators shall be able to exempt individual users from this non-use rule.
- 4. Access Levels: The system shall be capable of storing up to 512 access levels in each partition. Each access level must be assigned a unique alphanumeric name of up to 64 characters. The definition of an access level shall require the assignment of a reader or reader group, and a time specification. It shall be possible to also assign an elevator floor group to an access level.
- 5. First-in Unlock Rule: The system shall support the use of a First-in unlock rule. It shall be possible to use this rule to control the unlock behavior of portal groups with assigned unlock time specs.
 - a. The First-in unlock rule shall require a card read of a specified access level. The portals in the group shall unlock only when the rule is satisfied and the unlock time spec is valid.
 - b. There can be up to 64 First-in unlock rules in the system at a time.
- 6. Double Card Presentation: The system shall support the use of a Double Card Presentation mode. This mode shall allow the presentation of a card twice in quick succession at a designated reader. Such a "double read" shall change the locked portal to an unlocked state until a subsequent relock event or user-designated timeout occurs. The double card presentation mode shall be enabled on an individual portal basis and shall also require a designation on the access level assigned to the cardholder. The mode shall adhere to time spec and threat level restrictions.

- 7. Keypad timed unlock: It shall be possible to enable a timed unlock feature for a portal that has a combination reader/keypad device. Once this feature is enabled, any cardholder with valid access to the portal shall be able to specify how long the portal will remain unlocked.
 - a. A cardholder presents his or her card and then enters the associated PIN, followed by the number sign (#) and the number of minutes (1-99) the portal should remain unlocked.
 - b. The portal will remain unlocked for the specified number of minutes, unless it is closed before the timer expires. If the portal remains open after the timer has expired, a [Door Held Open] alarm will be activated.
 - c. If reader/keypad devices are located on both sides of the portal, cardholders will be able to use either device to initiate a timed unlock.
- 8. Holidays: The system shall be capable of storing up to 30 holidays per partition. Each holiday must be assigned a unique alphanumeric name of up to 64 characters. The definition of a holiday shall require a start date and an end date. Holidays shall have the ability to span several days using only one holiday slot. Holiday definitions shall support the designation of a start time and an end time. If no start time is designated then the system shall default to 00:00 (start-of-day). If no end time is designated then the system shall default to 24:00 (end-of-day). Holidays shall require the use of 24-hour time format, e.g. 17:00 is 5:00PM.
- 9. Portals: A portal is any access point and each portal supports up to two access reader devices. The System User, holding at least a "Setup" user role, shall be able to view current portal definitions, change portal definitions, delete portals, and create new portals. Creating a portal defines the access and alarm behavior of the access point. This can include:
 - a. Card readers and keypads.
 - b. Output for locking.
 - c. Input for monitoring the door switch.
 - d. Input for a Request-to-Exit function.
 - e. Local alarm outputs and system alarm events.
- 10. Portal Groups: It shall be possible to create groups of portals and to assign an unlock time specification to the entire group. All the portals in the group shall remain unlocked during the time specified.
 - a. It shall be possible to use portal groups for the purpose of assigning or withholding assignment of these groups to system user permissions known as Custom User Roles. If a portal group is assigned to a particular system user then the portals in that group shall be viewable and unlockable by that system user.
- 11. Portal Alarm Conditions: Portals shall have four alarm conditions. The four alarm conditions are as follows:
 - a. Forced: When a portal is opened and there has been no card read, nor request to exit.
 - b. Held: When a portal is held open past the expiration of the shunt timer.
 - Invalid: When the portal reader reads a card for which there is no entry in the database.
 - d. Valid: When the portal reader reads a card for which there is a valid entry in the database.
- 12. Two-man entry restriction: It shall be possible to require two valid card reads by different cardholders within a specified number of seconds for entry to a specific portal.
- 13. Anti-passback: The system shall support both regional and timed anti-passback access control. For anti-passback functions, it shall be possible to configure regions, assign readers to those regions, and specify events for response to tailgate, passback, and occupancy limit violations. It shall also be possible to designate parent regions for hierarchical anti-passback.
 - Grace: It shall be possible for a system Monitor or Administrator to Grace card holders from passback and tailgate violations.

- b. It shall also be possible to set a specific time for all cardholders to be Graced daily.
- c. The system shall be able to automatically place the cardholder in a predefined region upon the selection of the grace option
- 14. Mustering: To aid in evacuation management it shall be possible to designate a region or regions for mustering. It shall be possible to quickly get an occupancy count and occupant list for any region.
- 15. Scheduled Actions: It shall be possible to specify system actions to occur at scheduled times. When scheduling an action, it shall be possible to specify whether the time specifications for the scheduled action will be based on the time zone set for the local Network Node or the time zone set for the Network Controller. Scheduled actions can include:
 - a. Arming and disarming inputs.
 - b. Activating and deactivating outputs.
 - c. Locking and unlocking portals.
- 16. Floorplans: The system shall be capable of displaying active graphic floorplans and configuring each floorplan with icons representing system resources: cameras, portals, temperature points, and alarms. A network administrator holding at least a 'Setup' user role shall be able to upload floorplan images and graphically configure device icons onto the floorplan images. Viewing floorplans will require the Macromedia Flash Player 9.0 plug-in for the browser.
 - a. It shall be possible to create floorplan groups for the purpose of assigning or withholding assignment of these groups to system user permissions known as Custom User Roles. If a floorplan group is assigned to a particular system user then the floorplans in that group shall be viewable by that system user.
- 17. Elevator Control: The system shall be capable of controlling elevator access to floors. The system shall be capable of controlling up to 52 floor buttons per node. It shall be possible to create, change, or delete floor groups to assign a free access time specification to a floor group. The floors in this group will be freely accessible during the times defined by the chosen time specification.
 - It shall be possible to create elevator groups for the purpose of assigning or withholding assignment of these groups to system user permissions known as Custom User Roles. If an elevator group is assigned to a particular system user then the elevators in that group shall be viewable by that system user.
- 18. System user holding a "Setup" user role shall be able to create, delete, and edit access control specifications.

U. Threat Levels:

- 1. It shall be possible to configure up to eight threat levels. It shall be possible to alter security system behavior through the use of threat levels. Groups of threat levels may be created and assigned to portal groups, access levels, input groups, output groups, floor groups, and event actions. The behavior of groups, access levels, and event actions with assigned threat level groups shall change based upon the current system threat level.
- 2. The system shall support 32 threat level groups.
- 3. It shall also be possible to change the system threat level in response to an alarm event.
- 4. The current system threat level shall display in the title bar of the security application interface and on floorplans.
- Location-based threat levels: The system administrator shall have the ability to define locations. V. This allows for threat levels to be assigned to individual locations.
 - Within each parent location, sub-locations can be created, and additional sub-locations can be created within each of these, and so on. This creates a location hierarchy.
 - 2. Portals can be assigned, and threat levels applied, to any location within the hierarchy.

- W. Appropriate Use banner: The system administrator shall have the ability to enter text (such as an appropriate use statement) to be displayed on the login page.
- X. Reports:
 - 1. The system shall be capable of producing a variety of predefined reports regarding software and security hardware configuration, event history, and the administration of people within the system. In addition, an easy to use query language shall be included to create ad hoc reports. The query language shall be documented in the online help system. Alternatively, it shall be possible to specify a query by use of point-and-click.
 - It shall also be possible to produce reports directly from the Network Controller based on data in archive files on FTP servers, network attached storage, or the controller-attached compact flash.
 - 3. The system shall support a graphic interface for interactively building custom reports from either historical or personnel data. These reports shall be savable for later reuse. Parameters can be inserted into reports to prompt for data input at report runtime. Report results can be printed, output to a PDF file or put into a spreadsheet.
 - 4. It shall also be possible to group reports for assignment to custom user roles. Any reports not grouped and assigned to a custom user role shall not be viewable by that system user.
 - 5. Report generation shall not affect the real-time operation of the system.
 - 6. The specific reports provided shall include the following:
 - 1. Configuration Reports
 - a. As Built: A graphical report that displays an image of each Application blade in a node and the specific resources (inputs, outputs, readers, etc.) configured for that blade. The network settings for the node shall also be included.
 - b. Cameras: Displays all camera configuration information including control address, IP port, and camera type.
 - c. Camera Presets: Displays configured presets for each camera in the system.
 - d. Elevators: Displays elevator configuration information including Node, Reader, and Floor to output mappings.
 - e. Floor Groups: Displays all configured floor groups for use in elevator control.
 - f. Holidays: Displays holiday specification information.
 - g. Portals: Displays portal definition information including reader, DSM input, REX input, alarm outputs, and events.
 - h. Portal Groups: Displays a list of all defined portal groups.
 - Reader Groups: Displays defined groups of readers.
 - j. Remote Locksets: Available if the Remote Locksets feature is licensed for the system. Displays the following information for each remote lockset: name, IP address, synchronization status, serial number, last completed update time, firmware version, and battery voltage. The report can be sorted by any of the columns.
 - k. Resources: Displays all configured system resources including readers, inputs, outputs, elevators, and temperature points.
 - Threat Level Groups: Displays all configured threat level groups and the threat levels assigned to them.
 - m. Threat Levels: Displays all configured threat levels including the description and color assignment.
 - 2. History Reports

- a. Access History: Displays access history based on an entered query. The system user can specify the query using either the keyboard or point-and-click selection.
- b. Custom Report: This provides the capability to create custom reports of historical data. A graphic interface provides the user with the ability to interactively create and save reports for later use. Parameters can be inserted into reports to prompt for data input at report runtime. Report results can be printed, output to a PDF file or put into a spreadsheet.
- c. General Event History: Displays time, type of activity, and activity details for a variety of event types. The system user can select the specific event types for the report.
- d. Portal Access Count: Display how many times users have used a portal.
- e. Audit Trail: Displays an audit trail of system changes and the name of the system user that made the changes. It shall be possible to specify the dates and times covered in the report.
- f. Duty Log: Displays duty log comments residing in the current security database, including archives. For each duty log comment, the report shows the date and time the comment was entered, the person who entered the comment, the date and time of the logged event associated with the comment, and the Activity Log message followed by the specific comment text.

3. People Reports

- a. Access Levels: Displays all access levels entered into the system including time specification, reader/reader group, and floor group.
- b. Credential Audit: Lists existing credentials by their current status settings (such as Active, Damaged, Lost, or Not Used). Before running the report, users can filter the data to see only credentials with a particular status setting, or only credentials that were not used with a specific number of days from the date they were issued.
- Current Users: Displays a list of all security system users currently logged in to the security system website.
- d. Custom Report: This provides the capability to create custom reports of personnel data. A graphic interface provides the user with the ability to interactively create and save reports for later use. Parameters can be inserted into reports to prompt for data input at report runtime. Report results can be printed, output to a PDF file or put into a spreadsheet
- e. Occupancy: Displays a list of defined regions with the number of people currently occupying each region and the maximum number of occupants allowed, if a maximum has been specified.
- f. Photo ID Gallery: Displays all the photo ID pictures in the system and the person's name.
- g. Photo ID Requests: Displays all outstanding badge print requests and lists ID, name, badge layout, activation date, request date.
- h. Portal Access: Lists people with access for a selected portal.
- i. Roll Call: Allows you to select a defined Region from the drop-down and see a list of people currently in that region.
- j. Roster: Displays every person entered into the system and it lists name, ID photo, expiration date, username, and access level.
- k. Time Specifications: Displays all defined time specifications currently in the system.

Y. Administration: The system shall provide for the performance of system administration tasks from any network-connected computer with a browser. Most of the administrative, maintenance, and configuration utilities and functions shall require a system user with at least a "Setup" user role. Information from the network administrator shall, in many cases, also be required. These administrative tasks shall include but not be limited to:

1. Generating reports:

- a. The system shall be capable of producing a variety of predefined reports regarding software and security hardware configuration, event history, and the administration of people within the system.
- b. Alternatively, the system shall support a graphic interface for interactively building custom reports from either historical or personnel data. These reports shall be savable for later reuse. Parameters can be inserted into reports to prompt for data input at report runtime. Report results can be printed, output to a pdf file or put into a spreadsheet.
- c. It shall also be possible to group reports for assignment to custom user roles. Any reports not grouped and assigned to a custom user role shall not be viewable by that system user
- d. A system user holding "Administrator" permissions shall be able to view and create reports.

2. Database backups:

- a. The system shall create database, or full system data backups, each night at 00:15 hours. These backups shall be stored in ROM and compact flash onboard the solid-state Network Controller, and written to the drive on the disk-based controller.
- b. Backups shall also be written to network attached storage (NAS) or an FTP server if such storage has been configured in the system.
- c. It shall also be possible for the system users to create such database backups at any time. Any database backups onboard the Network Controller may also be downloaded to off board storage by the system user at any time.

3. System restore:

- a. The system shall be able to restore its database, or the full system data, from a backup. Restoration of the system shall only be possible from a backup copy onboard the Network Controller. It shall, therefore, be possible to upload a copy of a database backup from any network attached storage.
- b. It shall be possible to review backups by date and description and select the desired backup for upload to the Network Controller or restoration as the current system database.

4. Software updates:

- a. Software updates, upgrades and patches shall be provided from time to time. The system shall be able to update its software from the .tgz files. Update of the application software shall only be possible from an update file onboard the Network Controller. It shall, therefore, be possible to upload a copy of the software update from any network attached storage or from any PC drive or desktop.
- b. Software updates may involve the Network Controller only or may include updates for the node(s) also. The monitoring of the security system may be unavailable for several minutes during this process.
- 5. File cleanup: A utility shall be provided to assist in file cleanup. This utility will display for review and deletion all floorplan jpeg files, photo IDs, database backups, badge layouts, and software updates.
- 6. File upload: The system shall support uploads of files for use in and with the system. Files which shall be uploadable include:

- a. Floorplans in jpg format
- b. Badge layouts
- c. ID photos in jpg format
- d. Database backups
- e. Software license files
- f. software updates
- g. Threat level icons in jpg format
- h. Sound files (.wav) for use in event alerts
- 7. Setting system time, time zones, and time servers:
 - a. The system shall support the setting of time zones by selection off of a drop down pick list. Time zones shall be separately settable for the controller and for each node or MicroNode in the system. An extensive list of world-wide time zones shall be provided. Adjustments for daylight saving time (summer time) shall be automatic.
 - b. The system shall support the use of network time servers. Up to three time servers can be designated. Use of a network time server ensures that the Network Controller and its nodes will be regularly synchronized with the exact time used by all other network resources.
 - c. It shall also be possible to manually set the system date and time.
- 8. Changing passwords:
 - a. Person data maintained in the system may also contain a user name and password for logging on to the security application website as a system user. The system shall support the changing of administrator passwords. It shall be required to enter the password twice for verification purposes.
 - b. Administrators shall be able to specify a minimum number of characters that users must include in their login passwords.
 - Administrators shall be able to specify that users' login passwords must contain a combination of letters, numbers, and special characters.
 - d. Administrators shall be able to set a password expiration period in months (from 1 month to 12 months) for all passwords in the current partition. Whenever a user changes his or her password, it will remain in effect for the selected number of months.
 - e. It shall also be possible to integrate an LDAP server for single-user logon authentication. This will reference the LDAP-stored password for use by the system.
- 9. Issuing and revoking cards (credentials):
 - a. Access cards shall be assignable by the system user either by entering card data directly into the person record or by use of an enrollment reader. Access levels shall be assignable through the user interface by selection from a drop-down list.
 - Access cards shall be revocable at any time. A system user holding at least the Administer user role may perform this action. Revoked cards shall stop functioning immediately.
 - c. A system user holding at least the Administrator role may also disable an access card by changing its Active status to Clear, Damaged, Disabled, Forgotten, Lost, Not Returned, Not Validated, Returned, Stolen, or Suspended. The card will not function with any of these status settings (unless the setting has been customized, as described below). Running a Credential Audit report shall allow existing cards to be viewed by their current status settings.
 - d. A system user holding at least the Administrator role may customize any of the following access card status settings: Clear, Damaged, Forgotten, Lost, Not Returned, Not

- Validated, Returned, Stolen, or Suspended. The user can change the name and/or description of the status setting, and can specify that a card to which the setting is applied will continue to function.
- e. A maximum number of active cards per person can be enabled for the system. Once a person has reached the system limit, a new card can be added for that person only if one of his or her active cards is revoked or disabled.
- 10. Enrolling new people: All person data entered into the system shall be held in the system database and shall be available only to system users holding at least the Administer user role. Person data can be added, deleted, and edited by such system users.
- 11. Creating Photo IDs: The system shall include an integrated photo ID function. It shall be possible:
 - a. To design badge layouts,
 - b. To upload badge layouts for badge printing,
 - c. To capture ID photo images, print badges, and delete uploaded badge layouts.
 - d. For the system user to manage all photo ID functions entirely from within the browser
- 12. Configuring network resources:
 - a. DNS: The system shall support setting IP addresses for up to two domain name servers.
 - b. Email settings: The system shall support the use of email notifications of alarm events. The system user must setup the email server IP address or DNS name and the email address of the Network Controller. A network administrator must setup the network mail server to relay email for the IP address of the Network Controller.
 - c. File transfer protocol (FTP): The system shall support the use of an FTP Server for backups. Once configured, backups are automatically saved to the FTP server each night.
 - d. NAS: The system shall support the use of network attached storage devices for backups. The network administrator must create a domain user account for the Network Controller and a password. The system user must configure the network attached storage in the system including the domain name, server IP address, share name, and the directory where the Network Controller may store data.
 - e. Time Servers: The system shall support the use of network time servers. Up to three time servers can be designated. Use of a network time server ensures that the Network Controller and its nodes will be regularly synchronized with the exact time used by all other network resources.
 - f. A system user holding "Setup" permissions shall be able to configure network resources.
- 13. LDAP: It shall be possible to configure an Active Directory Server with the system.
 - a. This shall provide single user-login capability.
 - b. Password rules and authentication will be governed by the LDAP server.

2.07 VIDEO MANAGEMENT INTEGRATION

- A. General: The Security Management System shall support the integration of Digital Video Recorders (DVR) supporting analog video cameras and Network Video Recorders (NVR). This integration shall allow the viewing of live streaming video in the browser interface and recorded video playback. Viewing live streaming video shall require the Java™ 2 Runtime Environment version 1.4.2 or version 5.0.
 - 1. Events in the alarm subsystem can initiate video recording. Video motion detection, camera up and camera down messages from the VMS can initiate alarms.

- It shall be possible to monitor DVR and NVR cameras in the same views as IP cameras.
 VMS events shall be logged in the system activity log. It shall be possible to view recorded video of events from the Activity Log.
- B. Integrated DVR/NVR Systems:
 - 1. Dedicated Micros Generation 2 and Generation 3 DVR DS2 or DV-IP
 - 2. exacq exacqVision
 - 3. JVC VR900
 - 4. Milestone Systems XProtect Enterprise, XProtect Professional, XProtect Corporate
 - 5. OnSSI NetDVMS, NetDVR
 - 6. Panasonic Digital Disk Recorder WJ-HD309a, WJ-HD316a
 - 7. Salient Systems CompleteView NVR
 - 8. Samsung iPOLiS NVR
 - 9. Vicon ViconNet
- C. OVID: Open Video Interface API:
 - 1. This specification defines an API to implement the integration of video surveillance systems.
 - 2. The OVID API shall allow users to monitor and control one or more video servers along with their associated video cameras, to augment the physical security devices (door locks, card readers, etc.) controlled by the system.
 - The integrated system shall be controlled through a web browser user interface which presents an integrated view of both the access system and the video surveillance system.

2.08 HARDWARE INTEGRATION

A. The access system shall support the integration of access control hardware.

2.09 ELEVATOR COMPASS SYSTEM INTEGRATION

- A. The system shall support the integration of the Elevator Compass Destination Entry System with the Security Management system. The Compass system is designed to optimize the use of elevators in large office buildings.
 - The boundary between the Compass network and the access system network is a Layer 3 switch. This switch routes two-way data traffic between the Access Controller and the Compass nodes, using the TCP/IP networking protocol.
 - 2. The Access Controller acts as the central processor for the security system. A single controller can supervise the operation of many nodes. It also manages all communication between the access and the Compass system.
 - 3. Once the system has been initialized to support an interface to the Compass system, standard access system configuration pages shall be used to configure the Compass system:
 - The Status page lets users view the Compass IP network configuration information, such as node status.
 - b. The Floor Map page shall let users configure the floor mapping needed to identify the building floors by name and floor.
 - c. The Configuration page shall let users configure the destination entry server (DES) nodes, destination entry director (DER) nodes, and destination entry computer (DEC) nodes in the Compass system.
 - d. The Events page lets users view the IP address, name, node type, and status of each node in the Compass system.
 - e. The Reader Groups and Access Levels pages let users configure reader groups and their associated access levels within the Compass system.

2.10 Not Used

2.11 PIVCHECK INTEGRATION (Codebench)

- A. The system shall support the integration of Codebench's PIVCheck PIV/TWIC/CAC/FRAC. This integration allows for:
 - 1. Authentication of PIV, TWIC, CAC, and FRAC credentials.
 - 2. Validation against a certificate revocation list.
 - 3. Enrollment of information contained within the credential imported directly into the system database.

2.12 API INTEGRATION

- A. An application programming interface (API) shall be provided for the Security Management system. The API provides programmatic access to the network-connected components.
 - 1. Communication between the system and another application takes place through the TCP/IP networking protocol. The API is invoked by POSTing an HTTP message to the web server on the Network Controller.
 - 2. The database shall include a table of "people" whose records act as container objects for attributes attached to people in real life. People are mapped to access levels, which specify access privileges—and to access cards, whose credentials are used for access control.
 - Access levels are created in the system using the normal web user interface for thesystem.
 People and credentials may be entered into the system either through the web user interface or through the API.
 - 4. The API supports commands for:
 - a. Adding, modifying, removing, and retrieving data about a person, and retrieving information about one or more people based on various search criteria.
 - b. Adding, modifying, and removing credentials, and retrieving a list of the names of defined card formats.
 - c. Adding, modifying, and deleting access levels, and retrieving a list of the valid access levels in the system.
 - d. Pinging the system to determine its health, and retrieving the current version of the API from the server.
 - e. Retrieving a history of access activity, either for all users or for a particular access card.
 - f. Adding, modifying, and removing threat levels and threat level groups, and setting the threat level in the system.
 - g. Retrieving a list of portals and associated card readers defined for the system.
 - Adding, modifying, deleting, and retrieving time specifications and time specification groups.
 - Adding, modifying, and deleting holidays, and returning a list of holiday keys or a specific holiday.
 - Adding, modifying, deleting readers and reader groups, and returning a list of reader group keys or information for a specific reader group.
 - k. Adding, modifying, and deleting portals and portal groups, and retrieving information about a specific portal group.
 - Requesting events from the Activity Log that occurred within a specified time period.
 These events are returned from the API in the CSV Export report format.

2.13 Not Used

2.14 CERTIFICATIONS

A. UL 294 listed.

B. ISO 9000 listed.

2.15 CARD READER - HID R40

Model Code	R40-H
Series	pivCLASS readers
Reader Type	Mifare
IP Rating	55
Mount Type	Mullion
Read Range mm	13 ~32
LED / Beep	8 colour LED and audio beeper
Colour	Black/Grey
Electrical Specifications	Voltage: 12 VDC
Physical Specifications	Dimensions mm: 84 x 122 x 24 Weight g: 220

2.16 PROXIMITY CARD - HID Iclass 262

- A. 13.56 MHz read/write contactless smart card provides high speed, reliable communications with high data integrity, ensuring high security with mutual authentication, encrypted data transfer and 64-bit diversified keys for read/write capabilities
- B. Card data is protected by triple DES encryption
- C. Meets ISO/IEC 15693 and 14443B standards for contactless communications
- D. 32Kb standard (2Kb available with 1KB MIFARE Classic only)
- E. Contractor to provide minimum of five thousand (5000) cards.

2.17 DOOR Contact – PS 906 MW Electrical

Normally Open Contact Switch (N/O, 1 Form A) For Closed Loop System (N/C, 1 Form B or C/O, 1 Form C is also available on request

Contact Rating - 10W/VA Switching Voltage (Max.) - 200 VDC

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Switching Current (Max.) - 0.5 Amp.
Contact Resistance (Min.) - 150 milli ohms
Life Expectancy - 10x 10 6 Operations
Insulation Resistance - 10 9 ohms
Shock Resistance - 30G for 11mSec.
Vibration Resistance - 20G (10 to 1000Hz)
Magnets - ALINCO/ Rare Earth (Unless otherwise specified)
Armour Jacket - Stainless Steel (Type 304)
Plastic Material - ABS Plastic (Unless otherwise specified

2.18 Power Supply - ALTV 1224C4

Input:

A. 115VAC 50/60 Hz, 1.52 amp.

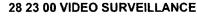
Output:

- B. Four (4) individually fused outputs.
- C. Two (2) fuse protected outputs @ 12VDC.
- D. Two (2) fuse protected outputs @ 24VAC.
- E. 6 amp total output current.
- F. 2 amp supply current @ 12VDC.
- G. 4 amp supply current @ 24VAC.
- H. DC output fuses are rated @ 1 amp.
- AC output fuses are rated @ 3.5 amp.
- J. Filtered and electronically regulated outputs (DC outputs).
- K. Surge suppression (AC outputs).

Electrical:

- L. Operating temperature: -20° C to 49° C ambient.
- M. BTU/Hr
- N. 12VDC: 9 BTU/Hr.
- O. 24VAC: 36 BTU/Hr.
- P. System AC input VA requirement: 174.8VA.

END OF SECTION 28 13 16



1 GENERAL

- A. Equipment and materials used shall be standard components that are manufactured and available for purchase as standard replacement parts as long as the product is commercially available from the manufacturer.
- B. All manufactured products shall be thoroughly tested and proven in actual use.
- C. All manufactured products shall include, at no additional cost, online support services and availability of a toll-free (U.S. and Canada), 24-hour technical assistance program (TAP) for emergencies.
- D. The manufacturer shall repair or replace without charge, manufactured products proven defective in material or workmanship for the stated warranty period from the date of shipment.

2 PRODUCTS

2.1 1/3-INCH CCD HIGH RESOLUTION ENVIRONMENTAL DAY/NIGHT CAMERA

- A. The CCD high resolution environmental outdoor fixed dome camera shall integrate a (650 TVL) color camera and lens package into a small outdoor rugged enclosure that can be mounted directly to a ceiling or wall.
- B. The CCD high resolution environmental outdoor fixed dome camera shall feature the option of an IR Illumination color camera with an auto iris and varifocal lens; true day/night camera with an auto iris and varifocal lens; or a color camera with auto iris and a varifocal lens.
- C. The CCD high resolution environmental outdoor fixed dome camera shall offer 24 VAC/12 VDC operation with internal synchronization.
- D. The CCD high resolution environmental outdoor fixed dome camera shall provide manual 3-axis (pan/tilt/rotation) positioning.
- E. The CCD high resolution environmental outdoor fixed dome camera shall provide a service connector for video output.
- F. The CCD high resolution environmental outdoor fixed dome camera shall provide window blanking.
- G. The CCD high resolution environmental outdoor fixed dome camera shall provide the Adaptive Motion analytic to intelligently detect motion within the field of vision and trigger an alarm.
- H. The CCD high resolution environmental outdoor fixed dome camera shall include a removable IR cut filter.
- I. The network camera enclosure shall be environmentally rated and offer an impact resistance rating of IK10++ per EN62262 (50J). The enclosure shall also be vandal and tamper resistant.
- J. The CCD high resolution environmental outdoor fixed dome camera shall include automatic white balance (AWB) capabilities.
- K. The CCD high resolution environmental outdoor fixed dome camera shall meet or exceed the following design and performance specifications.

VIDEO SURVEILLANCE 28 23 00 - 1

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- a. Image Sensor
- b. Signal Processing
- c. Effective Pixels
 - 1. NTSC
 - 2. PAL
- d. Scanning Area
- e. Scanning System
 - 1. NTSC
 - 2. PAL
- f. Scanning Frequency
 - 1. NTSC
 - 2. PAL
- g. Synchronization
- h. Horizontal Resolution
- i. Lens
- j. Minimum Illumination
 - 1. FD5-V Series
 - 2. FD5-DV Series
 - 3. FD5-IRV Series
- k. IR Cut Filter
 - 1. FD5-V Series
 - 2. FD5-DV Series
 - 3. FD5-IRV Series
- I. Dynamic Range
- m. IR Illumination Distance
 - 1. FD5-IRV Series
- n. IR Sensitivity
- 1. FD5-IRVo. Low-Light Technology
 - 1. FD5-DV Series
 - 2. FD5-IRV Series
- p. Shutter
- q. Video Output
- r. White Balance
 - 1. FD5-V Series
 - 2. FD5-DV Series
 - 3. FD5-IRV Series
- s. Signal-to-Noise Ration
- t. Focal Length
 - 1. FD5-V Series
 - 2. FD5-DV, FD5-IRV Series
- u. Focus Range
 - 1. FD5-V Series
 - 2. FD5-DV, FD5-IRV Series
- v. Horizontal Angle of View

Sony[®] 1/3-inch EXview HAD CCD II[™] 960H Sony DSP, Effio-E[™]

976 (H) x 494 (V)

976 (H) x 582 (V)

5.58 (H) mm x 4.67 (V) mm (0.22 x 0.18 inch)

525 lines; 2.1 interlace

625 lines; 2:1 interlace

Horizontal, 15.734 kHz; Vertical, 59.94 Hz Horizontal, 15.625 kHz; Vertical, 50.00 Hz

Internal

650 TVL

Varifocal

f/1.2; 2,850°K; 30 IRE; Color 0.1 lux;

Mono 0.05 lux

f/1.2; 2,850°K; 30 IRE; Color 0.1 lux;

Mono 0.04 lux

f/1.2; 2,850°K; 30 IRE; Color 0.1 lux;

Mono 0.0 lux

Fixed

Yes, D/N switch

Yes, D/N switch

Gamma selectable (ATR)

25 m

>40% at 850 nm, peak response

ICR

ICR and LEDs

1/50~1/10,000 sec

1.0 Vp-p, NTSC/PAL composite, 75 ohms,

BNC connector

ATW/Manual/Push/Push;

Lock/User1/User2/Anti CR

ATW/Manual/Push/Push;

Lock/User 1/User3/Anti CR

ATW/Manual/Push/Push

Lock/User1/User4/Anti CR

48 dB(>52 dB by parameter adjustment)

3.0 to 9.0 mm

2.8 mm to 10.5 mm

∞ to 0.5 m (1.6 ft)

∞ to 0.3 m (1.0 ft)

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1. FD5-V Series

2. FD5-DV, FD5-IRV Series

w. Vertical Angle of View1. FD5-V Series

2. FD5-DV, FD5-IRV Series

x. Adjusting Angle

1. Panning Range

2. Tilting Range

i. FD5-V, FD5-DV Series

ii. FD5-IRV Series

3. Rotation Range

y. Noise Reduction

z. Motion Detection

aa. Privacy Zones

bb. Camera Titles

1. FD5-DV, FD5-IRV Series

cc. Alarm Out

1. FD5-DV, FD5-IRV Series

2. Electrical Specifications

a. Power Requirement

b. Power Consumption

1. FD5-V, FD5-DV Series

2. FD5-IRV Series

c. Power Connector

d. Video Connector

3. Environmental Specifications

a. Operating Temperature

b. Operating Humidity

c. Impact Resistance

4. Physical Specifications

a. Back Box Construction

b. Bubble Type

c. Weight

1. FD5-V, FD5-DV Series

2. FD5-IRV Series

5. Certifications

a. CE, Class B

b. FCC, Class B

c. UL/cUL Listed

d. Meets IP66 standards

L. Warranty

. 36-months, parts and labor

M. Pelco Model Numbers

85.3° at 3.0 mm wide zoom; 31.5° at 9.0 mm telephoto zoom 101.8° at 2.8 mm wide zoom; 27.4° at 10.5 mm telephoto zoom

63.8° at 3.0 mm wide zoom; 23.7° at 9.0 mm telephoto zoom 73.7° at 2.8 mm wide zoom; 20.6° at 10.5 mm telephoto zoom

±180°

+90° to 0°

+55° to 0°

±180°

2D

Included (4 areas) Included (8 areas)

Included

1

12 VDC/24 VAC +10% to -15%, 60 Hz

2.5 W (without heater); 43 W (with heater on)

4 W (IR on, without heater);

47 W (IR on, with heater on)

2-pin terminal block with screw terminals BNC

.

 -30° to 50° C (-22° to 122° F)

20% to 80%, noncondensing

IK10

ABS plastic Lightly obscured

0.73 kg (1.61 lb)

0.75 kg (1.61 lb)

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December 1, 2014

Queens, NY 11435

SECTION 28 31 00 - FIRE ALARM SYSTEM

PART 1 - GENERAL

1.1 RELATED DOCUMENTS:

- A. Drawings and general provisions of Contract, including General and supplementary Conditions and Division 1 Specification Sections, apply to this section.
- B. Requirements of the following Divisions apply to this Section:
 - 1. Division 23 HVAC
 - 2. Division 26 Electrical

1.2 SUMMARY:

- A. Furnish and install Fire Alarm System in rooms as described herein and as shown on the plans; to be wired, connected, and left in first-class operating condition. The fire alarm system shall include manual pull stations, automatic fire (smoke and heat) detectors, audio/visual devices (horns and flashing lights). All wiring, connections to devices, outlet boxes, junction boxes, and all other necessary material for a complete operating system shall be included.
- B. The fire protection system shall be installed and operational prior to occupancy. The Contractor shall arrange for all work and be responsible for all costs associated with installing the fire protection service.
- C. All peripheral devices shall be the standard product of an existing fire alarm panel manufacturer, and shall display the manufacturer's name on each component.

1.3 SYSTEM DESCRIPTION:

A. The System shall consist of initiating devices and indicating appliances wired to the fire alarm panel. The System shall generate audible alarms throughout all signal speakers and signal lamps shall flash continuously throughout at the activation of any of the fire detectors, until manually reset.

1.4 OPERATION:

A. The System alarm operation subsequent to the alarm activation of any manual station, or

Fire Alarm System

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automatic detection device shall be to cause a zone alarm condition at the central panel.

B. The operation of the system shall be in compliance with all applicable fire alarm codes.

1.5 SUBMITTALS:

- A. Shop drawings shall be submitted and comply with the provision of Division 1, General Provisions, and the following:
 - 1. Manufacturer's catalog sheets, specifications, and installation instructions.
 - 2. The shop drawings shall include in addition to a riser diagram, a floor plan of each area, minimum scale 1/8-inch equals one foot. The floor plans shall show the location of all alarm system equipment and wiring.
 - 3. At the time shop drawings are submitted, submit two complete sets of shop drawings to the Engineer for their record and comment. The Contractor shall be responsible for any extra costs required because of failure to submit shop drawings the start of construction.
- B. Test Reports: Final system test report.
- C. Certificate: Affidavit, signed by the approved manufacturer's factory engineer and notarized, certifying that the system meets the Contract requirements and is operating properly.

1.6 QUALITY ASSURANCE:

- A. Each and all items of the Fire Alarm System shall be listed as a product of an existing fire alarm system manufacturer under the appropriate category by the Underwriters' Laboratories, Inc. (UL) and shall bear the "U.L." label.
- B. The complete installation shall conform to the applicable sections of NFPA-72 A through H, Local Code Requirements and New York City Building Code
- C. The fire alarm system shall be UL listed and in accordance with all applicable documents, and shall also be acceptable to and meet all requirements of the local Fire Marshal and other authorities having jurisdiction.

1.7 WARRANTY

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- A. Project Warranty: Refer to Conditions of the Contract for project warranty provisions.
- B. The contractor shall provide a one (1) year written guarantee, covering the materials and workmanship. Should any defects occur during the stated period, they shall be corrected immediately, and all damage caused by such defects shall be corrected. All corrective work shall be at the Contractor's expense.
- C. Warranty: Shall Commence on Date of the entire Project Substantial Completion, as defined by the DDC General Conditions.
- D. The equipment manufacturer shall make available to the Engineer a maintenance contract proposal to provide a minimum of two (2) inspections and tests per year in compliance with NFPA-72H guidelines.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

Existing FA system in the building is manufactured by "Siemens". Contractor has to provide and install Siemens manufactured or Siemens compatible approved equal fire alarm devices as indicated in contract documents.

2.2 PERIPHERAL DEVICES - FIRE ALARM SYSTEM:

A. Smoke Detectors

- Smoke detectors shall be ionization type UL 268 listed. The detectors shall have a functional test feature that simulates smoke and shall be designed for twist-lock mounting on the separate base assembly.
- Each detector shall have a flashing status indicating LED for visual supervision.
 When the detector is actuated, the flashing LED will latch on steady and at full brilliance. The detector may be reset by actuating the control panel reset switch.
- 3. To minimize nuisance alarms, voltage and RF transient suppression techniques shall be employed as well as a smoke verification circuit and an insect screen. The detector design shall provide full solid-state construction and compatibility with other normally open fire alarm detection loop devices (heat detectors, pull stations, etc.). The detector head shall be easily disassembled to facilitate cleaning.

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B. Control Relay/ Monitoring Modules

- 1. The control relay module shall provide four Form-C auxiliary relay circuits rated at 5 amperes, 28 VDC. An expansion circuit board shall allow expansion to eight Form-C relays per module.
- 2. Each relay circuit shall be capable of being activated (change in state) by any initiating device or from any combination of initiating devices.
- 4. The module shall provide a momentary switch per relay circuit that may be used to manually turn the relay ON/OFF or to disable the relay.
- Each relay circuit shall include a custom label inserted to identify its location.
 Labels shall be created using a standard typewriter or word processor.
- 6. The control relay module shall be provided with removable wiring terminal blocks for ease of installation and service. The terminal blocks shall be UL listed for use with up to 12 AWG wire.

PART 3 - EXECUTION

3.1 INSTALLATION:

- A. Install fire alarm system in accordance with the plans and specifications, all applicable codes and the manufacturer's recommendations. All wiring for the Fire Alarm section shall be in a completely separate conduit system. All junction boxes shall be sprayed red and labeled "FIRE ALARM". Wiring color codes shall be maintained throughout the installation.
- B. The manufacturer's authorized representative shall provide onsite supervision of installation and must meet all qualifications regarding certification and training as listed.
- C. Clean all dirt and debris from the inside and the outside of the fire alarm equipment after completion of installation.
- D. Provide DCAS approved fire watch services, as necessary, during disruption of fire alarm system.
- E. Coordinate the installation with DCAS' contractor who currently maintains the buildings fire alarm system. Where required, hire DCAS's contractor to complete fire alarm panel modifications, fire alarm drawing revisions, FDNY permit filing, and central fire alarm system re-programming.

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F. Label all installed equipment as it is identified on the programmable central fire alarm panel.

3.2 TESTING:

A. The completed fire alarm system shall be fully tested in accordance with NFPA-72H by the Contractor in the presence of the Engineer's representative, the Local Fire Marshal and DCAS' contractor who maintains the existing fire alarm system. Upon completion of a successful test, the Contractor shall provide a certified test report to the Engineer.

End of Section 28 31 00

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CO300ELV2

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

30-30 THOMSON AVENUE

LONG ISLAND CITY, NEW YORK 11101-3045

TELEPHONE (718) 391-1000

WEBSITE www.nyc.gov/buildnyc

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

CONTRACT NO. 1

GENERAL CONSTRUCTION

Queens Supreme Court Elevator Modernization Re-Bid

LOCATION:

88-11 Sutphin Boulevard

BOROUGH:

Queens 11435

CITY OF NEW YORK		
Contractor	-	
Dated		, 20
Entered in the Comptroller's Office		
First Assistant Bookkeeper		
Dated		, 20



