

ISSUE FOR RE-BID: JULY 13, 2022

PROJECT MANUAL

VOLUME 1 OF 1: DIVISIONS 00 – 33

TOWN/VILLAGE of MOUNT KISCO Water Department Building Addition

CONTRACT 2022.09

The design of this project conforms to applicable provisions of the New York State Uniform Fire Prevention and Building.



DOCUMENT 000101 - PROJECT TITLE PAGE

1.1 PROJECT MANUAL VOLUME 1

- A. Water Department Building Addition
 - 1. The Village/Town of Mount Kisco.
 - 2. Mount Kisco NY 10549.
- B. Owner Project No. 2022-09.
- C. Architect Project No. 21-01.
- D. Bar Down Studio, Inc.
- E. PO Box 721.
- F. Beacon NY 12508.
- G. Phone: 845-559-3187.
- H. Web Site: www.bardownstudio.com.
- I. Issued: 13 July 2022.
- J. Copyright 2022, Bar Down Studio. All rights reserved.

END OF DOCUMENT 000101

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DOCUMENT 000107 - SEALS PAGE

1.1 DESIGN PROFESSIONALS OF RECORD

- A. Architect:
1. Dana Hochberg, R.A.
 2. 037172.
 3. Responsible for Divisions 01-49 Sections except where indicated as prepared by other design professionals of record.
- B. Structural Engineer:
1. Christopher A. Leshner, P.E..
 2. 074148.
 3. Responsible for Division 03, Division 05 (structural), and Division 31.
- C. Plumbing Engineer:
1. Kevin D. Schaefer P.E.
 2. 067273.
 3. Responsible for Division 22.
- D. HVAC Engineer:
1. Kevin D. Schaefer P.E.
 2. 067273.
 3. Responsible for Division 23.
- E. Electrical Engineer:
1. Kevin D. Schaefer P.E.
 2. 067273.
 3. Responsible for Division 26.

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SECTION 000115 - LIST OF DRAWING SHEETS

1.1 LIST OF DRAWINGS

- A. Drawings: Drawings consist of the Contract Drawings listed on the Table of Contents page of the separately bound drawing set titled 'Water Department Building Addition, Construction Documents, dated July 13, 2022, as modified by subsequent Addenda and Contract modifications.

END OF SECTION 000115

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**NOTICE TO BIDDERS
VILLAGE/TOWN OF MOUNT KISCO
WATER DEPARTMENT BUILDING
ADDITION & RENOVATIONS
MOUNT KISCO, NEW YORK 10549
Telephone: (914) 864-0001; Fax: (914) 241-9018**

Sealed proposals for performing the work herein described will be received by the Village/Town of Mount Kisco, NY, at the Office of the Village Manager, Village Hall, 104 E Main Street, Mount Kisco, NY 10549, until **August 3, 2022 at 10:00 A.M.** and immediately thereafter the bids will be opened and read aloud. Bidders are invited to view the opening via Zoom Meeting teleconference, **Meeting ID: 886 3369 1521** or <https://us02web.zoom.us/j/88633691521>.

The work consists of furnishing all labor, materials and equipment necessary for building addition and interior renovations at the Water Department Building in accordance with the plans and specifications. The project is located at 43 Columbus Avenue, Mount Kisco, NY 10549 and must be completed by **March 3, 2023**.

Complete digital sets of Bidding Documents, drawings and specifications, may be obtained online as a download for a non-refundable fee of (\$100), or viewed at no charge, at www.usinglesspaper.com under 'Public Projects.'

Bids shall be made on the Proposal Forms furnished with the Specifications and must be accompanied by a Bid Bond acceptable to the Village or a certified cashier's check drawn on a solvent bank in the amount of not less than 5% of the total amount of the Bid. Checks shall be made payable to the Village/Town of Mount Kisco, NY, and are to be held by the Village as a guarantee for the proper execution and delivery of the Contract and bonds to secure the faithful performance thereof. In default of such execution and delivery of Contract and Bonds, the amount of the deposit represented by the check shall be forfeited to and retained by the Village/Town of Mount Kisco as liquidated damages.

Proposals may be submitted via hard copy by mail only, and shall be enclosed in a sealed envelope bearing the name and address of the Bidder, addressed to the Village/Town of Mount Kisco, Village Hall, 104 E Main Street, Mount Kisco, NY and endorsed "WATER DEPARTMENT BUILDING."

The Village Manger reserves the right to reject any and all Bids, to waive any informality in any Bid, and to award the Contract to other than the lowest Bidder if deemed in the best interest of the Village to do so.

Edward W. Brancati, Village Manger
Mount Kisco, NY

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SECTION 002113 - INSTRUCTIONS TO BIDDERS

PART 1 - DEFINITIONS

- A. Bidding Documents include the Bidding Requirements and the proposed Contract Documents. The Bidding Requirements consist of the Advertisement to Bid, Instruction to Bidders, the Bid Form, Supplementary Bid Forms and other sample bid and contract forms.
- B. The Contract Documents include the executed Contract Forms between the Owner and Contractor and that Agreement's Exhibits, Contractor's executed Bid Form, executed Supplementary Bid Forms, Conditions of the Contract (General and other Conditions), Drawings, Specifications and all Addenda issued prior to execution of the Contract.
- C. Definitions set forth in the General Conditions of the Contract of Construction, or in other Contract Documents are applicable to the Bidding Documents.
- D. Addenda are written or graphic instruments issued by the Architect prior to the execution of the Contract which modify or interpret the Bidding Documents by additions, deletions, clarifications or corrections.
- E. A Bid is a complete and properly executed proposal to do the Work for the sums stipulated therein, submitted in accordance with the Bidding Documents.
 - 1. Wherever the word "Bid" occurs in the documents, it refers to Bidders Proposal.
- F. The Base Bid is an amount stated on the Bid for which the Bidder offers to perform the Work described in the Bidding Documents.
- G. An Alternate is an amount stated on the Bid Form to be added to or deducted from the amount of the Base Bid if the corresponding change in the Work, as described in the Bidding Documents, is accepted by the Owner.
- H. A Unit Price is an amount stated on the Bid Form as a price per unit of measurement for materials, equipment or services for a portion of the Work as described in the Bidding Documents.
- I. A Bidder is a person or entity who submits a Bid and who meets the requirements set forth in the Bidding Documents.
- J. A Sub-bidder is a person or entity who submits a Bid to a Bidder for materials, equipment or labor for a portion of the Work.

PART 2 - BIDDER'S REPRESENTATIONS

- A. The Bidder by making a Bid represents that:
 - 1. The Bidder has read and understands the Bidding Documents, to the extent that such documentation relates to the Work for which the Bid is submitted, and for other portions of the Project, if any, being Bid concurrently or presently under construction.
 - 2. The Bid is made in compliance with the Bidding Documents.
 - 3. The Bidder has visited the site, become familiar with local conditions under which the Work is to be performed and has correlated the Bidder's personal observations with the requirements of the proposed Contract Documents.
 - 4. The Bid is based upon the materials, equipment and systems required by the Bidding Documents without exception.

- B. Each Bidder is required to form an individual opinion of the quantities and character of construction work by personal examination of the site and all existing facilities where the project work is to be done, and of the plans and specifications relating to it by such means as is preferred. Each Bidder shall inspect accessible concealed areas of existing construction, provided no significant permanent damage is inflicted upon the property. Lack of knowledge about conditions in accessible concealed areas shall not be the basis for additional cost claims at a later time.

PART 3 - BIDDING DOCUMENTS

3.1 COPIES

- A. Bidding Documents are available as detailed in the Advertisement for Bids.

3.2 INTERPRETATION OR CORRECTION OF BIDDING DOCUMENTS

- A. The Bidder shall carefully study and compare the Bidding Documents with each other, and with other work being Bid concurrently or presently under construction to the extent that it relates to the Work for which the Bid is submitted, shall examine the site and local conditions, and shall at once report to the Architect errors, inconsistencies or ambiguities discovered. All reports shall be in writing.
- B. No interpretation of the meaning of the Bidding Documents, existing conditions, or of the scope of Work will be made verbally. Provide every request for such interpretation in writing, addressed to the Architect and to be given consideration must be received at least eight (8) working days prior to the date of the Bid Opening.
- C. Interpretations, corrections and changes of the Bidding Documents will be made by Addendum. Interpretations, corrections and changes of the Bidding Documents made in any other manner will not be binding, and Bidders are not required to rely upon them.
- D. The Bidding Documents for this project have been prepared using certain existing construction documents furnished by the Owner, which pertain to the construction of the existing conditions, and limited observations obtained by the Architect at the project site.
 - 1. More extensive investigations of existing conditions, including disassembly or testing of existing building components, was not undertaken by the Architect.
 - 2. Portrayal of such existing conditions obscured or concealed from the Owner or Architect's view prior to the start of this Project's construction activities, is based on reasonable implications and assumptions. The Owner and Architect do not imply or guarantee to the Bidders, in any way, that such portrayals are accurate or true existing conditions.
- E. If there is any inconsistency in the Drawings or between the Drawings and the Specifications or between or within any of the Contract Documents, unless otherwise ordered in writing by the Owner, the Contractor shall provide or abide by the better quality of, or the greater quantity of, Work, materials or services for the benefit of the Owner.

3.3 EQUIVALENTS

- A. Each Bidder shall base his Bid upon the materials and equipment described in the Bidding Documents to the fullest extent possible.
- B. In the specifications, two or more kinds, types, brands, or manufacturers or materials may be named. They shall be regarded as the required standard of quality, and overall, are judged to be equivalent by the Architect. The Bidder may select one of these named items as the basis for his Bid or, if the Bidder desires to use any other kind, type, brand, or manufacturer or material other than those named in the specification,

he shall indicate in writing, when requested, and prior to the award of the Contract, what kind, type, brand, or manufacturer he proposes in lieu of the named specified item(s).

3.4 ADDENDA

- A. All bid addenda will be transmitted to plan holders via email to registered Plan Holders.
- B. Copies of Addenda will be made available for inspection wherever Bidding Documents are on File for that purpose.
- C. Addenda will not be issued later than five (5) working days prior to the time specified for receipt of Bids, except any Addendum withdrawing the request for Bids or one which includes postponement of the time for receipt of Bids.
- D. Each Bidder shall ascertain upon submitting a Bid that the Bidder has received all Addenda issued, and the Bidder shall acknowledge their receipt on the Bid Form.

3.5 TAX LIABILITY

- A. Bidders are exempt from payment of manufacturer's excise taxes for materials purchased for the exclusive use of the Owner, provided that manufacturer has complied with rules and regulation of the Commissioner of Internal Revenue Service.
- B. New York State Sales Tax does not apply to this project. Contractors are exempt from payment on purchase of materials for the execution of this Contract and such taxes shall not be included in Bids. Exemption Certificates will be provided upon request.
- C. All other taxes shall be included in the Bid.

3.6 PRE-BID CONFERENCE

- A. There will be a Pre-bid Conference as detailed in the Preliminary Schedules. A lack of representation at the Pre-bid Conference will not be justification for additional costs due to unforeseen conditions during the construction phases of the Contract.

PART 4 - BIDDING PROCEDURES

4.1 PREPARATION OF BIDS

- A. Bids shall be submitted on forms identical to the Bid Forms contained in this Project Manual, or submitted using unaltered and legible copies thereof.
- B. All blanks on the Bid Form shall be legible executed in a non-erasable medium.
- C. Sums shall be expressed in both words and figures. In case of discrepancy, the amount written in word shall govern.
- D. Interlineations, alterations and erasures must be initialed by the signer of the Bid.
- E. Bid all requested alternates. If no change in the Base Bid is required, enter "No Change."
- F. Each copy of the Bid Form shall state the legal name of the Bidder and the nature of legal form of the Bidder. The Bidder shall provide evidence of legal authority to perform within the jurisdiction of the Work. Each Bid Form copy shall be signed by the person or persons legally authorized to bind the Bidder to a Contract. A

Bid by a corporation shall further give the state of incorporation and have the corporate seal affixed. A Bid submitted by an agent shall have a current power of attorney attached certifying the agent's authority to bind the Bidder.

4.2 BID SECURITY

- A. Each Bid must be accompanied by a certified bank check of the Bidder, or a Bid Bond prepared by a surety company licensed in New York State.
 - 1. Bid Security shall be provided in the amount of five (5) percent of the dollar amount of the Base Bid.
 - 2. Bid security shall be payable to The Village of Mt. Kisco.
 - 3. If certified check is utilized, the Bidder shall provide written confirmation from a licensed New York State Surety company that Performance and Payment Bonds will be available to said Bidder for this project.
 - 4. The apparent successful Bidder, upon failure or refusal to furnish the required Performance and Payment Bonds and execute a Contract within forty-five (45) calendar days after receipt of notice of the acceptance of Bid, shall forfeit the Bid Security as liquidated damages for such failure to refusal, and not as a penalty.
 - 5. The successful Bidder shall have the Bid Security returned upon execution of an Owner/Contractor Agreement.
 - 6. Unsuccessful Bidders shall have their Bid Security returned following the execution of the Owner/Contractor Agreement or the 45 day period following the Bid Opening, whichever occurs first.
 - 7. The Bid Security shall not be forfeited to the Owner in the event the Owner fails to comply with subparagraph 6.2.
- B. Surety Bond shall be written on AIA Document A310, Bid Bond, and the attorney-in-fact that executes the bond on behalf of the surety shall affix to the bond a certified and current copy of the power of attorney.
- C. Owner will have the right to retain the Bid Security of Bidders to whom an award is being considered until either:
 - 1. The Contract has been executed and bonds, when required, have been furnished;
 - 2. The specified time has elapsed so that Bids may be withdrawn or;
 - 3. All Bids have been rejected.

4.3 SUBMISSION OF BIDS

- A. All copies of the Bid, the Bid Security, and any other documents required to be submitted with the Bid shall be enclosed in a sealed opaque envelope. The envelope shall be addressed to the party receiving the Bids and shall be identified with the Project name, the Bidder's name and address and, if applicable, the designated Contract for which the Bid is submitted. If the Bid is sent by mail, the sealed envelope shall be enclosed in a separate mailing envelope with the notation "SEALED BID ENCLOSED" on the face thereof.
 - 1. If Bidder submits for different Contracts, each shall be submitted individually and so labeled for that Contract.
- B. Bids shall be deposited at the designated location prior to the time and date indicated in the Invitation to Bidders for receipt of Bids. Bids received after the time and date for receipt of Bids will be rejected and returned unopened.
 - 1. The Bidder shall assume full responsibility for timely delivery at the location designated for receipt of Bids.
 - 2. Oral, telephonic, telegraphic, facsimile or other electronically transmitted Bids will not be considered.
- C. Bids not exhibiting original signatures or seals will not be accepted as a responsive Bid.

D. Bids shall be submitted in duplicate. Executed forms required for each submitted Bid are as follows:

1. Bid Form and Supplements
2. Resolution
3. Iran Divestment Act Certification
4. Bid Security
5. Certification of Bidder Responsibility
6. CDBG Bidder's Certification
7. CDBG Subcontractor's Certification
8. CDBG Section 3 Bidder's Certification
9. CDBG Subcontractor List
10. CDBG Wage Rate Certification

4.4 MODIFICATION OR WITHDRAWAL OF BID

- A. A Bid may not be modified, withdrawn or canceled by the Bidder during the stipulated time period following the time and date designated for the receipt of Bids, and each Bidder so agrees in submitting a Bid. No Bidder may withdraw a Bid within the forty-five (45) day period following the time of the Bid Opening.
- B. Prior to the time and date designated for receipt of Bids, a Bid submitted may be modified or withdrawn by notice to the party receiving Bids at the place designated for receipt of Bids. Such notice shall be in writing over the signature of the Bidder. Written confirmation over the signature of the Bidder shall be received, and date and time-stamped by the receiving party on or before the date and time set for receipt of Bids. A change shall be so worded as not to reveal the amount of the original Bid.
- C. Withdrawn Bids may be resubmitted up to the date and time designated for the receipt of Bids provided that they are then fully in conformance with these Instructions to Bidders.

PART 5 - CONSIDERATION OF BIDS

5.1 OPENING OF BIDS

- A. At the discretion of the Owner, the properly identified Bids received on time will be publicly opened and will be read aloud. An abstract of the Bids may be made available to Bidders.

5.2 REJECTION OF BIDS

- A. The Owner shall maintain the right to reject any or all Bids. A Bid not accompanied by the required Bid Security or by other data required by the Bidding Documents, or which is in any way incomplete or irregular is subject to rejection.

5.3 AWARD OF BID

- A. It is the intent of the Owner to award a Contract to the lowest qualified Bidder provided the Bid has been submitted in accordance with the requirements of the Bidding Documents and does not exceed the funds available. The Owner shall have the right to waive informalities and irregularities in a Bid received and to accept the Bid which, in the Owner's judgment, is in the Owner's own best interest.
- B. The Owner shall have the right to accept Alternates in any order or combination, unless otherwise specifically provided in the Bidding Documents, and to determine the lowest Bid on the basis of the sum of the Base Bid and Alternates accepted.

PART 6 - SUPPLEMENTARY BID INFORMATION

6.1 CONTRACTOR'S QUALIFICATION STATEMENT

- A. Bidders to whom award of a Contract is under consideration shall submit to the Architect, within three (3) calendar days, a properly executed AIA Document A305, Contractor's Qualification Statement, unless such statement has been previously required and submitted as a prerequisite to the issuance of Bidding Documents.

6.2 OWNERS FINANCIAL CAPABILITY

- A. The Owner shall, at the request of the Bidder to whom award of a Contract is under consideration and no later than seven (7) days prior to the expiration of the time for withdrawal of Bids, furnish to the Bidder reasonable evidence that financial arrangements have been made to fulfill the Owner's obligations under the Contract. Unless such reasonable evidence is furnished, the Bidder will not be required to execute the Agreement between the Owner and Contractor.

6.3 SUBMITTALS

- A. Within three (3) calendar days following the Bid Opening time, the apparent lowest Bidder, shall furnish to the Owner through the Architect the following information:
 - 1. Subcontractor list.
 - 2. Itemized identification of Work to be self-performed.
 - 3. Substitution list.
 - 4. Material and Equipment List.
 - 5. Schedule of Values.
 - 6. Cost breakdown.
- B. The Bidder will be required to establish to the satisfaction of the Owner and Architect the reliability and responsibility of the persons or entities proposed to furnish and perform the Work described in the Bidding Documents.
- C. Upon request only, the apparent second and third low Bidders shall be prepared to submit the information of paragraphs 6.1 and 6.3.A.
- D. Prior to the execution of the Contract, the Bidder will be notified in writing if either the Owner or Architect, after due investigation, has reasonable objection to a person or entity proposed by the Bidder. If the Owner or Architect has reasonable objection to a proposed person or entity, the Bidder may, at the Bidder's option, (1) withdraw the Bid or (2) submit an acceptable substitute person or entity. In the event of withdrawal or disqualification, Bid Security will not be forfeited.
- E. Persons and entities proposed by the Bidder and to whom the Owner and Architect have made no reasonable objection must be used on the Work for whom they were proposed and shall not be changed except with the written consent of the Owner and Architect.
- F. Any Bidder, upon failure to submit the information required in subparagraphs 6.1.A, 6.3.A, and 6.3.B in the allowed time, may have the Bid rejected. In that event, the Bidder shall forfeit the Bid Security to the Owner as liquidated damages for such failure or refusal, and not as penalty.

6.4 BOND REQUIREMENTS

- A. The Owner requires the apparent successful Bidder to furnish and deliver bonds, covering the faithful performance of the Contract Work and payment of all obligations arising thereunder duly executed by the Bidder and a surety company licensed to do business in New York State.
- B. The premiums shall be included in the Bid and paid by the Contractor. The Bidder shall proportionally distribute the costs of such bonds between the Base Bid and any Alternates.

6.5 TIME OF DELIVERY AND FORM OF BONDS

- A. The Bidder shall deliver the required bonds to the Owner through the Architect on or before the time of execution of the Owner/Contractor Agreement. Bonds shall be payable to The Village of Mt. Kisco.
- B. Unless otherwise provided, the bonds shall be written on AIA Document A312, Performance Bond and Payment Bond. Both bonds shall be written in the amount of the Contract Sum.
- C. The bonds shall be dated the same as the Owner/Contractor Agreement.
- D. The Bidder shall require the attorney-in-fact who executes the required bonds on behalf of the surety to affix thereto a certified and current copy of the power of attorney.

PART 7 - FORM OF AGREEMENT BETWEEN OWNER AND CONTRACTOR

- A. The form of agreement between Owner and Contractor shall be based on the Owner-Contractor Agreement included herein.

END OF SECTION 002113

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SECTION 002600 - PROCUREMENT SUBSTITUTION PROCEDURES

1.1 DEFINITIONS

- A. Procurement Substitution Requests: Requests for changes in products, materials, equipment, and methods of construction from those indicated in the Procurement and Contracting Documents, submitted prior to receipt of bids.
- B. Substitution Requests: Requests for changes in products, materials, equipment, and methods of construction from those indicated in the Contract Documents, submitted following Contract award. See Section 012500 "Substitution Procedures" for conditions under which Substitution requests will be considered following Contract award.

1.2 QUALITY ASSURANCE

- A. Compatibility of Substitutions: Investigate and document compatibility of proposed substitution with related products and materials. Engage a qualified testing agency to perform compatibility tests recommended by manufacturers.

1.3 PROCUREMENT SUBSTITUTIONS

- A. Procurement Substitutions, General: By submitting a bid, the Bidder represents that its bid is based on materials and equipment described in the Procurement and Contracting Documents, including Addenda. Bidders are encouraged to request approval of qualifying substitute materials and equipment when the Specifications Sections list materials and equipment by product or manufacturer name.
- B. Procurement Substitution Requests will be received and considered by Owner when the following conditions are satisfied, as determined by Architect; otherwise requests will be returned without action:
 - 1. Extensive revisions to the Contract Documents are not required.
 - 2. Proposed changes are in keeping with the general intent of the Contract Documents, including the level of quality of the Work represented by the requirements therein.
 - 3. The request is fully documented and properly submitted.

1.4 SUBMITTALS

- A. Procurement Substitution Request: Submit to Architect. Procurement Substitution Request must be made in writing by prime contract Bidder only in compliance with the following requirements:
 - 1. Requests for substitution of materials and equipment will be considered if received no later than 10 days prior to date of bid opening.
 - 2. Submittal Format: Submit three copies of each written Procurement Substitution Request, using CSI Substitution Request Form 1.5C.
 - 3. Submittal Format: Submit Procurement Substitution Request, using format provided on Project Web site.
 - a. Identify the product or the fabrication or installation method to be replaced in each request. Include related Specifications Sections and drawing numbers.
 - b. Provide complete documentation on both the product specified and the proposed substitute, including the following information as appropriate:
 - 1) Point-by-point comparison of specified and proposed substitute product data, fabrication drawings, and installation procedures.

- 2) Copies of current, independent third-party test data of salient product or system characteristics.
 - 3) Samples where applicable or when requested by Architect.
 - 4) Detailed comparison of significant qualities of the proposed substitute with those of the Work specified. Significant qualities may include attributes such as performance, weight, size, durability, visual effect, sustainable design characteristics, warranties, and specific features and requirements indicated. Indicate deviations, if any, from the Work specified.
 - 5) Material test reports from a qualified testing agency indicating and interpreting test results for compliance with requirements indicated.
 - 6) Research reports, where applicable, evidencing compliance with building code in effect for Project, from ICC-ES.
 - 7) Coordination information, including a list of changes or modifications needed to other parts of the Work and to construction performed by Owner and separate contractors, which will become necessary to accommodate the proposed substitute.
- c. Provide certification by manufacturer that the substitute proposed is equal to or superior to that required by the Procurement and Contracting Documents, and that its in-place performance will be equal to or superior to the product or equipment specified in the application indicated.
 - d. Bidder, in submitting the Procurement Substitution Request, waives the right to additional payment or an extension of Contract Time because of the failure of the substitute to perform as represented in the Procurement Substitution Request.
- B. Architect's Action:
1. Architect may request additional information or documentation necessary for evaluation of the Procurement Substitution Request. Architect will notify all bidders of acceptance of the proposed substitute by means of an Addendum to the Procurement and Contracting Documents.
- C. Architect's approval of a substitute during bidding does not relieve Contractor of the responsibility to submit required shop drawings and to comply with all other requirements of the Contract Documents.

END OF SECTION 002600



SUBSTITUTION REQUEST FORM (DURING BID)

Project: _____ Substitution Request Number: _____

From: _____
To: _____ Date: _____

A/E Project Number: _____
Re: _____ Contract For: _____

Specification Title: _____ Description: _____
Section: _____ Page: _____ Article/Paragraph: _____

Proposed Substitution: _____
Manufacturer: _____ Address: _____ Phone: _____
Trade Name: _____ Model No.: _____

Attached data includes product description, specifications, drawings, photographs, and performance and test data adequate for evaluation of the request; applicable portions of the data are clearly identified.

Attached data also includes a description of changes to the Contract Documents that the proposed substitution will require for its proper installation.

The Undersigned certifies:

- Proposed substitution has been fully investigated and determined to be equal or superior in all respects to specified product.
- Same warranty will be furnished for proposed substitution as for specified product.
- Same maintenance service and source of replacement parts, as applicable, is available.
- Proposed substitution will have no adverse effect on other trades and will not affect or delay progress schedule.
- Proposed substitution does not affect dimensions and functional clearances.
- Payment will be made for changes to building design, including A/E design, detailing, and construction costs caused by the substitution.

Submitted by: _____
Signed by: _____
Firm: _____
Address: _____

Telephone: _____

A/E's REVIEW AND ACTION

- ☐ Substitution approved - Make submittals in accordance with Specification Section 013300.
☐ Substitution approved as noted - Make submittals in accordance with Specification Section 013300.
☐ Substitution rejected - Use specified materials.
☐ Substitution Request received too late - Use specified materials.

Signed by: _____ Date: _____

Supporting Data Attached: ☐ Drawings ☐ Product Data ☐ Samples ☐ Tests ☐ Reports ☐ _____

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SECTION 003113 - PRELIMINARY SCHEDULES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provision of the Contract, including General and Special Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. This Section includes the following:
 - 1. Project Milestone Schedule for project duration.

1.3 DEFINITIONS

- A. 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.
 - 1. Critical activities are activities on the critical path. They must start and finish on the planned early start and finish times.
 - 2. Predecessor activity is an activity that must be completed before a given activity can be started.
- B. Critical Path: The longest continuous chain of activities through the network schedule that establishes the minimum overall Project duration.
- C. Event: The starting or ending point of an activity.
- D. Major Area: A story of construction, a separate building, or a similar significant construction element.
- E. Milestone: A key or critical point in time for reference or measurement.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION

3.1 PREPARATION

- A. Preparation of Prime Contractor Construction Schedule: Refer to Division 01 Sections "Submittals" and "Construction Progress Documentation" for administrative requirements governing preparation and submittal thereof.
- B. Contractors' own preliminary detailed schedule is due at, or prior to the Pre-Construction Conference.
- C. The approved Project Master Schedule shall supersede all previous schedules. Project Master Schedule shall be reviewed bi-weekly and updated as required, with each revision taking precedence over previously issued.

PART 4 - MILESTONE SCHEDULE

4.1 In order to meet the Substantial Completion dates, all overtime costs for extended work hours, Saturdays (and Sundays when required) must be included in the contractor's bid; no special consideration will be given to any contractor that fails to include said costs in his/her bid. Extended work days and/or hours will be required to make up lost time due to weather and other unforeseen occurrences.

A.	Issue for Bid	13 July 2022
B.	Pre-Bid Meeting	20 July 2022 @ 10 a.m.
C.	Bids Due	03 August 2022 @ 10 a.m.
D.	Contract Award/Notice to Proceed	08 August 2022
E.	Substantial Completion	03 February 2023
F.	Final Completion	03 March 2023

END OF SECTION 013113

SECTION 003119 - EXISTING HAZARDOUS MATERIAL INFORMATION

1.1 EXISTING HAZARDOUS MATERIAL INFORMATION

- A. This Document with its referenced attachments is part of the Procurement and Contracting Requirements for Project. They provide Owner's information for Bidders' convenience and are intended to supplement rather than serve in lieu of Bidders' own investigations. They are made available for Bidders' convenience and information, but are not a warranty of existing conditions. This Document and its attachments are not part of the Contract Documents.
 - 1. An existing asbestos report for Project, prepared by Quality Environmental Solutions & Technologies, Inc., dated February 11, 2022, is available for viewing as appended to this Document.
 - 2. Bidders may examine any available existing conditions information by giving Owner reasonable advance notice.
- B. Related Requirements:
 - 1. Document 002113 "Instructions to Bidders" for the Bidder's responsibilities for examination of Project site and existing conditions.

END OF SECTION 003119

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Quality Environmental Solutions & Technologies, Inc.

**PRE-DEMOLITION SURVEY REPORT
FOR
ASBESTOS-CONTAINING MATERIALS (ACM)**

Prepared for:

**The Village of Mount Kisco
104 Main Street,
Mount Kisco, NY 10549**

at:

**DPW Garage
43 Columbus Avenue,
Mount Kisco, NY 10549**

February 11, 2022

QuES&T Project #22-4486

QuES&T

Quality Environmental Solutions & Technologies, Inc.

The Village of Mount Kisco
104 Main Street,
Mount Kisco, NY 10549

ATTN: Ken Famulare
Via E-mail: kfamulare@mountkisco.ny.gov

Re: DPW Garage
43 Columbus Avenue,
Mount Kisco, NY 10549
Pre-Renovation Asbestos Inspection
QuES&T Project #22-4486

Dear Mr. Famulare,

Attached is the Pre-Demolition Inspection Report for Asbestos-containing Materials (ACM) identified throughout interior and exterior areas included within the above-referenced location(s) by **Quality Environmental Solutions & Technologies, Inc. (QuES&T)**. The inspection included visual assessment and representative sampling for the detection of ACM in compliance with the requirements of Title 12 NYCRR Part 56-5.1.

The attached report summarizes the inspection protocol and inspection results for your review. **QuES&T** believes this report accurately reflects the material condition existing in the functional spaces at the time of our inspection.

Should you wish to discuss this matter further or require additional information concerning this submittal, please contact us at (845) 298-6031. **QuES&T** appreciates the opportunity to assist the Village of Mount Kisco in the environmental services area.

Sincerely,



Zachary Timpano
Field and Technical Services
NYS/AHERA Inspector
Cert # AH 17-42304
NYS Licensed Mold Assessor # MA01430
Niton-Certified XRF Technician

Cc: QuES&T File
Cc: gdean@qualityenv.com



Quality Environmental Solutions & Technologies, Inc.

TABLE OF CONTENTS

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II.	Inspection Summary	Page 2
III.	Identified Asbestos-containing Materials (ACM)	Page 3
IV.	General Discussion	Page 3
V.	Abatement Required	Page 4
VI.	Disclaimers	Page 5

Appendix A **ACM Location Drawings & Photos**

Appendix B **Results**

Appendix C **Personnel Licenses & Certifications**

I. INTRODUCTION:

Quality Environmental Solutions & Technologies, Inc. (**QuES&T**) performed a Pre-Demolition Asbestos Survey, in conformance with Title 12 NYCRR Part 56-5.1, on January 27, 2022 for the Village of Mount Kisco in support of the planned renovation of the property located at 43 Columbus Avenue, Mount Kisco, NY 10549. The survey included a visual inspection / assessment for Presumed Asbestos-containing Materials (PACM) and suspect miscellaneous Asbestos-containing Materials (ACM) throughout accessible roof locations to be affected by future renovation activities.

QuES&T established functional spaces based either on physical barriers (i.e., walls, doors, etc.) or homogeneity of material. Within each functional space identified, a visual inspection was performed using reasonable care and judgment, to identify and assess location, quantity, friability, and condition of all accessible installed ACM building materials observed at the affected portion of the building/structure.

Limited localized demolition of building surfaces was performed, as part of this survey, to access concealed surfaces. No disassembly of installed equipment was conducted as part of this inspection. ACM concealed within structural components and equipment interiors or that is accessible only through extensive mechanical or structural demolition may not have been identified as part of this survey. When any construction activity, such as demolition, remodeling, renovation, or repair work, reveals PACM or suspect miscellaneous ACM that has not been identified, as part of this survey, all construction activities shall cease in the affected area.

The survey included both visual inspection of accessible spaces and representative sampling of suspect building materials for ACM. Samples collected were analyzed by a laboratory approved under the New York State Department of Health Environmental Laboratory Approval Program (NYSDOH ELAP). Samples were analyzed in the laboratory by Polarized Light Microscopy (PLM), Polarized Light Microscopy-NOB (PLM-NOB) and/or Quantitative Transmission Electron Microscopy (QTEM), as required. Sample collection and laboratory analysis were conducted in compliance with the requirements of Title 12 NYCRR Part 56-5.1, 29 CFR 1926.1101 and standard EPA & OSHA accepted methods. Samples consisting of multiple layers were separated and analyzed independently in the laboratory.

Certified **QuES&T** personnel (Appendix D), Mr. Zachary Timpano (#AH 17-42304) performed visual assessments throughout interior and exterior construction areas. A total of thirty-six (**36**) samples/layers of installed and accessible suspect building materials were analyzed by a laboratory approved under the NYSDOH ELAP. Twenty (**20**) samples/layers were analyzed using Polarized Light Microscopy (PLM) for friable materials; six (**6**) samples/layers were analyzed using Polarized Light Microscopy (PLM-NOB) for non-friable organically bound materials; and six (**6**) samples/layers were analyzed by Confirmatory-QTEM following negative-determinations using PLM-NOB protocols.

II. INSPECTION SUMMARY:

A visual inspection was performed, and homogenous material types were established based on appearance, color and texture. The findings presented in this report are based upon reasonably available information and observed site conditions at the time the assessment was performed. The findings and conclusions of this report are not meant to be indicative of future conditions at the site and does not warrant against conditions that were not evident from visual observations or historical information obtained from others.

Representative bulk sampling was performed on suspect building materials for laboratory analysis using PLM, PLM-NOB, and/or QTEM. The following is a summary of installed building materials sampled:

- Wall Materials – Cinderblock, Mortar, Sheetrock, Joint Compound
- Flooring Materials – Floor Tile, Mastic, Ceramic Floor Tile, Grout, Mudset, Cement Slab
- Thermal Systems Insulation – Mudded Joint Packing
- Miscellaneous Materials – Caulk, Window Glazing, Cementitious Panel

III. IDENTIFIED ASBESTOS-CONTAINING MATERIALS (ACM):

IDENTIFIED ACM 43 Columbus Avenue, Mount Kisco, NY 10549 (Refer to Appendix A for details)				
KEY: ACM = Materials containing greater than 1% of asbestos; LF = Linear Feet; SF = Square Feet; PACM = Presumed Asbestos-containing Materials; Friable = ACM capable of being released into air, and which can be crumbled, pulverized, powdered, crushed or exposed by hand-pressure.				
Location	Material	Approximate Quantity	Friable?	Condition
Interiors				
1 st Floor, Locker Room Bathroom, & Locker Room Corner on Metal Pipe	Mudded Joint Packing	4 SF	Yes	Good
2 nd Floor, Break Room, Floor	12" x 12" Floor Tile	400 SF	No	Good
1 st Floor, Bay 2, Storage Room, Floor	12" x 12" Floor Tile	100 SF	No	Good
Exteriors				
Exterior, Under Windows	Cementitious Panel	25 SF	Yes	Good
Exterior, Window, Metal To Glass	Window Glazing	100 LF	Yes	Good

IV. GENERAL DISCUSSION:

All construction personnel as well as individuals who have access to locations where asbestos containing materials (ACM) exists should be informed of its presence and the proper work practices in these areas. Conspicuous labeling of all ACM is suggested to ensure personnel are adequately informed. Personnel should be informed not to rest, lean or store material or equipment on or near these surfaces and not to cut, saw, drill, sand or disturb ACM. All removal, disturbance, and repair of ACM should be performed in compliance with Title 12 NYCRR Part 56 by persons properly trained to handle ACM. Facility custodial and maintenance personnel should receive training commensurate with their work activities; as defined in 29 CFR 1910.1001.

The findings presented in this report are based upon reasonably available information and observed site conditions at the time the assessment was performed. Conditions may have changed since that time and the findings and conclusions of this report are not meant to be indicative of future conditions at the Site. This report does not warrant against conditions that were not evident from visual observations or historical information obtained, or conditions that could only be determined by physical sampling or other intrusive investigation techniques that are outside the proposed scope of work.

V. ABATEMENT REQUIRED:

As specified in Title 12 NYCRR Part 56-5.1 (h) and (i), "If the building/structure asbestos survey finds that the portion of the building/structure to be demolished, renovated, remodeled, or have repair work contains ACM, PACM, suspect miscellaneous ACM assumed to be ACM, or asbestos material, which is impacted by the work, the owner or the owner's agent shall conduct, or cause to have conducted, asbestos removal performed by a licensed asbestos abatement contractor in conformance with all standards set forth in this Part. All ACM, PACM, suspect miscellaneous ACM assumed to be ACM, or asbestos material impacted by the demolition, renovation, remodeling, or repair project shall be removed as per this Part, prior to access or disturbance by other uncertified trades or personnel. No demolition, renovation, remodeling or repair work shall be commenced by any owner or the owner's agent prior to the completion of the asbestos abatement in accordance with the notification requirements of this Part...All building/structure owners and asbestos abatement contractors on a demolition, renovation, remodeling, or repair project, which includes work covered by this part, shall inform all trades on the work site about PACM, ACM, asbestos material and suspect miscellaneous ACM...Bids may be advertised and contracts awarded for demolition, remodeling, renovation, or repair work, but no work on the current intermediate portion of the project shall commence on the demolition, renovation, remodeling or repair work by any owner or agent prior to completion of all necessary asbestos abatement work for the current intermediate portion of the entire project, in conformance with all standards set forth in this Part."

Prior to conducting demolition or construction work at the building, all ACM affected/impacted by such activities shall be removed utilizing a licensed asbestos abatement contractor and NYSDOL/EPA/NYC certified personnel prior to construction/demolition activities. All work conducted should be in accordance with all legal requirements, including but not limited to U.S. Environmental Protection Agency (EPA) National Emissions Standards for Hazardous Air Pollutants (NESHAP) [40 CFR Part 61], New York State Industrial Code Rule 56 Asbestos Regulations (ICR 56) and Chapter 1 of Title 15 of the Rules of the City of New York Regulations, as applicable. Advance notification of the asbestos project to the USEPA, NYSDOL, and NYCDEP may be required.

All suspect building materials not sampled during this survey should be considered ACM until these materials are sampled and analyzed for ACM in the laboratory. Concealed ACM: In addition to the ACMs identified at the site, there is a possibility that concealed ACM may exist at the subject facility. As such, if any concealed suspect ACM is encountered during future construction related activities, the work should immediately stop. Prior to resuming the work, the suspect ACM should either be 1) Sampled by an appropriately certified asbestos professional and submitted to an Approved NYSDOH ELAP laboratory for asbestos analysis or 2) Presumed to be ACM (PACM) and removed by a licensed asbestos abatement contractor for disposal in accordance with all applicable regulations.

VI. DISCLAIMERS

It should be noted that the information contained within this report is based solely upon site observations and the results of laboratory analysis for samples collected by **QuES&T**. These observations and results are time dependent, subject to changing site conditions and revisions to Federal, State and Local regulations. **QuES&T** warrants that these findings have been promulgated after being prepared in general accordance with generally accepted practices in the abatement industries. **QuES&T** also recognizes that inspection laboratory data is not usually sufficient to make all abatement and management decisions.

Due to the potential for concealed Asbestos-containing Materials (ACM) or other regulated materials, this report should not be construed to represent all ACM or regulated materials within the site(s). All quantities of ACM or other regulated materials identified, and all dimensions listed within this report are approximate and should be verified On-site.

This inspection report is not intended to be used as the sole basis for soliciting pricing for asbestos abatement. An abatement plan, specification, drawing and/or Variances should be developed to identify scope, timing, phasing, and remediation means & methods for any asbestos project. The Linear and/or Square Footages (LF / SF) listed within this Report are only approximates. Abatement Contractor(s) are required to visit the building(s) in order to take actual field measurements within each listed location.



Quality Environmental Solutions & Technologies, Inc.

Appendix A: ACM LOCATION DRAWINGS & PHOTOS



2 DPW SECOND FLOOR ABATEMENT PLAN
ASB-100 NOT TO SCALE

1 DPW FIRST FLOOR ABATEMENT PLAN
ASB-101 NOT TO SCALE

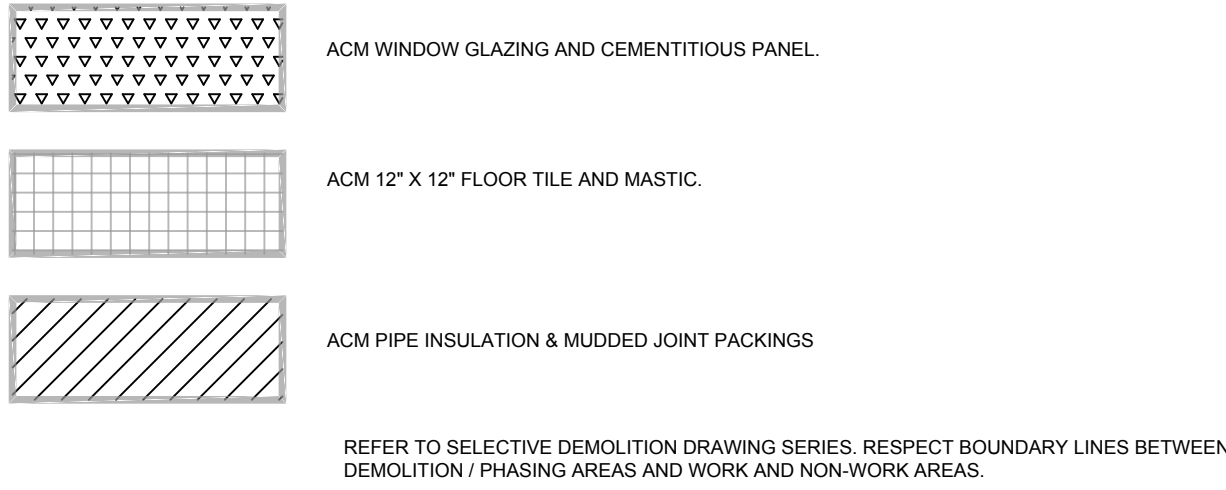
ASBESTOS ABATEMENT NOTES

ASBESTOS CONTRACTOR IS RESPONSIBLE FOR TOTAL AND COMPLETE REMOVAL AND DISPOSAL OF ACM WINDOW GLAZING AND CEMENTITIOUS PANEL.

ASBESTOS CONTRACTOR IS RESPONSIBLE FOR TOTAL AND COMPLETE REMOVAL AND DISPOSAL OF 12" x 12" FLOOR TILES AND MASTIC WHERE INDICATED.

ASBESTOS ABATEMENT CONTRACTOR IS RESPONSIBLE FOR TOTAL AND COMPLETE REMOVAL AND DISPOSAL OF FRIABLE ASBESTOS CONTAINING PIPE INSULATION AND ASSOCIATED MUDDER JOINT PACKING LOCATED IN BATHROOM WET WALLS AND PIPE CHASES.

ASBESTOS ABATEMENT LEGEND



REFER TO SELECTIVE DEMOLITION DRAWING SERIES. RESPECT BOUNDARY LINES BETWEEN DEMOLITION / PHASING AREAS AND WORK AND NON-WORK AREAS.



BAR DOWN STUDIO
PO Box 721, Beacon NY 12508
845.599.3187



QUALITY ENVIRONMENTAL SOLUTIONS
& TECHNOLOGIES, INC.
1170 HAVENHILL RD., SUITE 100
BEACON, NY 12508
TEL: 845.298.6211



Consultant

VILLAGE OF MT. KISCO
DPW GARAGE ADDITION
43 COLUMBUS AVE, MT KISCO, NY 10549

Project Title



4			
3			
2			
1			

Drawn By: am
Checked By: gd
BDS Proj. #: 22-01
Date: February 17, 2022

Sheet Title
Abatement
Plan

Sheet No.

ASB-100

CONSTRUCTION DOCUMENTS

QuES&T

Quality Environmental Solutions & Technologies, Inc.



ACM Floor Tile



QuES&T

Quality Environmental Solutions & Technologies, Inc.



ACM Window Glazing & Transite Panels



Quality Environmental Solutions & Technologies, Inc.

Appendix B: RESULTS

Eastern Analytical Services, Inc.**Bulk Sample Results**

RE: CPN 22-4486 - Village of Mount Kisco - 43 Columbus Avenue - Mount Kisco, NY -
DPW Garage

Date Collected : 01/27/2022

Collected By : Z. Timpano

Date Received : 01/28/2022

Date Analyzed : 02/03/2022

Analyzed By : George Htay

Signature :

Analytical Method : NYS-DOH 198.1

NVLAP Lab Code : 101646-0

NYS Lab No. 10851

Client: QuES&T, Inc.
1376 Route 9
Wappingers Falls, NY 12590

Sample ID Number	4486-01	4486-02	4486-03	4486-04
Layer Number				
Lab ID Number	2809829	2809830	2809831	2809832
Sample Location	DPW, 1st Floor, Hall, On Sheetrock Wall	DPW, 1st Floor, Hall, On Sheetrock Wall	DPW, 1st Floor, Hall, On Sheetrock Wall	DPW, 1st Floor, Bay 2, Storage Room, Ceiling
Sample Description	Joint Compound	Joint Compound	Joint Compound	Sheetrock
Method of Quantification	Visual Estimation	Visual Estimation	Visual Estimation	Visual Estimation
Appearance	Layered	Yes	Yes	Yes
	Homogenous	No	No	No
	Fibrous	No	No	Yes
	Color	White/Gray	White/Gray	Gray/Brown
Sample Treatment	Homogenized	Homogenized	Homogenized	Homogenized
Asbestos	% Amosite	0.0	0.0	0.0
Content	% Chrysotile	0.0	0.0	0.0
	% Other	0.0	0.0	0.0
	% Total Asbestos	0.0	0.0	0.0
Other Fibrous	% Fibrous Glass	0.0	0.0	0.0
Materials	% Cellulose	0.0	0.0	15.0
Present	% Other	0.0	0.0	0.0
	% Unidentified	0.0	0.0	0.0
Non-Fibrous	% Silicates	30.0	30.0	15.0
Materials	% Carbonates	30.0	35.0	35.0
Present	% Other	0.0	0.0	0.0
	% Unidentified	40.0	35.0	35.0

Results Applicable To Those Items Tested. Report Cannot be Reproduced, Except Entirely, Without Written Approval of the Laboratory.

Liability Limited To Cost Of Analysis. This Report Must Not be Used by the Client to Claim Product Endorsement by NVLAP or Any Agency of the US Government.

These Results Can Not Be Used To Claim That NOB Items Tested Are Non-Asbestos Containing. Overall Lab Accuracy $\pm 17\%$. Samples received in acceptable condition unless otherwise noted.

AIHA LAP, LLC No. 100263 Rhode Island DOH No. AAL-072 Massachusetts DOL No. A A 000072 Connecticut DOH No. PH-0622 Maine DEP No. LA-024 Vermont DOH No. AL-709936

Eastern Analytical Services, Inc.**Bulk Sample Results**

RE: CPN 22-4486 - Village of Mount Kisco - 43 Columbus Avenue - Mount Kisco, NY -
DPW Garage

Date Collected : 01/27/2022

Collected By : Z. Timpano

Date Received : 01/28/2022

Date Analyzed : 02/03/2022

Analyzed By : George Htay

Signature :

Analytical Method : NYS-DOH 198.1

NVLAP Lab Code : 101646-0

NYS Lab No. 10851

Client: QuES&T, Inc.
1376 Route 9
Wappingers Falls, NY 12590

Sample ID Number	4486-05	4486-06	4486-07	4486-08
Layer Number				
Lab ID Number	2809833	2809834	2809835	2809836
Sample Location	DPW, 1st Floor, Hall, Wall	DPW, 1st Floor, Locker Room, Bathroom, On Metal Pipe	DPW, 1st Floor, Locker Room, Bathroom, On Metal Pipe	DPW, 1st Floor, Locker Room, Back Corner, On Metal Pipe
Sample Description	Sheetrock	Mudded Joint Compound	Mudded Joint Compound	Mudded Joint Compound
Method of Quantification	Visual Estimation	Point Count	Point Count	Point Count
Appearance	Layered	Yes	Yes	Yes
	Homogenous	No	No	No
	Fibrous	Yes	Yes	Yes
	Color	Gray/Brown	Gray/Brown	Gray/Brown
Sample Treatment	Homogenized	Homogenized	Homogenized	Homogenized
Asbestos	% Amosite	0.0	0.0	0.0
Content	% Chrysotile	0.0	19.0	18.2
	% Other	0.0	0.0	0.0
	% Total Asbestos	0.0	19.0	18.2
Other Fibrous	% Fibrous Glass	0.0	0.0	0.0
Materials	% Cellulose	15.0	0.0	0.0
Present	% Other	0.0	0.0	0.0
	% Unidentified	0.0	0.0	0.0
Non-Fibrous	% Silicates	15.0	0.0	0.0
Materials	% Carbonates	35.0	0.0	0.0
Present	% Other	0.0	0.0	0.0
	% Unidentified	35.0	81.0	81.8

Results Applicable To Those Items Tested. Report Cannot be Reproduced, Except Entirely, Without Written Approval of the Laboratory.

Liability Limited To Cost Of Analysis. This Report Must Not be Used by the Client to Claim Product Endorsement by NVLAP or Any Agency of the US Government.

These Results Can Not Be Used To Claim That NOB Items Tested Are Non-Asbestos Containing. Overall Lab Accuracy $\pm 17\%$. Samples received in acceptable condition unless otherwise noted.

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Eastern Analytical Services, Inc.**Bulk Sample Results**

RE: CPN 22-4486 - Village of Mount Kisco - 43 Columbus Avenue - Mount Kisco, NY -
DPW Garage

Date Collected : 01/27/2022

Collected By : Z. Timpano

Date Received : 01/28/2022

Date Analyzed : 02/03/2022

Analyzed By : George Htay

Signature :

Analytical Method : NYS-DOH 198.1

NVLAP Lab Code : 101646-0

NYS Lab No. 10851

Client: QuES&T, Inc.
1376 Route 9
Wappingers Falls, NY 12590

Sample ID Number	4486-09	4486-09	4486-10	4486-10
Layer Number	1	2	1	2
Lab ID Number	2809837	2809837	2809838	2809838
Sample Location	DPW, Exterior	DPW, Exterior	DPW, Exterior	DPW, Exterior

Sample Description	Block and Mortar (Block Layer)	Block and Mortar (Mortar Layer)	Block and Mortar (Block Layer)	Block and Mortar (Mortar Layer)
--------------------	-----------------------------------	------------------------------------	-----------------------------------	------------------------------------

Method of Quantification	Visual Estimation	Visual Estimation	Visual Estimation	Visual Estimation
Appearance	Layered	Yes	Yes	Yes
	Homogenous	No	No	No
	Fibrous	No	No	No
	Color	Brown/Gray	Gray/Brown	Gray/Brown

Sample Treatment	Homogenized	Homogenized	Homogenized	Homogenized
Asbestos	% Amosite	0.0	0.0	0.0
Content	% Chrysotile	0.0	0.0	0.0
	% Other	0.0	0.0	0.0
	% Total Asbestos	0.0	0.0	0.0
Other Fibrous	% Fibrous Glass	0.0	0.0	0.0
Materials	% Cellulose	0.0	0.0	0.0
Present	% Other	0.0	0.0	0.0
	% Unidentified	0.0	0.0	0.0
Non-Fibrous	% Silicates	25.0	30.0	25.0
Materials	% Carbonates	25.0	25.0	30.0
Present	% Other	0.0	0.0	0.0
	% Unidentified	50.0	45.0	45.0

Results Applicable To Those Items Tested. Report Cannot be Reproduced, Except Entirely, Without Written Approval of the Laboratory.

Liability Limited To Cost Of Analysis. This Report Must Not be Used by the Client to Claim Product Endorsement by NVLAP or Any Agency of the US Government.

These Results Can Not Be Used To Claim That NOB Items Tested Are Non-Asbestos Containing. Overall Lab Accuracy $\pm 17\%$. Samples received in acceptable condition unless otherwise noted.

AIHA LAP, LLC No. 100263 Rhode Island DOH No. AAL-072 Massachusetts DOL No. A A 000072 Connecticut DOH No. PH-0622 Maine DEP No. LA-024 Vermont DOH No. AL-709936

Eastern Analytical Services, Inc.**Bulk Sample Results**

RE: CPN 22-4486 - Village of Mount Kisco - 43 Columbus Avenue - Mount Kisco, NY -
DPW Garage

Date Collected : 01/27/2022

Collected By : Z. Timpano

Date Received : 01/28/2022

Date Analyzed : 02/03/2022

Analyzed By : George Htay

Signature :

Analytical Method : NYS-DOH 198.1

NVLAP Lab Code : 101646-0

NYS Lab No. 10851

Client: QuES&T, Inc.
1376 Route 9
Wappingers Falls, NY 12590

Sample ID Number	4486-11	4486-12	4486-13	4486-14
Layer Number				
Lab ID Number	2809839	2809840	2809841	2809842
Sample Location	DPW, 1st Floor, Bay 2, Floor	DPW, 2nd Floor, Floor	DPW, 2nd Floor, Office, Ceiling	DPW, 2nd Floor, Office, Ceiling
Sample Description	Cement Slab	Cement Slab	Cementitious Block	Cementitious Block
Method of Quantification	Visual Estimation	Visual Estimation	Visual Estimation	Visual Estimation
Appearance	Layered	No	Yes	Yes
	Homogenous	No	No	No
	Fibrous	No	No	No
	Color	Brown/Gray	Gray/White	Gray/White
Sample Treatment	Homogenized	Homogenized	Homogenized	Homogenized
Asbestos	% Amosite	0.0	0.0	0.0
Content	% Chrysotile	0.0	0.0	0.0
	% Other	0.0	0.0	0.0
	% Total Asbestos	0.0	0.0	0.0
Other Fibrous	% Fibrous Glass	0.0	0.0	0.0
Materials	% Cellulose	0.0	0.0	0.0
Present	% Other	0.0	0.0	0.0
	% Unidentified	0.0	0.0	0.0
Non-Fibrous	% Silicates	30.0	25.0	25.0
Materials	% Carbonates	30.0	30.0	30.0
Present	% Other	0.0	0.0	0.0
	% Unidentified	40.0	45.0	45.0

Results Applicable To Those Items Tested. Report Cannot be Reproduced, Except Entirely, Without Written Approval of the Laboratory.

Liability Limited To Cost Of Analysis. This Report Must Not be Used by the Client to Claim Product Endorsement by NVLAP or Any Agency of the US Government.

These Results Can Not Be Used To Claim That NOB Items Tested Are Non-Asbestos Containing. Overall Lab Accuracy $\pm 17\%$. Samples received in acceptable condition unless otherwise noted.

AIHA LAP, LLC No. 100263 Rhode Island DOH No. AAL-072 Massachusetts DOL No. A A 000072 Connecticut DOH No. PH-0622 Maine DEP No. LA-024 Vermont DOH No. AL-709936

Eastern Analytical Services, Inc.**Bulk Sample Results**

RE: CPN 22-4486 - Village of Mount Kisco - 43 Columbus Avenue - Mount Kisco, NY -
DPW Garage

Date Collected : 01/27/2022

Collected By : Z. Timpano

Date Received : 01/28/2022

Date Analyzed : 02/03/2022

Analyzed By : George Htay

Signature :

Analytical Method : NYS-DOH 198.1

NVLAP Lab Code : 101646-0

NYS Lab No. 10851

Client: QuES&T, Inc.
1376 Route 9
Wappingers Falls, NY 12590

Sample ID Number	4486-15	4486-15	4486-16	4486-16
Layer Number	1	2	1	2
Lab ID Number	2809843	2809843	2809844	2809844
Sample Location	DPW, 1st Floor, Bay 2, Wall	DPW, 1st Floor, Bay 2, Wall	DPW, 2nd Floor, Office, Wall	DPW, 2nd Floor, Office, Wall
Sample Description	Block and Mortar (Block Layer)	Block and Mortar (Mortar Layer)	Block and Mortar (Block Layer)	Block and Mortar (Mortar Layer)
Method of Quantification	Visual Estimation	Visual Estimation	Visual Estimation	Visual Estimation
Appearance	Layered	Yes	Yes	Yes
	Homogenous	No	No	No
	Fibrous	No	No	No
	Color	Gray/Orange	Gray/Orange	Gray/Orange
Sample Treatment	Homogenized	Homogenized	Homogenized	Homogenized
Asbestos	% Amosite	0.0	0.0	0.0
Content	% Chrysotile	0.0	0.0	0.0
	% Other	0.0	0.0	0.0
	% Total Asbestos	0.0	0.0	0.0
Other Fibrous	% Fibrous Glass	0.0	0.0	0.0
Materials	% Cellulose	0.0	0.0	0.0
Present	% Other	0.0	0.0	0.0
	% Unidentified	0.0	0.0	0.0
Non-Fibrous	% Silicates	30.0	35.0	25.0
Materials	% Carbonates	30.0	25.0	30.0
Present	% Other	0.0	0.0	0.0
	% Unidentified	40.0	40.0	45.0

Results Applicable To Those Items Tested. Report Cannot be Reproduced, Except Entirely, Without Written Approval of the Laboratory.

Liability Limited To Cost Of Analysis. This Report Must Not be Used by the Client to Claim Product Endorsement by NVLAP or Any Agency of the US Government.

These Results Can Not Be Used To Claim That NOB Items Tested Are Non-Asbestos Containing. Overall Lab Accuracy \pm 17%. Samples received in acceptable condition unless otherwise noted.

AIHA LAP, LLC No. 100263 Rhode Island DOH No. AAL-072 Massachusetts DOL No. A A 000072 Connecticut DOH No. PH-0622 Maine DEP No. LA-024 Vermont DOH No. AL-709936

Eastern Analytical Services, Inc.**Bulk Sample Results**

RE: CPN 22-4486 - Village of Mount Kisco - 43 Columbus Avenue - Mount Kisco, NY -
DPW Garage

Date Collected : 01/27/2022

Collected By : Z. Timpano

Date Received : 01/28/2022

Date Analyzed : 02/03/2022

Analyzed By : George Htay

Signature :

Analytical Method : NYS-DOH 198.1

NVLAP Lab Code : 101646-0

NYS Lab No. 10851

Client: QuES&T, Inc.
1376 Route 9
Wappingers Falls, NY 12590

Sample ID Number	4486-17	4486-18	4486-19	4486-19
Layer Number			1	2
Lab ID Number	2809845	2809846	2809847	2809847
Sample Location	DPW, Exterior, Window	DPW, Exterior, Window	DPW, 1st Floor, Locker Room, Bathroom, Floor	DPW, 1st Floor, Locker Room, Bathroom, Floor
Sample Description	Cementitious Panel	Cementitious Panel	Ceramic Floor Tile, Grout, and Mudset (Tile Layer)	Ceramic Floor Tile, Grout, and Mudset (Grout Layer)
Method of Quantification	Point Count	Point Count	Visual Estimation	Visual Estimation
Appearance	Layered	No	No	No
	Homogenous	No	Yes	Yes
	Fibrous	Yes	No	No
	Color	Gray/White	Blue/White	Gray
Sample Treatment	Homogenized	Homogenized	None	None
Asbestos	% Amosite	0.0	0.0	0.0
Content	% Chrysotile	13.3	0.0	0.0
	% Other	0.0	0.0	0.0
	% Total Asbestos	13.3	0.0	0.0
Other Fibrous	% Fibrous Glass	0.0	0.0	0.0
Materials	% Cellulose	0.0	0.0	0.0
Present	% Other	0.0	0.0	0.0
	% Unidentified	0.0	0.0	0.0
Non-Fibrous	% Silicates	0.0	45.0	15.0
Materials	% Carbonates	0.0	0.0	30.0
Present	% Other	0.0	0.0	0.0
	% Unidentified	86.7	55.0	55.0

Results Applicable To Those Items Tested. Report Cannot be Reproduced, Except Entirely, Without Written Approval of the Laboratory.

Liability Limited To Cost Of Analysis. This Report Must Not be Used by the Client to Claim Product Endorsement by NVLAP or Any Agency of the US Government.

These Results Can Not Be Used To Claim That NOB Items Tested Are Non-Asbestos Containing. Overall Lab Accuracy $\pm 17\%$. Samples received in acceptable condition unless otherwise noted.

AIHA LAP, LLC No. 100263 Rhode Island DOH No. AAL-072 Massachusetts DOL No. A A 000072 Connecticut DOH No. PH-0622 Maine DEP No. LA-024 Vermont DOH No. AL-709936

Eastern Analytical Services, Inc.**Bulk Sample Results**

RE: CPN 22-4486 - Village of Mount Kisco - 43 Columbus Avenue - Mount Kisco, NY -
DPW Garage

Date Collected : 01/27/2022

Collected By : Z. Timpano

Date Received : 01/28/2022

Date Analyzed : 02/03/2022

Analyzed By : George Htay

Signature :

Analytical Method : NYS-DOH 198.1

NVLAP Lab Code : 101646-0

NYS Lab No. 10851

Client: QuES&T, Inc.
1376 Route 9
Wappingers Falls, NY 12590

Sample ID Number	4486-19	4486-20	4486-20	4486-20
Layer Number	3	1	2	3
Lab ID Number	2809847	2809848	2809848	2809848
Sample Location	DPW, 1st Floor, Locker Room, Bathroom, Floor	DPW, 1st Floor, Locker Room, Bathroom, Floor	DPW, 1st Floor, Locker Room, Bathroom, Floor	DPW, 1st Floor, Locker Room, Bathroom, Floor
Sample Description	Ceramic Floor Tile, Grout, and Mudset (Mudset Layer)	Ceramic Floor Tile, Grout, and Mudset (Tile Layer)	Ceramic Floor Tile, Grout, and Mudset (Grout Layer)	Ceramic Floor Tile, Grout, and Mudset (Mudset Layer)
Method of Quantification	Visual Estimation	Visual Estimation	Visual Estimation	Visual Estimation
Appearance	Layered	No	No	No
	Homogenous	No	Yes	No
	Fibrous	No	No	No
	Color	Gray/Brown	Blue/White	Gray
Sample Treatment	Homogenized	None	None	Homogenized
Asbestos	% Amosite	0.0	0.0	0.0
Content	% Chrysotile	0.0	0.0	0.0
	% Other	0.0	0.0	0.0
	% Total Asbestos	0.0	0.0	0.0
Other Fibrous	% Fibrous Glass	0.0	0.0	0.0
Materials	% Cellulose	0.0	0.0	0.0
Present	% Other	0.0	0.0	0.0
	% Unidentified	0.0	0.0	0.0
Non-Fibrous	% Silicates	30.0	45.0	15.0
Materials	% Carbonates	30.0	0.0	30.0
Present	% Other	0.0	0.0	0.0
	% Unidentified	40.0	55.0	55.0

Results Applicable To Those Items Tested. Report Cannot be Reproduced, Except Entirely, Without Written Approval of the Laboratory.

Liability Limited To Cost Of Analysis. This Report Must Not be Used by the Client to Claim Product Endorsement by NVLAP or Any Agency of the US Government.

These Results Can Not Be Used To Claim That NOB Items Tested Are Non-Asbestos Containing. Overall Lab Accuracy $\pm 17\%$. Samples received in acceptable condition unless otherwise noted.

AIHA LAP, LLC No. 100263 Rhode Island DOH No. AAL-072 Massachusetts DOL No. A A 000072 Connecticut DOH No. PH-0622 Maine DEP No. LA-024 Vermont DOH No. AL-709936

Eastern Analytical Services, Inc.**Bulk Sample Results**

RE: CPN 22-4486 - Village of Mount Kisco - 43 Columbus Avenue - Mount Kisco, NY -
DPW Garage

Date Collected :	01/27/2022	Client	QuES&T, Inc.
Collected By :	Z. Timpano		1376 Route 9
Date Received :	01/28/2022		Wappingers Falls, NY 12590
Date Analyzed :	02/02/2022		
Analyzed By :	George Htay		
Signature :			
Analytical Method :	NYS-DOH 198.6		
NVLAP Lab Code :	101646-0		
NYS Lab No.	10851		

Sample ID Number	4486-21	4486-21	4486-22	4486-22
Layer Number	1	2	1	2
Lab ID Number	2809796	2809796	2809797	2809797
Sample Location	DPW, 2nd Floor, Break Room, Floor	DPW, 2nd Floor, Break Room, Floor	DPW, 1st Floor, Bay 2, Storage Room, Floor	DPW, 1st Floor, Bay 2, Storage Room, Floor
Sample Description	12" x 12" Floor Tile and Mastic (Tile Layer)	12" x 12" Floor Tile and Mastic (Mastic Layer)	12" x 12" Floor Tile and Mastic (Tile Layer)	12" x 12" Floor Tile and Mastic (Mastic Layer)
Analytical Method	NOB Plm	NOB Plm	NOB Plm	NOB Plm
Appearance	Layered Homogenous Fibrous Color	No Yes No Gray/Brown	No Yes No Gray/Brown	No Yes No Black
Asbestos Content	% Amosite % Chrysotile % Other % Total Asbestos	0.0 0.0 0.0 0.0	0.0 0.0 0.0 0.0	0.0 0.0 0.0 0.0
Other Materials Present	% Organic % Carbonates % Other Inorganic	29.9 56.1 14.0	66.5 14.4 19.1	31.8 57.0 11.2
				55.1 18.8 26.1

Eastern Analytical Services, Inc.**Bulk Sample Results**

RE: CPN 22-4486 - Village of Mount Kisco - 43 Columbus Avenue - Mount Kisco, NY -
DPW Garage

Date Collected :	01/27/2022	Client	QuES&T, Inc.
Collected By :	Z. Timpano		1376 Route 9
Date Received :	01/28/2022		Wappingers Falls, NY 12590
Date Analyzed :	02/02/2022		
Analyzed By :	George Htay		
Signature :			
Analytical Method :	NYS-DOH 198.6		
NVLAP Lab Code :	101646-0		
NYS Lab No.	10851		

Sample ID Number	4486-23	4486-24	4486-25	4486-26
Layer Number				
Lab ID Number	2809798	2809799	2809800	2809801
Sample Location	DPW, Exterior, Window, Metal to Glass	DPW, Exterior, Window, Metal to Glass	Exterior, Window, Metal to Block	Exterior, Window, Metal to Block
Sample Description	Glazing	Glazing	Caulk	Caulk
Analytical Method	NOB Plm	NOB Plm	NOB Plm	NOB Plm
Appearance	Layered Homogenous Fibrous Color	No Yes No Gray/White	No Yes No Gray/White	No Yes No Gray/White
Asbestos Content	% Amosite % Chrysotile % Other % Total Asbestos	0.0 0.0 0.0 0.0	0.0 0.1 0.0 0.0	0.0 0.0 0.0 0.0
Other Materials Present	% Organic % Carbonates % Other Inorganic	7.7 87.3 5.0	8.1 83.8 8.0	20.4 59.8 19.8
				22.5 56.5 21.0

Eastern Analytical Services, Inc.**Bulk Sample Results**

RE: CPN 22-4486 - Village of Mount Kisco - 43 Columbus Avenue - Mount Kisco, NY -
DPW Garage

Date Collected :	01/27/2022	Client	QuES&T, Inc.
Collected By :	Z. Timpano		1376 Route 9
Date Received :	01/28/2022		Wappingers Falls, NY 12590
Date Analyzed :	02/03/2022		
Analyzed By :	Fahrudin Lalic		
Signature :			
Analytical Method :	NYS-DOH 198.4		
NVLAP Lab Code :	101646-0		
NYS Lab No.	10851		

Sample ID Number	4486-21	4486-21	4486-22	4486-22
Layer Number	1	2	1	2
Lab ID Number	2809796	2809796	2809797	2809797
Sample Location	DPW, 2nd Floor, Break Room, Floor	DPW, 2nd Floor, Break Room, Floor	DPW, 1st Floor, Bay 2, Storage Room, Floor	DPW, 1st Floor, Bay 2, Storage Room, Floor
Sample Description	12" x 12" Floor Tile and Mastic (Tile Layer)	12" x 12" Floor Tile and Mastic (Mastic Layer)	12" x 12" Floor Tile and Mastic (Tile Layer)	12" x 12" Floor Tile and Mastic (Mastic Layer)
Analytical Method	NOB Tem	NOB Tem	NOB Tem	NOB Tem
Appearance	Layered Homogenous Fibrous Color	No Yes No Gray/Brown	No Yes No Gray/Brown	No Yes No Black
Asbestos Content	% Amosite % Chrysotile % Other % Total Asbestos	0.0 2.8 0.0 2.8	0.0 0.0 0.0 2.2	0.0 0.0 0.0 0.0
Other Materials Present	% Organic % Carbonates % Other Inorganic	29.9 56.1 11.2	66.5 14.4 19.1	31.8 57.0 9.0
				55.1 18.8 26.1

Eastern Analytical Services, Inc.**Bulk Sample Results**

RE: CPN 22-4486 - Village of Mount Kisco - 43 Columbus Avenue - Mount Kisco, NY -
DPW Garage

Date Collected :	01/27/2022	Client	QuES&T, Inc.
Collected By :	Z. Timpano		1376 Route 9
Date Received :	01/28/2022		Wappingers Falls, NY 12590
Date Analyzed :	02/03/2022		
Analyzed By :	Fahrudin Lalic		
Signature :			
Analytical Method :	NYS-DOH 198.4		
NVLAP Lab Code :	101646-0		
NYS Lab No.	10851		

Sample ID Number	4486-23	4486-24	4486-25	4486-26
Layer Number				
Lab ID Number	2809798	2809799	2809800	2809801
Sample Location	DPW, Exterior, Window, Metal to Glass	DPW, Exterior, Window, Metal to Glass	Exterior, Window, Metal to Block	Exterior, Window, Metal to Block
Sample Description	Glazing	Glazing	Caulk	Caulk
Analytical Method	NOB Tem	NOB Tem	NOB Tem	NOB Tem
Appearance	Layered Homogenous Fibrous Color	No Yes No Gray/White	No Yes No Gray/White	No Yes No Gray/White
Asbestos Content	% Amosite % Chrysotile % Other % Total Asbestos	0.0 0.0 0.0 0.0	0.0 2.5 0.0 2.5	0.0 0.0 0.0 2.5
			< 0.2 Anthophyllite	< 0.2 Anthophyllite
Other Materials Present	% Organic % Carbonates % Other Inorganic	7.7 87.3 5.0	8.1 83.8 5.6	20.4 59.8 19.8
				22.5 56.5 21.0



Quality Environmental Solutions & Technologies, Inc.

Appendix C: PERSONNEL LICENSES & CERTIFICATIONS



NEW YORK STATE **MINORITY- AND WOMEN-OWNED BUSINESS ENTERPRISE ("MWBE")** **CERTIFICATION**

Empire State Development's Division of Minority and Women's Business Development grants a
Women Business Enterprise (WBE)

pursuant to New York State Executive Law, Article 15-A to:

Quality Environmental Solutions & Technologies Inc.

Certification Awarded on: March 28, 2019

Expiration Date: March 28, 2024

File ID#: WBE- 49952



**Division of Minority
and Women's
Business Development**

A Division of Empire State Development

New York State – Department of Labor

Division of Safety and Health
License and Certificate Unit
State Campus, Building 12
Albany, NY 12240

ASBESTOS HANDLING LICENSE

Quality Environmental Solutions & Technologies, Inc.

1376 Route 9

Wappinger Falls, NY 12590

FILE NUMBER: 99-0018

LICENSE NUMBER: 29085

LICENSE CLASS: RESTRICTED

DATE OF ISSUE: 01/21/2022

EXPIRATION DATE: 01/31/2023

Duly Authorized Representative – Lawrence J Holzapfel:

This license has been issued in accordance with applicable provisions of Article 30 of the Labor Law of New York State and of the New York State Codes, Rules and Regulations (12 NYCRR Part 56). It is subject to suspension or revocation for a (1) serious violation of state, federal or local laws with regard to the conduct of an asbestos project, or (2) demonstrated lack of responsibility in the conduct of any job involving asbestos or asbestos material.

This license is valid only for the contractor named above and this license or a photocopy must be prominently displayed at the asbestos project worksite. This license verifies that all persons employed by the licensee on an asbestos project in New York State have been issued an Asbestos Certificate, appropriate for the type of work they perform, by the New York State Department of Labor.

Amy Phillips, Director
For the Commissioner of Labor

STATE OF NEW YORK - DEPARTMENT OF LABOR
ASBESTOS CERTIFICATE



ZACHARY TIMPANO

CLASS(EXPIRES)

C ATEC(11/22) D INSP(11/23)

H PM (11/22)

CERT# 17-42304
DMV# 131470793

MUST BE CARRIED ON ASBESTOS PROJECTS



01213 006209562 58

EYES GRN

HAIR BRO

HGT 5' 11"

IF FOUND RETURN TO:

NYSDEL - L&C UNIT

ROOM 161A BUILDING 12

STATE OFFICE CAMPUS

ALBANY NY 12240

NEW YORK STATE DEPARTMENT OF HEALTH
WADSWORTH CENTER



Expires 12:01 AM April 01, 2022
Issued April 01, 2021

CERTIFICATE OF APPROVAL FOR LABORATORY SERVICE

Issued in accordance with and pursuant to section 502 Public Health Law of New York State

MR. PAUL STASCAVAGE
EAS INC - EASTERN ANALYTICAL SERVICES INC
4 WESTCHESTER PLAZA
ELMSFORD, NY 10523-1610

NY Lab Id No: 10851

is hereby APPROVED as an Environmental Laboratory for the category
ENVIRONMENTAL ANALYSES SOLID AND HAZARDOUS WASTE
All approved subcategories and/or analytes are listed below:

Miscellaneous

Asbestos in Friable Material	Item 198.1 of Manual EPA 600/M4/82/020
Asbestos in Non-Friable Material-PLM	Item 198.6 of Manual (NOB by PLM)
Asbestos in Non-Friable Material-TEM	Item 198.4 of Manual
Asbestos-Vermiculite-Containing Material	Item 198.8 of Manual
Lead in Dust Wipes	EPA 7000B
Lead in Paint	EPA 7000B

Sample Preparation Methods

EPA 3050B

Serial No.: 62796

Property of the New York State Department of Health. Certificates are valid only at the address shown, must be conspicuously posted, and are printed on secure paper. Continued accreditation depends on successful ongoing participation in the Program. Consumers are urged to call (518) 485-5570 to verify the laboratory's accreditation status.

DOCUMENT 004113 BID FORM - STIPULATED SUM (SINGLE-PRIME CONTRACT)

1.1 BID INFORMATION

- A. Bidder: _____
- B. Project Name: Mount Kisco Water Department Building Addition
- C. Project Location: 40 Columbus Avenue, Mount Kisco NY 10549
- D. Owner: The Village/Town of Mount Kisco
- E. Architect: Bar Down Studio

1.2 CERTIFICATIONS AND BASE BID

- A. Base Bid, Single-Prime (All Trades): The undersigned Bidder, having carefully examined the Procurement and Contracting Requirements, Conditions of the Contract, Drawings, Specifications, and all subsequent Addenda, as prepared by Bar Down Studio, having visited the site, and being familiar with all conditions and requirements of the Work, hereby agrees to furnish all material, labor, equipment and services, including all scheduled allowances, necessary to complete the construction of the above-named project, according to the requirements of the Procurement and Contracting Documents, for the stipulated sum of:

1. _____
(Words)

_____ (\$ _____)
(Figures)

1.3 ALTERNATES

- A. **DELETE/ADD** (Circle one) Mezzanine at Existing Building

1. _____
(Words)

_____ (\$ _____)
(Figures)

1.4 BID GUARANTEE

- A. The undersigned Bidder agrees to execute a contract for this Work in the above amount and to furnish surety as specified within (5) five days after a written Notice of Award, if offered within (30) thirty days after receipt of bids, and on failure to do so agrees to forfeit to Owner the attached cash, cashier's check, certified check, U.S. money order, or bid bond, as liquidated damages for such failure, in the following amount constituting five percent (5%) of the Base Bid amount above:

1. _____
(Words)

_____ (\$ _____)
(Figures)

- B. In the event Owner does not offer Notice of Award within the time limits stated above, Owner will return to the undersigned the cash, cashier's check, certified check, U.S. money order, or bid bond.

1.5 TIME OF COMPLETION

- A. The undersigned Bidder proposes and agrees hereby to commence the Work of the Contract Documents on a date specified in a written Notice to Proceed to be issued by Architect, and shall fully complete the Work by March 3, 2023.

1.6 ACKNOWLEDGEMENT OF ADDENDA

- A. The undersigned Bidder acknowledges receipt of and use of the following Addenda in the preparation of this Bid:

1. Addendum No. 1, dated _____
2. Addendum No. 2, dated _____
3. Addendum No. 3, dated _____

1.7 BID SUPPLEMENTS

- A. The following supplements are a part of this Bid Form and are attached hereto.

1. Contractor's Qualification Statement (AIA Document A305)
2. Bid Bond Form (AIA Document A310)
3. Non-Collusion Affidavit
4. Iran Divestment Act
5. Section 007300 "Special Conditions" Forms:
 - a. Bidder's Certification
 - b. Subcontractor Certification
 - c. Section 3 Bidders Certification
 - d. Propose Subcontractors List
 - e. Wage Rate Certification
 - f. Disclosure of Relationship with Municipality

1.8 CONTRACTOR'S LICENSE

- A. The undersigned further states that it is a duly licensed contractor, for the type of work proposed, All required license(s) as necessary to complete work have been applied and paid for.

1.9 SUBMISSION OF BID

1.10 Respectfully submitted this _____ day of _____, 2022.

1.11 Submitted By: _____
(Name of firm or corporation)

A. Authorized Signature: _____
(Handwritten signature)

B. Signed By: _____
(Type or print name)

C. Title: _____

D. Street Address: _____

E. City, State Zip: _____

F. Phone: _____

G. License No.: _____

H. Federal ID No: _____

END OF SECTION 004116.01

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AIA[®] Document A310[™] – 2010

Bid Bond

CONTRACTOR:

(Name, legal status and address)

SURETY:

(Name, legal status and principal place of business)

OWNER:

(Name, legal status and address)

The Village/Town of Mt. Kisco
104 Main Street
Mount Kisco NY 10549

BOND AMOUNT:

PROJECT:

(Name, location or address, and Project number, if any)

Water Department Building Addition
40 Columbus Avenue
Mount Kisco NY 10549

Project Number, if any:

Contract #2022-09

The Contractor and Surety are bound to the Owner in the amount set forth above, for the payment of which the Contractor and Surety bind themselves, their heirs, executors, administrators, successors and assigns, jointly and severally, as provided herein. The conditions of this Bond are such that if the Owner accepts the bid of the Contractor within the time specified in the bid documents, or within such time period as may be agreed to by the Owner and Contractor, and the Contractor either (1) enters into a contract with the Owner in accordance with the terms of such bid, and gives such bond or bonds as may be specified in the bidding or Contract Documents, with a surety admitted in the jurisdiction of the Project and otherwise acceptable to the Owner, for the faithful performance of such Contract and for the prompt payment of labor and material furnished in the prosecution thereof; or (2) pays to the Owner the difference, not to exceed the amount of this Bond, between the amount specified in said bid and such larger amount for which the Owner may in good faith contract with another party to perform the work covered by said bid, then this obligation shall be null and void, otherwise to remain in full force and effect. The Surety hereby waives any notice of an agreement between the Owner and Contractor to extend the time in which the Owner may accept the bid. Waiver of notice by the Surety shall not apply to any extension exceeding sixty (60) days in the aggregate beyond the time for acceptance of bids specified in the bid documents, and the Owner and Contractor shall obtain the Surety's consent for an extension beyond sixty (60) days.

If this Bond is issued in connection with a subcontractor's bid to a Contractor, the term Contractor in this Bond shall be deemed to be Subcontractor and the term Owner shall be deemed to be Contractor.

When this Bond has been furnished to comply with a statutory or other legal requirement in the location of the Project, any provision in this Bond conflicting with said statutory or legal requirement shall be deemed deleted herefrom and provisions conforming to such statutory or other legal requirement shall be deemed incorporated herein. When so furnished, the intent is that this Bond shall be construed as a statutory bond and not as a common law bond.

Signed and sealed this _____ day of _____

_____	_____	_____
<i>(Witness)</i>	<i>(Principal)</i>	<i>(Seal)</i>
_____	_____	_____
	<i>(Title)</i>	
_____	_____	_____
<i>(Witness)</i>	<i>(Surety)</i>	<i>(Seal)</i>
	_____	_____
	<i>(Title)</i>	

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DOCUMENT 004393 - BID SUBMITTAL CHECKLIST

1.1 BID INFORMATION

- A. Bidder: _____.
- B. Project Name: Water Department Building Addition
- C. Project Location: 40 Columbus Avenue, Mount Kisco NY 10549
- D. Owner: The Village/Town of Mount Kisco
- E. Architect: Bar Down Studio

1.2 BIDDER'S CHECKLIST

- A. In an effort to assist the Bidder in properly completing all documentation required, the following checklist is provided for the Bidder's convenience. The Bidder is solely responsible for verifying compliance with bid submittal requirements.
- B. Attach this completed checklist to the outside of the Submittal envelope.
 - ☐ Used the Bid Form provided in the Project Manual.
 - ☐ Prepared the Bid Form as required by the Instructions to Bidders.
 - ☐ Indicated on the Bid Form the Addenda received.
 - ☐ Attached to the Bid Form: Performance Bond OR a certified check for the amount required.
 - ☐ Attached to the Bid Form: Maintenance Bond.
 - ☐ Attached to the Bid Form: Certification of Bidder Responsibility.
 - ☐ Attached to the Bid Form: Non-Collusion Affidavit.
 - ☐ Attached to the Bid Form: Iran Divestment Act Affidavit.
 - ☐ Attached to the Bid Form: Corporate Resolutions.
 - ☐ Attached to the Bid Form: Special Conditions Forms.
 - ☐ Bid envelope shows name and address of the Bidder.
 - ☐ Bid envelope shows name of Project being bid.
 - ☐ Bid envelope shows time and day of Bid Opening.
 - ☐ Verified that the Bidder can provide executed Performance Bond and Labor and Material Bond.
 - ☐ Verified that the Bidder can provide Certificates of Insurance in the amounts indicated.

END OF DOCUMENT 004393

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AIA[®] Document A305[™] – 1986

Contractor's Qualification Statement

The Undersigned certifies under oath that the information provided herein is true and sufficiently complete so as not to be misleading.

SUBMITTED TO:

ADDRESS:

SUBMITTED BY:

NAME:

ADDRESS:

PRINCIPAL OFFICE:

- ☐ Corporation
- ☐ Partnership
- ☐ Individual
- ☐ Joint Venture
- ☐ Other

NAME OF PROJECT: *(If applicable)*

TYPE OF WORK: *(File a separate form for each Classification of Work.)*

- ☐ General Construction
- ☐ HVAC
- ☐ Electrical
- ☐ Plumbing
- ☐ Other: *(Specify)*

§ 1.0 ORGANIZATION

§ 1.1 How many years has your organization been in business as a Contractor?

This form is approved and recommended by the American Institute of Architects (AIA) and The Associated General Contractors of America (AGC) for use in evaluating the qualifications of contractors. No endorsement of the submitting party or verification of the information is made by AIA or AGC.

§ 1.2 How many years has your organization been in business under its present business name?

§ 1.2.1 Under what other or former names has your organization operated?

§ 1.3 If your organization is a corporation, answer the following:

§ 1.3.1 Date of incorporation:

§ 1.3.2 State of incorporation:

§ 1.3.3 President's name:

§ 1.3.4 Vice-president's name(s):

§ 1.3.5 Secretary's name:

§ 1.3.6 Treasurer's name:

§ 1.4 If your organization is a partnership, answer the following:

§ 1.4.1 Date of organization:

§ 1.4.2 Type of partnership, if applicable:

§ 1.4.3 Name(s) of general partner(s):

§ 1.5 If your organization is individually owned, answer the following:

§ 1.5.1 Date of organization:

§ 1.5.2 Name of owner:

§ 1.6 If the form of your organization is other than those listed above, describe it and name the principals:

§ 2.0 LICENSING

§ 2.1 List jurisdictions and trade categories in which your organization is legally qualified to do business, and indicate registration or license numbers, if applicable.

§ 2.2 List jurisdictions in which your organization's partnership or trade name is filed.

§ 3.0 EXPERIENCE

§ 3.1 List the categories of work that your organization normally performs with its own forces.

§ 3.2 Claims and Suits

(If the answer to any of the questions below is yes, attach details.)

§ 3.2.1 Has your organization ever failed to complete any work awarded to it?

§ 3.2.2 Are there any judgments, claims, arbitration proceedings or suits pending or outstanding against your organization or its officers?

§ 3.2.3 Has your organization filed any law suits or requested arbitration with regard to construction contracts within the last five years?

§ 3.3 Within the last five years, has any officer or principal of your organization ever been an officer or principal of another organization when it failed to complete a construction contract?

(If the answer is yes, attach details.)

§ 3.4 On a separate sheet, list major construction projects your organization has in progress, giving the name of project, owner, architect, contract amount, percent complete and scheduled completion date.

§ 3.4.1 State total worth of work in progress and under contract:

§ 3.5 On a separate sheet, list the major projects your organization has completed in the past five years, giving the name of project, owner, architect, contract amount, date of completion and percentage of the cost of the work performed with your own forces.

§ 3.5.1 State average annual amount of construction work performed during the past five years:

§ 3.6 On a separate sheet, list the construction experience and present commitments of the key individuals of your organization.

§ 4.0 REFERENCES

§ 4.1 Trade references:

§ 4.2 Bank references:

§ 4.3 Surety

§ 4.3.1 Name of bonding company:

§ 4.3.2 Name and address of agent:

§ 5.0 FINANCING

§ 5.1 Financial Statement

§ 5.1.1 Attach a financial statement, preferably audited, including your organization's latest balance sheet and income statement showing the following items:

- .1 Current Assets (e.g., cash, joint venture accounts, accounts receivable, notes receivable, accrued income, deposits, materials inventory and prepaid expenses);
- .2 Net Fixed Assets;
- .3 Other Assets;
- .4 Current Liabilities (e.g., accounts payable, notes payable, accrued expenses, provision for income taxes, advances, accrued salaries and accrued payroll taxes); and
- .5 Other Liabilities (e.g., capital, capital stock, authorized and outstanding shares par values, earned surplus and retained earnings).

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SECTION 004513.1 - CERTIFICATION OF BIDDER RESPONSIBILITY

CONTRACT: _____

BID OPENING DATE: _____

NAME OF BIDDER: _____

ADDRESS OF BIDDER: _____

By submission of this certification, the bidder, and each person signing on behalf of the bidder, certifies under the penalty of perjury that, at the time of execution and to the best of his/her knowledge and belief:

A] the bidder has not been terminated for cause under any contract;

B] neither the bidder, nor any officer or director of the bidder, nor any holder of five percent (5%) or more of the bidder's stock or equity, has been convicted of criminal conduct in connection with government contracts, Women's or Minority Business Enterprises (W/MBE), or business activities;

C] the bidder has attached to this form a complete and accurate record (listing the project, date, number and dollar value of fine(s), if any) of violations of O.S.H.A. requirements by the bidder within the past two calendar years;

D] the bidder has not been determined by the NYS Department of Labor to have been in willful noncompliance with the requirements of the Labor Law, including the prevailing wage and supplements payment requirements;

E] neither the bidder, nor any officer or director of the bidder, nor any holder of five percent (5%) or more of the bidder's stock or equity, have been convicted of criminal conduct involving violations of the Environmental Conservation Law, or of other State or federal environmental statutes;

F] the bidder has not been assessed civil penalties for violations of the Environmental Conservation Law, or of other State or federal environmental statutes;

G] the person signing this document certifies that he/she has fully informed her/himself regarding the accuracy of the statements contained in this certification, and, under the penalties of perjury, affirms the truth thereof, such penalties being applicable to the bidder as well as to the person signing in its behalf; and,

H] attached hereto (if a corporate bidder) is a certified copy of the resolution authorizing the execution of this certificate by the signatory, on behalf of the corporate bidder.

If in any case the bidder cannot make the foregoing certification, the bidder shall so state, and shall furnish to the Village a signed statement which sets forth in detail the reasons therefore.

Signature: _____

[SEAL OF CORPORATION]

Name (*printed*): _____

(*Name of Corporation*)

Title: _____

Sworn to me this _____ day of _____, 2022.

Notary Public

END OF SECTION 004513

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SECTION 004519 – NON-COLLUSION AFFIDAVIT

The following provisions of the New York State General Municipal Law form a part of the Bidding Requirements:

NON-COLLUSIVE BIDDING CERTIFICATE

- 1) 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 his or her knowledge and belief:
 - a) 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.
 - b) Unless otherwise required by law, the prices which have been 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
 - c) 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.
- 2) A Bid shall not be considered for award nor shall any award be made where (a) (1), (2) and (3) above have not been complied with; provided, however, that if in any case the Bidder cannot make the foregoing certification, the Bidder shall so state and shall so furnish with the Bid, a signed statement which sets forth in detail the reasons therefore. Where (a) (1), (2) and (3) above have not been complied with, the Bid shall not be considered for award nor shall any award be made unless the head of the purchasing unit of the political subdivision, public department, agency or official thereof to which the Bid is made, or his designee, determines that such disclosure was not made for the purpose of restricting competition.
 - a) The fact that a bidder (a) has published price lists, rates, or tariffs covering items being procured, (b) has informed prospective customers of proposed or pending publication of new or revised price lists for such items, or (c) has sold the same items to other customers at the same prices being bid, does not constitute, without more, a disclosure within the meaning of subparagraph (a).
- 3) Any bid hereafter made to any political subdivision of the State or any public department, agency or official thereof by a corporate bidder for work or services performed or to be performed or goods sold or to be sold, where competitive bidding is required by statute, rule, regulation, or local law, and where such bid contains the certification referred to in subdivision one of this section, shall be deemed to have been authorized by the board of directors of the bidder, and such authorization shall be deemed to include the signing and submission of the bid and the inclusion therein of the certificate as to non-collusion as the act and deed of the corporation.
- 4) The person signing this Bid or Proposal certifies that he has fully informed himself regarding the accuracy of the statements contained in this certification, and under the penalties of perjury, affirms the truth thereof, such penalties being applicable to the Bidder as well to the person signing in his behalf.

Signature_____Date_____Title_____

Business Address_____

Telephone_____Facsimile_____Federal ID No._____

END OF SECTION 004519

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SECTION 004520 - IRAN DIVESTMENT ACT AFFIDAVIT

The following provisions of the New York State General Municipal Law form a part of the Bidding Requirements:

- 1) 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 his or her knowledge and belief:
- 2) That the Bidder is not on the list created pursuant to Paragraph (b) of Subdivision 3 of Section 165-a of the New York State finance law.
 - a) By submitting a bid in response to this solicitation or by assuming the responsibility of a Contract awarded hereunder, Bidder / Contractor (or any assignee) certifies that once the prohibited entities list is posted on the Office of General Services (OGS) website, it will not utilize on such Contract any subcontractor that is identified on the prohibited entities list; and
 - b) Additionally, Bidder / Contractor is advised that once the list is posted on the OGS website, any Contractor seeking to renew or extend a Contract or assume the responsibility of a contract awarded in response to the solicitation, must certify at the time the Contract is renewed, extended or assigned that it is not included on the prohibited entities list.
- 3) A bid shall not be considered for award nor shall any award be made where the condition set forth in paragraph a of this subdivision has not been complied with; provided, however, that if in any case the bidder cannot make the foregoing certification, the bidder shall so state and shall furnish with the bid a signed statement which sets forth in detail the reasons therefor. A political subdivision may award a bid to a bidder who cannot make the certification pursuant to paragraph a of this subdivision on a case-by-case basis if:
 - a) The investment activities in Iran were made before the effective date of this section, 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
 - b) The political subdivision makes a determination that the goods or services are necessary for the political subdivision to perform its functions and that, absent such an exemption, the political subdivision 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.
- 4) Any bid hereafter made to any political subdivision of the State or any public department, agency or official thereof by a corporate bidder for work or services performed or to be performed or goods sold or to be sold, where competitive bidding is required by statute, rule, regulation, or local law, and where such bid contains the certification referred to in subdivision one of this section, shall be deemed to have been authorized by the board of directors of the bidder, and such authorization shall be deemed to include the signing and submission of the bid and the inclusion therein of the certificate as to non-engagement in investment activities in Iran as the act and deed of the corporation.
- 5) The person signing this Bid or Proposal certifies that he has fully informed himself regarding the accuracy of the statements contained in this certification, and under the penalties of perjury, affirms the truth thereof, such penalties being applicable to the Bidder as well to the person signing in his behalf.

Signature _____ Date _____ Title _____

Business Address _____

Telephone _____ Facsimile _____ Federal ID No. _____

END OF SECTION 004520

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SECTION 004543 - CORPORATE RESOLUTIONS

BE IT RESOLVED THAT _____
(Name)

of _____
(Name of Corporation)

be authorized to sign and submit the bid or proposal of this corporation for the following project:

(Project Name)

and to include in such bid or proposal the certificate as to non-collusion required by Section 103 of the General Municipal Law of the State of New York as the act and deed of such corporation. The foregoing is a true and correct copy of the resolution adopted by:

(Name of Corporation)

at a meeting of its Board of Directors held on the _____ day of _____, 2022.

The undersigned agrees and acknowledges that this corporate bidder shall be liable under the penalties of perjury for any inaccuracies or misstatement in such certificate.

(SEAL OF CORPORATION) _____
(Officer)

END OF SECTION 004543

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DRAFT AIA® Document A101® - 2017

Standard Form of Agreement Between Owner and Contractor where the basis of payment is a Stipulated Sum

AGREEMENT made as of the « » day of « » in the year « »
(In words, indicate day, month and year.)

BETWEEN the Owner:
(Name, legal status, address and other information)

The Village/Town of Mount Kisco
104 Main Street
Mount Kisco NY 10549

and the Contractor:
(Name, legal status, address and other information)

« »
« »
« »
« »

for the following Project:
(Name, location and detailed description)

Water Dept. Building Addition
40 Columbus Avenue
Mount Kisco NY 10459

The Architect:
(Name, legal status, address and other information)

Bar Down Studio, Inc.
PO Box 721
Beacon NY 12508

The Owner and Contractor agree as follows.

ADDITIONS AND DELETIONS: The author of this document has added information needed for its completion. The author may also have revised the text of the original AIA standard form. An *Additions and Deletions Report* that notes added information as well as revisions to the standard form text is available from the author and should be reviewed.

This document has important legal consequences. Consultation with an attorney is encouraged with respect to its completion or modification.

The parties should complete A101®-2017, Exhibit A, Insurance and Bonds, contemporaneously with this Agreement. AIA Document A201®-2017, General Conditions of the Contract for Construction, is adopted in this document by reference. Do not use with other general conditions unless this document is modified.

ELECTRONIC COPYING of any portion of this AIA® Document to another electronic file is prohibited and constitutes a violation of copyright laws as set forth in the footer of this document.

TABLE OF ARTICLES

1	THE CONTRACT DOCUMENTS
2	THE WORK OF THIS CONTRACT
3	DATE OF COMMENCEMENT AND SUBSTANTIAL COMPLETION
4	CONTRACT SUM
5	PAYMENTS
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8	MISCELLANEOUS PROVISIONS
9	ENUMERATION OF CONTRACT DOCUMENTS

EXHIBIT A INSURANCE AND BONDS

ARTICLE 1 THE CONTRACT DOCUMENTS

The Contract Documents consist of this Agreement, Conditions of the Contract (General, Supplementary, and other Conditions), Drawings, Specifications, Addenda issued prior to execution of this Agreement, other documents listed in this Agreement, and Modifications issued after execution of this Agreement, all of which form the Contract, and are as fully a part of the Contract as if attached to this Agreement or repeated herein. The Contract represents the entire and integrated agreement between the parties hereto and supersedes prior negotiations, representations, or agreements, either written or oral. An enumeration of the Contract Documents, other than a Modification, appears in Article 9.

ARTICLE 2 THE WORK OF THIS CONTRACT

The Contractor shall fully execute the Work described in the Contract Documents, except as specifically indicated in the Contract Documents to be the responsibility of others.

ARTICLE 3 DATE OF COMMENCEMENT AND SUBSTANTIAL COMPLETION

§ 3.1 The date of commencement of the Work shall be:

(Check one of the following boxes.)

- ☐ [« »] The date of this Agreement.
- ☐ [« »] A date set forth in a notice to proceed issued by the Owner.
- ☒ [X] Established as follows:
(Insert a date or a means to determine the date of commencement of the Work.)

The date of the Agreement or as set forth in notice to proceed issued by the Owner, whichever is earliest.

If a date of commencement of the Work is not selected, then the date of commencement shall be the date of this Agreement.

§ 3.2 The Contract Time shall be measured from the date of commencement of the Work.

§ 3.3 Substantial Completion

§ 3.3.1 Subject to adjustments of the Contract Time as provided in the Contract Documents, the Contractor shall achieve Substantial Completion of the entire Work:

(Check one of the following boxes and complete the necessary information.)

[X] Not later than 168 (one-hundred sixty-eight) calendar days from the date of commencement of the Work.

[« »] By the following date: « »

§ 3.3.3 If the Contractor fails to achieve Substantial Completion as provided in this Section 3.3, liquidated damages, if any, shall be assessed as set forth in Section 4.5.

ARTICLE 4 CONTRACT SUM

§ 4.1 The Owner shall pay the Contractor the Contract Sum in current funds for the Contractor's performance of the Contract. The Contract Sum shall be « » (\$ « »), subject to additions and deductions as provided in the Contract Documents.

§ 4.2 Alternates

§ 4.2.1 Alternates, if any, included in the Contract Sum:

Item	Price

§ 4.2.2 Subject to the conditions noted below, the following alternates may be accepted by the Owner following execution of this Agreement. Upon acceptance, the Owner shall issue a Modification to this Agreement. (Insert below each alternate and the conditions that must be met for the Owner to accept the alternate.)

Item	Price	Conditions for Acceptance

§ 4.3 Allowances, if any, included in the Contract Sum: (Identify each allowance.)

Item	Price

§ 4.4 Unit prices, if any: (Identify the item and state the unit price and quantity limitations, if any, to which the unit price will be applicable.)

Item	Units and Limitations	Price per Unit (\$0.00)

§ 4.5 Liquidated damages, if any: (Insert terms and conditions for liquidated damages, if any.)

Per Article 116, General Conditions of the Contract for Construction.

ARTICLE 5 PAYMENTS

§ 5.1 Progress Payments

§ 5.1.1 Based upon Applications for Payment submitted to the Architect by the Contractor and Certificates for Payment issued by the Architect, the Owner shall make progress payments on account of the Contract Sum to the Contractor as provided below and elsewhere in the Contract Documents.

§ 5.1.2 The period covered by each Application for Payment shall be one calendar month ending on the last day of the month, or as follows:

« »

§ 5.1.3 Provided that an Application for Payment is received by the Architect not later than the « » day of a month, the Owner shall make payment of the amount certified to the Contractor not later than the « » day of the « » month. If an Application for Payment is received by the Architect after the application date fixed above, payment of the amount certified shall be made by the Owner not later than « » (« ») days after the Architect receives the Application for Payment.

(Federal, state or local laws may require payment within a certain period of time.)

§ 5.1.4 Each Application for Payment shall be based on the most recent schedule of values submitted by the Contractor in accordance with the Contract Documents. The schedule of values shall allocate the entire Contract Sum among the various portions of the Work. The schedule of values shall be prepared in such form, and supported by such data to substantiate its accuracy, as the Architect may require. This schedule of values shall be used as a basis for reviewing the Contractor's Applications for Payment.

§ 5.1.5 Applications for Payment shall show the percentage of completion of each portion of the Work as of the end of the period covered by the Application for Payment.

§ 5.1.6 In accordance with the General Conditions of the Contract for Construction, and subject to other provisions of the Contract Documents, the amount of each progress payment shall be computed as follows:

§ 5.1.6.1 The amount of each progress payment shall first include:

- .1 That portion of the Contract Sum properly allocable to completed Work;
- .2 That portion of the Contract Sum properly allocable to materials and equipment delivered and suitably stored at the site for subsequent incorporation in the completed construction, or, if approved in advance by the Owner, suitably stored off the site at a location agreed upon in writing; and
- .3 That portion of Construction Change Directives that the Architect determines, in the Architect's professional judgment, to be reasonably justified.

§ 5.1.6.2 The amount of each progress payment shall then be reduced by:

- .1 The aggregate of any amounts previously paid by the Owner;
- .2 The amount, if any, for Work that remains uncorrected and for which the Architect has previously withheld a Certificate for Payment;
- .3 Any amount for which the Contractor does not intend to pay a Subcontractor or material supplier, unless the Work has been performed by others the Contractor intends to pay;
- .4 For Work performed or defects discovered since the last payment application, any amount for which the Architect may withhold payment, or nullify a Certificate of Payment in whole or in part; and
- .5 Retainage withheld pursuant to Section 5.1.7.

§ 5.1.7 Retainage

§ 5.1.7.1 For each progress payment made prior to Substantial Completion of the Work, the Owner may withhold the following amount, as retainage, from the payment otherwise due:

(Insert a percentage or amount to be withheld as retainage from each Application for Payment. The amount of retainage may be limited by governing law.)

5%

§ 5.1.7.3 Except as set forth in this Section 5.1.7.3, upon Substantial Completion of the Work, the Contractor may submit an Application for Payment that includes the retainage withheld from prior Applications for Payment pursuant to this Section 5.1.7. The Application for Payment submitted at Substantial Completion shall not include retainage as follows:

(Insert any other conditions for release of retainage upon Substantial Completion.)

« »

§ 5.1.8 If final completion of the Work is materially delayed through no fault of the Contractor, the Owner shall pay the Contractor any additional amounts in accordance with Article 116 of the General Conditions of the Contract for Construction.

§ 5.1.9 Except with the Owner's prior approval, the Contractor shall not make advance payments to suppliers for materials or equipment which have not been delivered and stored at the site.

§ 5.2 Final Payment

§ 5.2.1 Final payment, constituting the entire unpaid balance of the Contract Sum, shall be made by the Owner to the Contractor when

- .1 the Contractor has fully performed the Contract except for the Contractor's responsibility to correct Work as provided in Article 133 of the General Conditions of the Contract for Construction, and to satisfy other requirements, if any, which extend beyond final payment; and
- .2 a final Certificate for Payment has been issued by the Architect.

§ 5.2.2 The Owner's final payment to the Contractor shall be made no later than 30 days after the issuance of the Architect's final Certificate for Payment, or as follows:

No later than 30 (thirty) days after receipt of Certified Final Application for Payment.

§ 5.3 Interest

Payments due and unpaid under the Contract shall bear interest from the date payment is due at the rate stated below, or in the absence thereof, at the legal rate prevailing from time to time at the place where the Project is located.
(Insert rate of interest agreed upon, if any.)

« » % « »

ARTICLE 6 DISPUTE RESOLUTION

§ 6.1 Initial Decision Maker

The Owner will serve as the Initial Decision Maker pursuant to Article 143 of the General Conditions of the Contract for Construction, unless the parties appoint below another individual, not a party to this Agreement, to serve as the Initial Decision Maker.

(If the parties mutually agree, insert the name, address and other contact information of the Initial Decision Maker, if other than the Architect.)

Edward Brancati, Village Manager
The Village/Town of Mount Kisco

§ 6.2 Binding Dispute Resolution

For any Claim subject to, but not resolved by, mediation pursuant to Article 15 of AIA Document A201-2017, the method of binding dispute resolution shall be as follows:
(Check the appropriate box.)

☒ Arbitration pursuant to Article 107 of the General Conditions of the Contract for Construction

☐ Litigation in a court of competent jurisdiction

☐ Other (Specify)

« »

If the Owner and Contractor do not select a method of binding dispute resolution, or do not subsequently agree in writing to a binding dispute resolution method other than litigation, Claims will be resolved by litigation in a court of competent jurisdiction.

ARTICLE 7 TERMINATION OR SUSPENSION

§ 7.1 The Contract may be terminated by the Owner or the Contractor as provided in Article 116 of the General Conditions of the Contract for Construction.

ARTICLE 8 MISCELLANEOUS PROVISIONS

§ 8.1 Where reference is made in this Agreement to a provision of the General Conditions of the Contract for Construction or another Contract Document, the reference refers to that provision as amended or supplemented by other provisions of the Contract Documents.

§ 8.2 The Owner's representative:
(Name, address, email address, and other information)

Edward Brancati, Village Manager
The Village/Town of Mount Kisco
Village Hall
Mount Kisco NY 10549
ebrancati@mountkisco.ny.gov
(914) 864-0001

§ 8.3 The Contractor's representative:
(Name, address, email address, and other information)

<< >>
<< >>
<< >>
<< >>
<< >>
<< >>

§ 8.4 Neither the Owner's nor the Contractor's representative shall be changed without ten days' prior notice to the other party.

§ 8.5 Insurance and Bonds

§ 8.5.1 The Owner and the Contractor shall purchase and maintain insurance as set forth in Specification Section 007316 'Contractors Insurance Requirements'.

§ 8.5.2 The Contractor shall provide bonds as set forth in the Contract Documents.

ARTICLE 9 ENUMERATION OF CONTRACT DOCUMENTS

§ 9.1 This Agreement is comprised of the following documents:

- .1 AIA Document A101™-2017, Standard Form of Agreement Between Owner and Contractor
- .2 General Conditions of the Contract for Construction, bound in Project Manual
- .5 Drawings

Number	Title	Date

- .6 Specifications

Section	Title	Date	Pages

- .7 Addenda, if any:

Number	Date	Pages

Portions of Addenda relating to bidding or proposal requirements are not part of the Contract Documents unless the bidding or proposal requirements are also enumerated in this Article 9.

- .8 Other Exhibits:
(Check all boxes that apply and include appropriate information identifying the exhibit where required.)

☒ Supplementary and other Conditions of the Contract:

Document	Title	Date	Pages
007300	Special Conditions		25

- .9 Other documents, if any, listed below:
(List here any additional documents that are intended to form part of the Contract Documents. AIA Document A201™-2017 provides that the advertisement or invitation to bid, Instructions to Bidders, sample forms, the Contractor's bid or proposal, portions of Addenda relating to bidding or proposal requirements, and other information furnished by the Owner in anticipation of receiving bids or proposals, are not part of the Contract Documents unless enumerated in this Agreement. Any such documents should be listed here only if intended to be part of the Contract Documents.)

« »

This Agreement entered into as of the day and year first written above.

OWNER (Signature)

« »« »

(Printed name and title)

CONTRACTOR (Signature)

« »« »

(Printed name and title)

PROJECT LABOR AGREEMENT

PROJECT LABOR AGREEMENT

BETWEEN

(construction firm)

AND

THE BUILDING AND CONSTRUCTION TRADES COUNCIL OF
WESTCHESTER AND PUTNAM COUNTIES, NEW YORK. AFL-CIO

WATER DEPARTMENT BUILDING

VILLAGE/TOWN OF MOUNT KISCO

STANDARD (Replace with Contractor / Owner)
PROJECT LABOR AGREEMENT

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ARTICLE 1 - PREAMBLE

Whereas: (CONTRACTOR) on behalf of itself and as Construction Manager (CM) desires to perform and complete **ADDITION AND RENOVATIONS OF THE WATER DEPARTMENT BUILDING, located at 43 Columbus Avenue, Mount Kisco, NY 10549** in a manner designed to afford the lowest reasonable costs to VILLAGE/TOWN OF MOUNT KISCO (OWNER)

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

- (1) avoiding the costly delays of potential strikes, slowdowns, walkouts, picketing and other disruptions arising from work disputes and promote labor harmony and peace for the duration of the Project;
- (2) standardizing the terms and conditions governing the employment of labor on the Project;
- (3) permitting wide flexibility in work scheduling and shift hours and times, including flexibility designed to meet the special needs of this Project;
- (4) including negotiated adjustments to work rules and staffing requirements from those which otherwise might obtain;
- (5) providing comprehensive and standardized mechanisms for the settlement of work disputes, including those relating to jurisdiction;
- (6) ensuring a reliable source of skilled and experienced labor;

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(7) furthering public policy objectives as to employment opportunities for minorities and women and improved opportunities for minority and women-owned business in the construction industry;

(8) ensuring appropriate security precautions during the life of the Project;

(9) minimizing the potential losses of revenues through timely completion of contracts;

And

(10) expediting the construction process and otherwise minimizing the inconvenience to the Village/Town of Mount Kisco, the citizens of Westchester County, the surrounding business entities, and the public; and

WHEREAS, the signatory Unions desire the stability, security and work opportunities afforded by a Project Labor Agreement; and,

WHEREAS, the Parties desire to maximize Project safety conditions for both workers and the public;

NOW, THEREFORE, the Parties enter into this Agreement:

SECTION 1. PARTIES TO THE AGREEMENT

This is a Project Labor Agreement ("Agreement") entered into by and between _____ CONSTRUCTION (CM) and its successors and assigns on its own behalf and on behalf of all other contractors and subcontractors (hereinafter "Contractor, Contractors or Sub Contractors) engaged in on-site project work, and by the Building and Construction Trades Council of Westchester and Putnam Counties, New York, AFL-CIO ("Council"), on behalf of itself and its affiliated local union members; and the signatory Local

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Unions on behalf of themselves and their members. It is understood that if the CM is changed, the successor CM shall assume all terms and conditions of this Agreement for certain construction work anticipated to be performed on the project

ARTICLE 2 - GENERAL CONDITIONS

SECTION 1. DEFINITIONS

Throughout this Agreement, the Union parties and the signatory Local Unions and the Council are referred to singularly and collectively as "**Union(s)**" where specific reference is made to "**Local Unions**" that phrase is sometimes used;

The term "**Contractor(s)**" shall include CM and all other signatory contractors, and their subcontractors of whatever tier, engaged in on-site Project Construction Work within the scope of this Agreement as defined in Article 3 and Exhibit C; and the work covered by this Agreement (as defined in Article 3 and Exhibit C) is referred to as the "Project work"

The term "**Employer**" means any contractor or subcontractor working on the Project.

SECTION 2. CONDITIONS FOR AGREEMENT TO BECOME EFFECTIVE

This Agreement shall not become effective unless each of the following conditions are met: (1) the Agreement is signed by the Council on behalf of itself and all of its affiliated Local Unions working on the Project; and, (2) the Agreement is signed by the CM and (3) the Agreement is approved by the Owner. A Union that is not an affiliate of the Council or who elects in writing not to be bound by this Agreement, or an affiliate that is delinquent in the payment of dues to the Council and remains delinquent after 30 days' notice of the delinquency cannot work on the Project.

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SECTION 3. ENTITIES BOUND & ADMINISTRATION OF AGREEMENT

A. This Agreement shall be binding on the Council, and its affiliated Local Unions, the CM and all signatory Contractors performing on-site Project work, including site preparation and staging areas, as defined in Article 3 and Exhibit C attached hereto. The CM and the Contractor shall include in any subcontract that they let, for performance during the term of this Agreement, a requirement that their subcontractors, of whatever tier, become signatory and bound by this Agreement with respect to subcontracted work performed within the scope of Article 3 and Exhibit C by signing a Letter of Assent (Exhibit "A"). This Agreement shall be administered by the CM on behalf of all contractors.

SECTION 4. SUPREMACY CLAUSE

This Agreement, together with the local Collective Bargaining Agreements (the "CBA's"), referenced at Exhibit B, copies of which are available for inspection at the Office of the Council represents the complete understanding of all signatories and supersedes any national agreement, local agreement or other collective bargaining agreement of any type which would otherwise apply to this Project, in whole or in part. Where a subject covered by the provisions, explicit or implicit, of this Agreement is also covered by the Exhibit B CBA's, the provisions of this Agreement shall prevail. It is further understood that no Contractor shall be required to sign any other agreement as a condition of performing work on this Project. No practice, understanding or agreement between a Contractor and a Local Union which is not explicitly set forth in this Agreement or the Exhibit B CBA's shall be binding on this Project. It is further agreed that, where there is a conflict the terms and conditions of this Agreement shall supersede and override terms and conditions of any and all National, area, or local collective bargaining agreements, except for all work performed under the NTL Article of Agreement, the National Stack/Chimney Agreement, the National Cooling Tower Agreement, and the National

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Agreement of the International Union of Elevator Constructors. All instrument calibration work and loop checking shall be performed under the terms of the UA/IBEW Joint National Agreement for Instrument and Control Systems Technicians. This PLA will not affect, nor does it intend to change, a favored nation's clause contained in a Local Union CBA of any affiliate covered by this PLA.

SECTION 5. LIABILITY

The liability of any Contractor and the liability of any Union under this Agreement shall be several and not joint. The CM and any Contractor and any subcontractor shall not be liable for any acts or violations of any other contractor; and the Council and Local Unions shall not be liable for the acts or violation of any other Union.

SECTION 6. THE OWNER

The Owner is not a party to this Agreement and shall not be liable in any manner under this Agreement. It is understood that nothing in this Agreement shall be construed as limiting the sole discretion of the Owner and of the CM in determining which Contractors shall be awarded contracts for Project Work as long as the Contractor signs the Letter of Assent. It is further understood that the Owner has sole discretion at any time to terminate, delay or suspend the work, in whole or in part, on this Project. It is further understood that the Owner shall have the right to access, use, or occupy any parts of the Project that is completed or partly completed and to install Owner-provided equipment and furnishings therein. The Contractors, the Council and the Local Unions shall accommodate and cooperate with the Owner's use, occupancy and furnishing of these parts of the Project. CM shall turn the facility, system or space (including without limitation security and maintenance systems and new construction or renovations) over to the Owner upon the Owner's issuance to the CM of a letter of acceptance of the facility, system or space.

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SECTION 7. THE CM

The CM shall require in its bid specifications for all work within the scope of Article 3 and Exhibit C that all successful bidders, and their subcontractors of whatever tier, become bound by, and signatory to, this Agreement.

It is understood that nothing in this Agreement shall be construed as limiting the sole discretion of the CM in determining which Contractor or Subcontractor shall be awarded contracts for Project work. It is further understood that the Contractor has sole discretion at any time to terminate, delay or suspend the work, in whole or part, on this Project.

The CM agrees that neither it nor any of its Contractors or Subcontractors will subcontract any work to be done on the Project except to a person, firm or corporation who is or agrees to become party to this Agreement. Any Contractor or subcontractor working on the Project shall, as a condition to working on said Project, become signatory to and perform all work under the terms of this Agreement.

SECTION 8. AVAILABILITY AND APPLICABILITY TO ALL SUCCESSFUL BIDDERS

The Unions agree that this Agreement will be made available to, and will fully apply to any successful bidder for Project work who becomes signatory thereto, without regard to whether that successful bidder performs work at other sites on either a union or non-union basis and without regard to whether employees of such successful bidder are, or are not, members of any unions. This Agreement shall not apply to the work of any Contractor or subcontractor which is performed at any location other than the Project site, as defined in Article 3, Section 1, and Exhibit C.

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ARTICLE 3 - SCOPE OF THE AGREEMENT

The Project work covered by this Agreement shall be as defined and limited by the following sections of this Article and Exhibit C.

SECTION 1. THE WORK

This Agreement shall only apply to the on-site and off-site construction **work performed at or for the CM on behalf of the Owner at the following Project: VILLAGE/TOWN OF MOUNT KISCO WATER DEPARTMENT BUILDING ADDITION AND RENOVATIONS** further described in Exhibit C hereto and only to the extent that the work has been awarded by Owner to the CM. During the term of this Agreement, of the Project will include among other things the following components to the extent that these components have been contracted by the Owner to the CM (i) construction of renovations and upgrades to the Project "On Site" construction work in conjunction with the above shall also include Project Construction Work performed at preparation and staging area.

SECTION 2. EXCLUDED EMPLOYEES AND EXCLUDED WORK

Subject to Article 6, the following work and persons are not subject to the provisions of this Agreement, even though performing Project Work:

1. Superintendents, supervisors excluding general and forepersons specifically covered by an Exhibit B CBA, engineers, licensed architects, inspectors and testers, quality control assurance personnel, timekeepers, mail carriers, clerks, office workers, messengers, guards, technicians, non-manual employees, and all professional, engineering administrative and management persons. Excluded employees shall not apply to any general forepersons and field craft surveyors who are performing work traditionally done by members of IUOE Local 15D and/or which is covered by the Local 15D Surveying and Consulting Agreements.

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2. Employees or workers of any other public agency, authority, municipality or any other public employer;

3. Employees, workers, entities and sub-contractors engaged in off-Project site manufacture, modifications, repair, maintenance, assembly, painting, handling or fabrication of components, materials, equipment, modules or machinery or involved in deliveries to and from the Project site, except operating vehicles on the Project site and deliveries made within the geographic jurisdiction of the International Brotherhood of Teamsters Local 456 Exhibit B CBA of major building and construction materials as follows: fuel oil for construction vehicles and equipment on the Project site, fill, ready mix concrete, asphalt, sub-base stone/gravel, dynamite concrete block, lumber, and item 4 which are covered by this Agreement;

4. If a tank or pressurized vessel is to be installed on the Project the terms of this Agreement shall not apply to work of the employees that is normally performed under the terms of a National Specialty Agreement including, but not limited to, the National Tank Agreement, the Stack Liner Agreement, the Rubber Line Agreement, or any other Specialty Agreement;

5. Employees or workers of the CM or the Contractor, excepting those performing manual, on-site construction labor who will be covered by this Agreement;

6. Employees or workers engaged in on-site equipment warranty work (when the Contractor or a subcontractor has on site an employee already certified by the relevant manufacturer to make warranty repairs on that Contractor's equipment, that employee shall be used; when the Contractor or a subcontractor has on site an employee already qualified to

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make warranty repairs, although not certified by the equipment manufacturer to do so, that employee shall be used to make repairs working under the direction of a manufacturer certified warranty representative). Notwithstanding the foregoing, if a Contractor, in order to satisfy the warranty requirements of a manufacturer, must utilize a person or entity designated by the manufacturer, it may do so without coverage under this Agreement;

7. Employees or workers engaged to perform laboratory or specialty testing or inspections or engaged in geophysical testing (whether land or water) other than boring for core samples;

8. Employees engaged in work ancillary to the Project, performed by third parties, including without limitation performed by electric utilities, gas utilities, water utilities and telephone companies, who are not signatories to this Agreement, provided however that Contractors for teledata, audio-visual, security and television services will limit their work up to a demarcation or terminus point which will be the first point of distribution of system service in the respective building. With respect to entities engaged in such work ancillary to the Project, the Contractor will nonetheless notify those entities of this Project Labor Agreement and that they may participate under this Agreement, if they so choose. To the extent practicable, and within its control, the Contractor will use its best efforts to coordinate ancillary work within the vicinity of construction performed under this PLA to promote labor harmony on the Project;

9. Employees or workers engaged by the Owner even though working on the Project Site while Project Work is under way;

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10. Persons engaged in the delivery of Owner-furnished equipment to the Project Site or to any off-site warehouse maintained by Owner;

11. Employees of "Artisans" shall be individuals or entities whom Owner may (or may not) employ directly to create unique, one-of-a-kind decorative elements, including architectural finishes for incorporation into the building;

12. Employees or workers of any entity who are engaged in the final cleaning and housekeeping of all space at the Project Site just prior to occupancy by the Owner. This provision is intended to apply to workers performing the final cleaning and housekeeping that occurs after the clean-up required by the construction and renovation activities contemplated by this Agreement;

13. Employees or workers of any entity who are engaged in operation of building equipment and machinery that are not used in constructing the facilities and are owned or controlled and/or operated by Owner, its architect, engineers and/or its testing inspection firms;

14. Employees or workers of any entity who are engaged in the on-site or off-site maintenance of leased equipment;

15. Employees or workers of any entity who are engaged in work of any kind on the Project Site after this Agreement terminates

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SECTION 3. NON-APPLICATION TO CERTAIN ENTITIES

This Agreement shall not apply to the parents, affiliates, subsidiaries, or other joint or sole ventures of the CM, and Contractor or sub-contractor which does not perform work at this Project. It is agreed, for the purposes of this Agreement only, that this Agreement does not have the effect of creating any joint employment, single employer or alter ego status among or between the Owner, the CM, any Contractor or any other state agency, authority, or other municipal or public entity and nothing contained herein shall be construed to prohibit or restrict the Contractor or its employees or any other state or municipal authority, agency or entity and its employees from performing on or off-site work not related to the Project. As the contracts which comprise the Project work are completed and accepted, the Agreement shall have no further force or effect.

ARTICLE 4 - UNION RECOGNITION AND EMPLOYMENT

SECTION 1. PRE-HIRE RECOGNITION

The Contractor and all sub-contractors recognize the signatory Unions as the sole and exclusive bargaining representatives of all craft employees who are performing on-site Project work within the scope of this Agreement as defined in Article 3 and more fully described in Exhibit C.

SECTION 2. UNION REFERRAL

A. The Contractor and all sub-contractors agree to hire for this Project, craft employees covered by this Agreement through the job referral systems and hiring halls (where the referrals meet the qualifications set forth in items 1, 2,3 and 4 of subparagraph (B) established in the Local Unions' area collective bargaining agreements. Notwithstanding this, the Contractor and all sub-contractors shall have sole rights to determine the competency of all referrals; the number of employees required; the selection of employees to be laid-off (except as

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provided in Article 5, Section 3); and the sole right to reject any applicant referred by a Local Union. In the event that a Local Union is unable to fill any request for qualified employees within a 48 hour period after such requisition is made by the Contractor and all sub-contractors (Saturdays, Sundays and holidays excepted), the Contractor or sub-contractor may employ applicants from any other available source. In the event that the Local Union does not have a job referral system, the Contractor or sub-contractor shall give the Local Union first preference to refer applicants, subject to the other provisions of this Article. The Contractor or sub-contractor shall notify the Local Union of Project craft employees hired within its jurisdiction from any source other than referral by the Union.

B. Consistent with the Exhibit B CBA, The Contractor or a sub-contractor may request by name, and the Local will honor, referral of persons who have applied to the Local for Project work and who meet the following qualifications as determined by a Committee of 3 designated, respectively, by the applicable Local Union, the CM or Contractor or sub-contractor and a mutually selected third party or, in the absence of agreement, the permanent arbitrator (or designee) designated in Article 9:

- (1) Possess any license required by NYS law for the Project work to be performed;
- (2) Have worked a total of at least 1000 hours in the Construction craft during the prior 3 years;
- (3) Were on the Contractor's or sub-contractor's active payroll for at least 60 out of the 180 calendar days prior to the contract award;
- (4) Have demonstrated ability to safely perform the basic functions of the applicable trade.

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The CM, Contractor or sub-contractor will be initially responsible for determining that new hires meet the requirements established in (1), (2), (3) and (4), as set forth above.

The Exhibit B CBAs will determine the number of employees who shall be hired through the special provisions above (any fraction shall be rounded to the next highest whole number)

The Committee may also allow a Contractor or sub-contractor, subject to any limit expressed in the Exhibit B CBA, to employ trainees (pursuant to Article 13, Section 2) to afford an opportunity to minority, women for entry into the construction industry outside of the formal apprenticeship program.

SECTION 3. NON-DISCRIMINATION IN REFERRALS

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

SECTION 4. CROSS AND QUALIFIED REFERRALS

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

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SECTION 5. UNION DUES

All employees covered by this Agreement shall be subject to the union security provisions contained in the applicable Exhibit B CBA's, as amended from time to time, but only for the period of time during which they are performing on-site Project work and only to the extent of rendering payment of the applicable monthly union and administrative or working dues uniformly required for union membership in the Local Union, signatory to this Agreement, which represents the craft in which the employee is performing Project work. No employee shall be discriminated against at the Project site because of the employee's union membership or lack thereof. In the case of unaffiliated employees, the monthly dues payment will be received by the Council as an agency shop fee.

SECTION 6. CRAFT FOREPERSONS AND GENERAL FOREPERSONS

The selection of craft forepersons and/or general forepersons and the number of forepersons required shall be solely the responsibility of the Contractor or sub-contractor except where otherwise provided by specific provisions of an applicable Exhibit B CBA or as agreed to by the parties in a writing specific to this Project, in which case the writing specific to this Project shall govern. All forepersons shall take orders exclusively from the designated Contractor or sub-contractor representatives. Craft forepersons shall be designated as working forepersons at the request of the Contractor or subcontractor, except when an Exhibit B CBA prohibits a foreperson from working when the craft person he is leading exceed a specified number.

ARTICLE 5 - UNION REPRESENTATION

SECTION 1. LOCAL UNION REPRESENTATIVE

Each Local Union representing on-site Project employees shall be entitled to designate in writing (copy to the Contractor or sub-contractor involved and to CM) one representative, and/or the Business Manager, who shall be afforded access to the Project.

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SECTION 2. STEWARDS

A. Each Local Union shall have the right to designate a working journeyperson as a Steward (and an alternate who shall serve as a Steward only when the regular Steward is unavailable) and shall notify the Contractor(s) or sub-contractor(s) and CM of the identity of the designated Steward (and alternate) prior to the assumption of such duties with the understanding that at no time shall there be more than one designated Steward and one designated alternate per trade on the Project Site regardless of the number of Contractors on the Project Site.. Stewards shall not exercise supervisory functions and will receive the regular rate of pay for their craft classifications. There will be no non-working Stewards on the Project.

B. In addition to their work as an employee, the Steward shall have the right to receive complaints or grievances and to discuss and assist in their adjustment with the CM's, the Contractor or sub-contractor's appropriate supervisor. Each Steward shall be concerned with the employees of the Steward's Contractor or sub-contractor but not with the employees of any other Contractor or sub-contractor. The CM will not discriminate against the Steward in the proper performance of his Union duties.

C. Stewards shall assist in implementing the Agreement in the spirit on labor management cooperation.

D Stewards shall not be compensated by the Contractor for Steward work performed away from the Project Site, except to the extent that the duties being performed off-Site relate to the grievance-arbitration procedure of Article 7 or 9 of the Agreement. Stewards shall not be compensated for time spent on Union business which requires the Steward to leave the Project Site.

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E The Stewards shall not have the right to determine when overtime shall be worked, or who shall work overtime.

SECTION 3. LAYOFF OF A STEWARD

The Contractor and sub-contractors agree to notify the appropriate Union 24 hours prior to the layoff of a Steward, except in cases of discipline or discharge for just cause. If a Steward is protected against layoff by an Exhibit B CBA, such provisions shall be recognized to the extent the Steward possess the necessary qualifications to perform the work required. In any case in which a Steward is discharged or disciplined for just cause, the Local Union involved shall be notified immediately by the Contractor or sub-contractor.

ARTICLE 6 - MANAGEMENT'S RIGHTS

SECTION 1. RESERVATION OF RIGHTS

Except as expressly limited by a specific provision of this Agreement, the CM, the Contractor and sub-contractor retain full and exclusive authority for the management of their Project operations including, but not limited to: the right to direct the work force, including determination as to the number to be hired and the qualifications therefore; the promotion, transfer, layoff of its employees; or the discipline or discharge for just cause of its employees; the assignment and schedule of work; the promulgation of reasonable Project work rules; and, the requirement, timing and number of employees to be utilized for overtime work. No rules, customs, or practices which limit or restrict productivity or efficiency of the individual, as determined by the CM, the Contractor, or sub-contractor and/or joint working efforts with other employees shall be permitted or observed.

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SECTION 2. MATERIALS, METHODS & EQUIPMENT

A. There shall be no limitation or restriction upon the Contractor or sub-contractor's choice of materials, modules, techniques, methods, technology or design, or, regardless of source or location, upon the use and installation of equipment, machinery, package units, pre-cast, prefabricated, pre-finished (except that all rebar for use in cast-in-place, on site construction will be cut and bent in accordance with local industry practices), or pre-assembled materials, tools, or other labor-saving devices. Contractors may, without restriction, install or use materials, supplies or equipment regardless of their source. The on-site installation or application of such items shall be performed by the craft having jurisdiction over such work; provided, however, it is recognized that other personnel having special qualifications may participate, in a supervisory capacity, in the installation, check-off or testing of specialized or unusual equipment or facilities as designated by the Contractor or sub-contractor. There shall be no restrictions as to work which is performed off-site for the Project, except that the Contractor and sub-contractors will make reasonable efforts to have pre-assembled duct work produced in shops represented by Sheetmetal Workers Local 38. The Contractor will make reasonable efforts to provide that any equipment or materials under the jurisdiction of the Plumbing and Steamfitting trade shall be accepted and installed by Plumbers, Steamfitters and Apprentices, provided such material or equipment conforms to the National Form of Agreement of the United Association.

B. There shall be no stand-by Trades required for temporary power, light, water, or heat unless requested by the Owner.

C. The Employer shall subcontract for the delivery of redi-mix concrete and asphalt only to companies whose wages and other economic benefits are equivalent to the area standards

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established by the Union unless said companies are unable or unwilling to supply redi-mix concrete or asphalt to the Employer.

D Except to the extent otherwise agreed to by the parties in writing, All electrical and electronic work, including but not limited to, the installation, repair and maintenance of all building wiring systems, telephone, data, fire alarm, signs, TV, security wiring and devises, sound and alarm systems and building automation systems, shall be performed under the Local Agreement of IBEW Local 3.

ARTICLE 7 - WORK STOPPAGES AND LOCKOUTS

SECTION 1. NO STRIKES-NO LOCK OUT

There shall be no strikes, sympathy strikes, parades, picketing, bannering, establishment of an inflatable rat or any similar display or signal, work stoppages, slowdowns, hand billing, demonstrations or other disruptive activity at the Project site or any area where on-Site construction work (as defined in Article 3, Section 1) takes place, or other activity otherwise adversely affecting Project work for any reason by any Union or employee against any Contractor, sub-contractor or employer while performing work at the Project site. There shall be no other Union, or concerted or employee activity which disrupts or interferes with the CM's or the Contractors services or the Owner's operations. Failure of any Union or employee to cross any picket line established by any union, signatory or non-signatory to this Agreement, or the picket or demonstration line of any other organization, at the Project site or which otherwise adversely affects Project work or which disrupts or interferes with services to or at the Project Site is a violation of this Article. For the purposes of this Article and Article 10 of this Agreement, Project Site shall include each location that compromises the Project and other ancillary sites. There shall be no lockout at the Project by any Contractor or sub-contractors. The

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CM may stop work on or shut down the Project Site for valid legal or business reasons unrelated to a labor dispute but will make efforts to provide advance notice of a stoppage or work or shutdown. The Contractors and sub-contractors and Unions shall take all steps necessary to ensure compliance with this Section 1 and to ensure uninterrupted construction for the duration of this Agreement. Contractors and sub-contractors and Unions shall take all steps necessary to ensure compliance with this section 1 and to ensure uninterrupted construction at the Project, and ensure the free flow of vehicular or pedestrian traffic within, into and out of the Project Site, for the duration of the Agreement. No jurisdictional dispute shall excuse or justify a violation of this provision.

SECTION 2. DISCHARGE FOR VIOLATION

The Contractor or sub-contractor may discharge any employee violating Section 1, above, and any such employee will not be eligible thereafter for referral under this Agreement.

SECTION 3. NOTIFICATION

If a Contractor contends that any Union has violated this Article, it will notify the appropriate district or area council of the Local Union involved advising of such fact, with copies of the notification to the Local Union, and the Council. The district or area council and the Council shall each instruct, order and otherwise use their best efforts to cause the employees, and/or the Local Unions to immediately cease and desist from any violation of this Article. A district or area council, or the Council complying with these obligations shall not be liable for the unauthorized acts of a Local Union or its members. Similarly, a Local Union and its members will not be liable for any unauthorized acts of the Council.

SECTION 4. EXPEDITED ARBITRATION

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

A. A party invoking this procedure shall notify Gary Kendellen, J.J. Pierson, and Roger Maher, who shall alternate (beginning with Arbitrator Kendellen) as Arbitrator under this expedited arbitration procedure. If the Arbitrator next on the list is not available to hear the matter within 24 hours of notice, the next Arbitrator on the list shall be called. Copies of such notification will be simultaneously sent to the alleged violator and, if a Local Union is alleged to be in violation, its International, the Council, and the CM.

B. The Arbitrator shall thereupon, after notice as to time and place to the Contractor, the Local Union involved, the Council and the CM, hold a hearing within 48 hours of receipt of the notice invoking the procedure if it is contended that the violation still exists.

C. The sole issue at the hearing shall be whether a violation of Section 1, above, occurred. The Award shall be issued in writing within 3 hours after the close of the hearing, and may be issued without an Opinion.

D. The decision of the Arbitrator shall be final and binding on the involved Contractor, Local Union and employees and the fees and expenses of such arbitrations and the Arbitrator shall be borne equally by the involved Contractor and Local Union.

E. In any proceeding arising under this Article, the CM shall be a party in interest with full right of participation at its option and shall be sent contemporaneous copies of all notifications required to be given under this Article.

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ARTICLE 8 - LABOR MANAGEMENT COMMITTEE

SECTION 1. SUBJECTS

A Project Labor Management Committee will meet on a regular basis to: 1) promote harmonious relations among the CM, the Contractor, the sub-contractor and Unions; 2) enhance safety awareness, cost effectiveness and productivity of construction operations; 3) protect the public interests; 4) discuss matters relating to manning and scheduling with safety and productivity as considerations; and 5) review Affirmative Action and equal opportunity matters pertaining to the Project.

SECTION 2. COMPOSITION

The Committee shall be jointly chaired by designees of the President of the Council and the Executive Manager / Vice President of the CM, The Council and the CM may each designate two representatives to the committee. The Council and the CM may each designate two representatives to the Committee. The Council and the CM may designate additional representatives of the Local Unions and Contractors involved in the issues being discussed. The Committee may conduct business through mutually agreed sub-committees

ARTICLE 9 - GRIEVANCE & ARBITRATION PROCEDURE

SECTION 1. PROCEDURE FOR RESOLUTION OF GRIEVANCES

A. This Agreement is intended to provide close cooperation between management and labor. Each of the Unions will assign a representative to this Project for the purpose of completing the construction of the Project economically, efficiently, continuously, and without interruptions, delays, or work stoppages.

B. The CM, the Contractors, Unions, and the employees, collectively and individually, realize the importance to all parties to maintain continuous and uninterrupted

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performance of the work of the Project, and agree to resolve disputes in accordance with the grievance-arbitration provisions set forth in this Article.

C. Any question or dispute during the term of this agreement shall be subject to the grievance and arbitration process. Further, if an employee covered by this Agreement feels he or she is aggrieved by a violation of this Agreement, he or she, through his or her local union business representative or job steward, shall, within five (5) working days after the Union or the aggrieved employee (s) knows or should have known of the occurrence of the violation, give notice to the work-site representative of the involved Contractor stating the provision(s) alleged to have been violated. The business representative of the local union or the job steward and the work-site representative of the involved Contractor and the Project Contractor shall meet and endeavor to adjust the matter within three (3) working days after timely notice has been given. The representative of the Contractor shall keep the meeting minutes and shall respond to the Union representative in writing (copying the Project Contractor) at the conclusion of the meeting but not later than twenty-four (24) hours thereafter. If they fail to resolve the matter within the prescribed period, the grieving party may, within forty-eight (48) hours thereafter, pursue Step 2 of the Grievance Procedure, provided the grievance is reduced to writing, setting forth the relevant information concerning the alleged grievance, including a short description thereof, the date on which the grievance occurred, and the provision(s) of the Agreement alleged to have been violated.

Step 1:

Should the Local Union(s) or the Project Contractor or any Contractor have a dispute with the other party and, if after conferring, a settlement is not reached within three (3) working

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days, the dispute may be reduced to writing and proceed to Step 2 in the same manner as outlined herein for the adjustment of an employee complaint. Disputes shall include the payment, or non-payment, of Employee Benefit Funds which are not resolved pursuant to Article 11, Section 2.

Step 2:

The International union Representative and the involved Contractor shall meet within seven (7) working days of the referral of a dispute to this second step to arrive at a satisfactory settlement thereof. Meeting minutes shall be kept by the Contractor. If the parties fail to reach an agreement, the dispute may be appealed in writing in accordance with the provisions of Step 3 within seven (7) calendar days thereafter.

Step 3:

A. If the grievance shall have been submitted but not resolved in Step 2, any of the participating Step 2 entities may, within 21 calendar days after the initial Step 2 meeting, submit the grievance in writing (copies to other participants) to one of the designated arbitrators: J.J. Pierson, Richard Adelman, or Roger Maher who shall alternate as arbitrator. The Labor Arbitration Rules of the American Arbitration Association shall govern the conduct of the arbitration hearing, at which all Step 2 participants shall be permitted to participate. The decision of the arbitrator shall be final and binding on the involved Contractor or sub-contractor the Local Union and the grievant and the fees and expenses of such arbitrations shall be borne equally by the involved Contractor or sub-contractor and the Local Union. All arbitrations involving this Project Labor Agreement will be conducted at the offices of the Building Trades Council.

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B. Failure of the grieving party to adhere to the time limits established herein shall render the grievance null and void. The time limits established herein may be extended only by written consent of the parties involved at the particular step where the extension is agreed upon. The Arbitrator shall have the authority to make decisions only on issues presented to him or her and he or she shall not have authority to change, amend, add to or detract from any of the provisions of this Agreement. In the event that an arbitrator award is issued in favor of a Local Union resulting from a violation of Article 2, Section 3 of this Agreement by a subcontractor, and the Local Union cannot enforce the arbitration award against the offending subcontractor after due diligence, the Contractor may be held liable for the damages as set forth in the arbitration award subject to the following:

(1) The Local Union notified the Contractor by certified mail of a violation of Article 3, Section 3, with copies to the President of the Building Trades Council, and the offending subcontractor

(2) The arbitration award establishes that the Contractor had knowledge of the violation of Article 2, Section 3.

D. The Project Contractor and Owner shall be notified of all actions at Steps 2 and 3 and shall, upon their request, be permitted to participate in all proceedings at these steps.

ARTICLE 10 - JURISDICTIONAL DISPUTES

A. The assignment of work will be solely the responsibility of the Contractor performing the work involved; and such work assignments will be in accordance with the Plan

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for the Settlement of Jurisdictional Disputes in the Construction Industry (the "Plan") or any successor Plan.

B. All jurisdictional disputes on this project, between or among Building and Construction Trades Unions and employers, parties to this Agreement, shall be settled and adjusted according to the present Plan established by the Building and Construction Trades Department or any other plan or method of procedure that may be adopted in the future by the Building and Construction Trades Department. Decisions rendered shall be final, binding and conclusive on the Contractors and Unions parties to this Agreement.

C. All jurisdictional disputes shall be resolved without the occurrence of any strike, work stoppage, or slow-down of any nature and the Contractor's assignment shall be adhered to until the dispute is resolved. Individuals violating this section shall be subject to immediate discharge.

D. Each Contractor will conduct a pre job conference with the Council prior to commencing work. The CM and the Owner will be advised in advance of all such conference and may participate if they wish.

E. Jurisdictional Dispute grievances shall not be brought directly against the CM, except as they may relate to its role as a Contractor on the Project

F This jurisdictional Dispute Resolution will only apply to Project Work performed by Local Unions at the Project Site.

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ARTICLE 11- WAGES AND BENEFITS

SECTION 1. CLASSIFICATION AND BASE HOURLY RATE

A. All employees covered by this Agreement shall be classified in accordance with the work performed and paid the higher of (i) the base hourly wage rates for those classifications as specified in the Exhibit B CBAs, as amended during this Agreement, or Recognizing, however, that special conditions may exist or occur on the Project, the parties, by mutual agreement in writing may establish rates and/or hours for one or more classifications which may differ from the rates stated in Exhibit B CBAs. Parties to such agreements shall be the CM, the Contractor involved, the involved Local Unions and the Council.

SECTION 2. EMPLOYEE BENEFIT FUNDS

A. The Contractor and sub-contractors agree to pay contributions on behalf of all employees covered by this Agreement to the established employee benefit funds in the amounts designated in the appropriate Exhibit B CBAs. Bona fide jointly trusted fringe benefit plans established or negotiated through collective bargaining during the life of this Agreement may be added.

B. The Contractor and sub-contractors agree to be bound by the written terms of the legally established Trust Agreements specifying the detailed basis on which payments are to be paid into, and benefits paid out of such Trust Funds but only with regard to Project Work done under this Agreement and only for those employees to whom this Agreement requires such benefit payments. Any Contractor performing Project Work that is not a signatory to an Exhibit B CBA, will be required to sign and file with the CM, with a copy to the appropriate Local Union, an "Affidavit of Compliance with the PLA" in the form described as Exhibit F hereto so that such Affidavit may be filed with the Local Union and its related Trust Funds.

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C. The CM, the Contractor and sub-contractor, as applicable, in order to ensure the full and timely remittance of all union dues, IAF, PAC, and fringe benefit funds, including but not limited to Health and Welfare, Pension, Annuity, Legal Service, Education and Training, S.U.B., Apprenticeship (hereafter "Funds" or "Fund") due the affiliated Local Union Benefit Funds and the Labor Management Alliance as provided for in all Exhibit B CBA's or this PLA between the Local Unions and signatory employers and/or a supplier which has contracted to deliver construction materials to the Project using members of Teamsters Local 456 ("Supplier") agrees that it will, upon notification given to the CM or Contractor as applicable, from any affiliated Local Union or the Building Traced Council of not more than twenty-one (21) days from the date when the Union knew or should have known signatory Contractor, sub-contractor or Supplier, as applicable, has become delinquent in the payment of Fund contributions ("21-Day Notice") due in connection with the work on this Project, or the delivery of construction materials to the Project ("Delinquent Employer"), (i) immediately stop payment on all monies due or which may become due to the delinquent signatory employer or supplier up to the amount alleged to be owed from this Project and (ii) pay all such funds directly to the complaining Local Union Benefit Funds, which shall apply the funds against the amounts owed by the Delinquent Employer or Supplier. The 21-Day Notice to be effective shall include at a minimum a detailed breakdown of the delinquency amount, how it was calculated, the relevant dates, names of employees, the hours at issue, and the relevant job steward reports. Before such payment is made, the CM, the Contractor or sub-contractor, as applicable, shall first advise the delinquent Employer or Supplier, in writing of the complaint made by the Local Union and the amounts claimed ("10-Day Notice Letter") and shall allow the Delinquent Employer or Supplier a period of ten (10) days from the date of notification to produce a written letter signed by the Business Manager of the complaining Local Union that the delinquent amount has been paid in full and

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the Delinquent Employer or Supplier is current in the remittance of contributions to the complaining affiliate's Benefit Funds ("Payment in Full Letter") or a bona-fide explanation acceptable to the complaining Local Union of why in the signatory Delinquent Employer's or the Supplier's opinion the amounts are not due as alleged or the matter has been otherwise resolved. In the event of such a bona-fide dispute the CM, the Contractor or sub-contractor will use its best effort to act as an initial arbiter and take action it then deems appropriate.

(1) No monies shall be paid to a Delinquent Employer or Supplier who may request arbitration of the dispute in accordance with the expedited arbitration procedure in Article 7, Section 4 herein. Article 9 herein. There will be no strike, work stoppage or disruption pending resolution of the dispute.

(2) In the event such a Payment in Full Letter is not produced by the Delinquent Employer or Supplier within ten (10) days from the date of notification to the delinquent signatory employer or supplier, the CM, the Contractor or subcontractor shall immediately pay over to the Fund Administrator of the complaining Local Union all monies due and owing to the Delinquent Employer or Supplier, but only to the extent necessary to satisfy the amounts payable to the Delinquent Employer or Supplier by the Contractor or subcontractor for work performed or construction materials delivered to the Project. None of the foregoing is to be construed as having created a debt on the part of the CM, the Contractor to the Local Union Benefit Funds for unpaid Funds of the signatory Delinquent Employer or Supplier except to the extent that (a) there are funds payable to the signatory Delinquent Employer or Supplier (b) Benefit Fund contributions are overdue to the Local Unions for work by the signatory Delinquent Employer or for construction materials delivered by the Supplier for work on this Project and with proper

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notice as herein provided, and (c) the CM, the Contractor or the sub-contractor received a timely 21-Day Notice, and (d) the CM, the Contractor, as applicable, paid the unpaid Funds to the Delinquent Employer.

(3) There will be no strike, work stoppage or disruption pending resolution of the dispute. Notwithstanding any other provisions of this Agreement, including any provisions to arbitrate disputes, the members of a Local Union *shall* elect to refuse to perform services for only the Delinquent Employer or Supplier provided that all of the following conditions are first met: *first*, a Benefit Fund delinquency relates to Project Work and exceeds thirty (30) days; *second*, the Local Union provides five (5) days' written notice to the President of the Building Trades Council, the CM, and the Contractor, the subcontractor, as applicable, and the Delinquent Employer; *third*, the Local Union exhausts the expedited arbitration procedure in Article 7, Section 4 above; *fourth*, an arbitrator issues an award in favor of the Local Union and/or its Funds and against the Delinquent Employer; *fifth*, the Delinquent Employer does not file an action in a court of competent jurisdiction to overturn the arbitration award within 30 days of issuance of the award; but if the Delinquent Employer files a timely action in a court of competent jurisdiction to overturn the award, then *sixth*, the court declines for any reason to overturn the arbitration award. The provisions of Article 7, Section 1 shall remain in full force and effect with respect to all other Local Union members working on the Project. However, if the work of the complaining Local Union is being performed by employees represented by a Union that is not an affiliate of this Council or by non-union employees, the provisions of Article 7, Section 1 will not apply. If a signatory employer's or supplier's inability to collect payment from the Owner and/or Developer for work

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performed on the Project, or for construction materials delivered to the Project, the Contractor agrees that the signatory employer or supplier will not be removed from the job for non-performance which results from a Local Union's members refusing to perform services as set forth in this Section.

(4) The CM hereby designates _____ as the person to contact should there be any delinquent Benefit Fund Contributions for Project Work performed by members of a Local Union that is signatory to this Agreement.

D. At least two weeks before the CM or the Contractor makes final payment to a sub-contractor upon completion of the job, the CM or the Contractor, as applicable, shall make a written inquiry to the sub-contractor's Local Union to determine if all Benefit Fund payments have been made. If the sub-contractor is delinquent in the payment of Benefit Fund contributions due in connection with work on this Project, or for the delivery of construction materials to the Project, the Contractor shall adhere to the procedure in Section 2, Paragraphs (C)-(E) of this Article. The 21-Day Notice Requirement set forth in Section 2, Paragraph (C) shall be reduced to a 5 calendar day notice requirement but in all other respects shall remain applicable.

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

SECTION 1. WORK WEEK AND WORK DAY

A. The standard work week shall consist of 40 hours of work, Monday through Friday, eight hours per day, at straight time rates per the following schedule: Monday-Friday; 5 days, 8 hours plus 1/2 hour unpaid lunch period each day.

B. The first or day shift shall work eight (8) hours starting at 8:00 a.m. and ending at

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4:30pm (or 7:00a.m. and ending at 3:30p.m.), this includes a 1/2 hour lunch break.

C. If a second shift is required, the second shift shall work eight (8) hours starting at 4:00p.m. and ending at 12:30 a.m. This includes a 1/2 hour lunch period in between to be mutually agreed on.

D. If a third shift is required, the third shift shall work eight (8) hours starting at 12:00 midnight and ending at 8:30 a.m. This includes a 1/2 hour lunch period in between to be mutually agreed on.

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

SECTION 2. OVERTIME

Overtime at the rate of time and one-half the straight time wage for all employees covered by this Agreement shall be paid for the following:

- A. Work outside of the standard starting and finishing time.
- B. Work in excess of eight (8) hours per day; and
- C. Work on Saturday.

There will be no restriction upon the CM, the Contractor's or the sub-contractor's scheduling of overtime or the designation of employees who shall be worked. There shall be no pyramiding of overtime pay under any circumstances. The CM, the Contractor or sub-contractor shall have the right to schedule work so as to minimize overtime, and the right to schedule overtime as to some, but not all of the crafts, and to determine whether overtime shall be of a continuous nature.

SECTION 3. SHIFT WORK

- A. Flexible Schedules-In accordance with Project Work.

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The CM and the Contractors shall have the right to modify all shift start and end times and add or delete shifts subject *first* to obtaining a written notice from Owner request modification of the start and end times for one of more shifts and/or the number of shifts, and *second*, providing five days' notice and a copy of the Owner's notice to the affected Local Unions. Shifts must be worked a minimum of five consecutive work days, must have prior approval of the CM, and must be scheduled with not less than five work days' notice to the Local Union. Saturday and Sunday, if worked, can be used for establishing the 5 day minimum shift work period, however, those days will be paid at their respective overtime rates. The straight time workweek shall be considered to start with the day shift on Monday and end with the conclusion of the second or third shift on the fifth day. The shift that begins approximately midnight Sunday night shall be considered the last shift of the Sunday workday. In the event the second or third shift of any regular workweek shall extend into a holiday, employees will be paid the regular shift rate. Should the Contractor or sub-contractor choose to work at 7:00am.through 3:30pm as the first shift, the second shift will work eight (8) consecutive hours following the first shift with one-half hour break in each case.

B. Second Shift - If a second or third shift is required, then the shift premium for the second or third shift shall be ten (10%) percent

C. Shift work relating to structural steel erection is subject to a mutual agreement between Iron Workers Local 40 and the CM, the Contractor or sub-contractor, due to the potential hazardous situations which could exist.

D. A first shift need not be worked in order to work a second or third shift.

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SECTION 4. SATURDAY MAKE UP DAY

When conditions beyond the control of the Contractor, such as severe weather, power failure, fire or natural disaster, prevent the performance of Project Work on a regularly scheduled work day, the Contractor may, with mutual agreement of the Local Union, schedule Saturday during that calendar week in which a workday was lost, as a make-up work day at straight time rates, where New York Labor Law Section 220 and the Prevailing Wage Schedule for Westchester County permit this; providing the employees involved work a total of 40 hours or less during that work week. Any work after eight hours on a Saturday make-up day shall be at time and one half. If the make-up day results in an employee to be entitled to more than forty (40) hours pay for the week, the additional time shall be at time and one half. The crew of employees on a make-up day shall not exceed the average crew size employed during the week.

At the Employer's discretion, Saturdays can be substituted as a make-up day at the straight time rate of pay as the result of inclement weather which causes a cessation of work during the work week. If a Local Agreement provides for Shape-Up, there must be a Shape-Up Day during the week.

Any work after eight hours on a Saturday make-up day shall be at time and one half. If the make-up day results in an employee to be entitled to more than forty (40) hours pay for the week, the additional time shall be at time and one half. The crew of employees on a make-up day shall not exceed the average crew size employed during the week.

Four (4) day, ten (10) hour work week; Monday-Thursday at straight time may be established by the employer. Friday or Saturday can be substituted as a make-up day at the straight time rate of pay as a result of inclement weather which causes a cessation of work during the work week provided there has been a shape-up day during the work week.

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Any work performed over ten (10) hours in any one day or forty (40) hours in any one week, which includes any make-up day, shall be paid for at the rate of time and one-half (1-1/2). The crew of employees on a make-up day shall not exceed the average crew size employed during the week, the contractor must notify the union in writing at least three business days in advance of scheduling a four (4) day, ten (10) hour work week.

SECTION 5. HOLIDAYS

A. Schedule - There shall be only the following 8 recognized holidays on the Project:

New Year's Day	Labor Day
Presidents Day	Veterans Day
Memorial Day	Thanksgiving Day
Fourth of July	Christmas Day

All said holidays shall be observed on the dates designated by New York State Law. In the absence of such designation, they shall be observed on the calendar date, except those holidays which occur on Saturday shall be observed on the preceding Friday and those which occur on Sunday shall be observed on the following Monday.

B. Payment- Regular holiday pay, if any, and/or premium pay for work performed on such a recognized holiday shall be in accordance with the applicable Exhibit B CBA

C. Exclusivity - No holidays other than those listed in Section 5(A) above shall be recognized or observed on the Project.

SECTION 6. REPORTING PAY

A. Employees who report to the work location pursuant to a regular schedule and who are not provided with work or whose work is terminated early by a Contractor or subcontractor, for whatever reason, shall receive minimum reporting pay in accordance with the

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applicable Exhibit B CBA, except that no reporting pay shall be required for lost days due to severe weather conditions that cause the Project to shut down or makes performing certain work unsafe, power outage, fire, natural disaster, Presidential or Vice Presidential visits, or Homeland Security directives provided employees are called at least three hours ahead of their scheduled shift start (email notification shall also be sent to the Local Unions involved).

B. When an employee, who has completed his scheduled shift and left the Project Site, is "called out" to perform special work of a casual, incidental or irregular nature, the employee shall receive pay for actual hours worked with a minimum guarantee, as may be required by the applicable Exhibit B CBA, at the employee's straight time rate.

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

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

E. There shall be no pay for time not actually worked except as specifically set forth in this Article and except where an applicable Exhibit B CBA requires a full week's pay for foreperson

SECTION 7. PAYMENT OF WAGES

Payday - Payment shall be made by check, drawn on a New York bank with branches located within commuting distance of the job site. Paychecks shall be issued by the Contractor or sub-contractor at the job site by 10 a.m. on Thursdays. In the event that the following Friday is a bank holiday, paychecks shall be issued on Wednesday of that week. Not more than 3 days

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wages shall be held back in any pay period. Paycheck stubs shall contain the name and business address of the Contractor or sub-contractor, together with an itemization of deductions from gross wages.

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

SECTION 8. EMERGENCY WORK SUSPENSION

The Contractor or sub-contractor may, if considered necessary for the protection of life and/or safety of employees or others, suspend all or a portion of Project work. In such instances employees will be paid for actual time worked; provided, however, that when the Contractor or sub-contractor requests that employees remain at the job site available for work, employees will be paid for "stand-by" time at their hourly rate of pay.

SECTION 9. INJURY/DISABILITY

An employee, who, after commencing work, suffers a work-related injury or disability while performing work duties, shall receive no less than 8 hours wages for that day. Further, the employee shall be rehired at such time as he is able to return to his duties provided there is still work available on the Project for which he is qualified and able to perform.

SECTION 10. TIME KEEPING

The Contractor or sub-contractor may utilize brassing or other systems to check employees in and out. Each employee must check in and out. The Contractor or sub-contractor will provide adequate facilities for checking in and out in an expeditious manner.

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SECTION 11. MEAL PERIOD

The Contractor or sub-contractor shall schedule an unpaid period of not more than 1/2 hour duration at the work location between the 3rd and 5th hour of the scheduled shift. A Contractor or sub-contractor may, for efficiency of operation, establish a schedule which coordinates the meal periods of two or more crafts. If an employee is required to work through the meal period, he shall be compensated in a manner established in the applicable Exhibit B CBA.

SECTION 12 BREAK PERIODS

There will be no rest periods, organized coffee breaks, or other non-working time established during working hours, with the exception of reasonable coffee and/or soda breaks to be determined by the Contractor or sub-contractor. Individual coffee containers will be permitted at the employee's work location.

ARTICLE 13 - APPRENTICES

SECTION 1. RATIOS

Recognizing the need to maintain continuing supportive programs designed to develop adequate numbers of competent workers in the construction industry and to provide craft entry opportunities for minorities and women, the Contractor and sub-contractor will employ apprentices in their respective crafts to perform such work as is within their capabilities and which is customarily performed by the craft in which they are indentured. The Contractor and sub-contractor may utilize apprentices with the approval of the affected affiliate or affiliates to the highest ratio filed with New York State Department of Labor.

SECTION 2. MINORITIES, WOMEN, HELMETS TO HARDHATS

A. The Unions agree to work in close cooperation with, and accept monitoring by, the New York State Department of Labor to ensure that minorities and women are afforded every opportunity to participate in apprenticeship programs which result in the placement of

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apprentices on this Project. To further ensure that this goal is achieved, the Contractors and the Unions agree that minority or women apprentices or recognized trainees may be used on the Project in accordance with the requirements of the Project bid documents.

B. **Helmets to Hardhats.** The CM and the unions recognize a desire to facilitate the entry into the building and construction trades of veterans who are interested in careers in building and construction industry. The CM and unions agree to utilize the services of the Center for Military Recruitment, Assessment and Veterans Employment (hereinafter "Center") and the Center's "Helmets to Hardhats" program to serve as a resource for preliminary orientation, assessment of construction aptitude, referral to apprenticeship programs or hiring halls, counseling and mentoring, support network, employment opportunities and other needs as identified by the parties.

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

ARTICLE 14- SAFETY PROTECTION OF PERSON AND PROPERTY

SECTION 1. SAFETY REQUIREMENTS

The Contractors, the Council and the Local Unions acknowledge that the CM has submitted to the Owner, and the Owner has approved, a Safety Program for the Project and that the CM will monitor and measure compliance by the Contractors and their employees and workers with the Safety Program, report deficiencies and direct remedial action. The Safety

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program is more fully described in Exhibit D hereto, except that the provisions of the Substance Abuse Prevention and Firearms Prohibition Policy, which is summarized in Section 4 below and is described at Exhibit D hereto, shall supersede any contrary provisions of the Safety program. The Contractor and sub-contractor will ensure that applicable OSHA requirements are at all times maintained and enforced on the Project and the employees and Unions agree to cooperate fully with these efforts. Employees must perform their work at all times in a safe manner and protect themselves and the property of the Contractor from injury or harm. Failure to do so will be grounds for discipline, including discharge.

SECTION 2. CONTRACTOR RULES

Employees covered by this Agreement shall at all times be bound by the reasonable safety, security, and visitor rules as established by the CM, the Contractor and sub-contractor for this Project, including the CM's Exhibit D Safety program. Such other CM and Contractor rules will be published and posted in conspicuous places throughout the Project Site. Every employee who disregards or violates any safety, security, or visitor rules will be subject to discharge.

SECTION 3. INSPECTIONS

The CM, the Contractors and the sub-contractors retain the right to inspect incoming shipments of equipment, apparatus, machinery and construction materials of every kind.

ARTICLE 15- NO DISCRIMINATION

SECTION 1. COOPERATIVE EFFORTS

The Contractor, sub-contractor and Unions agree that they will not discriminate against any employee or applicant for employment because of race, color, religion, sex, sexual orientation,

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national origin, military status, predisposing genetic characteristics, age or marital status in any manner prohibited by law or regulation. It is recognized that special procedures may be established by the CM, the Contractor and sub-contractors and Local Unions and the New York State Department of Labor for the training and employment of persons who have not previously qualified to be employed on construction projects of the type covered by this Agreement. The parties to this Agreement will assist in such programs and agree to use their best efforts to ensure that the goals for female and minority employment if any are met on this Project.

SECTION 2. LANGUAGE OF AGREEMENT

The use of the masculine or feminine gender in this Agreement shall be construed as including both genders.

ARTICLE 16 - GENERAL TERMS

SECTION 1. PROJECT RULES

The CM, the Contractors and the sub-contractors shall establish such reasonable Project rules as are appropriate for the good order of the Project, including but not limited to rules relating to health and safety, access, smoking, and alcohol and drug use, and a comprehensive security, badging and access system to control worker access to the Project Site. These rules will be explained at the pre-job conference and posted at the Project Site and may be amended thereafter as necessary. Failure of an employee to observe these rules and regulations shall be grounds for discipline, including discharge. The fact that no order was posted prohibiting a certain type of misconduct shall not be a defense to an employee disciplined or discharged for such misconduct when the action taken is for cause.

- A. No smoking will be permitted on or adjacent to the Project Site.

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B. No alcohol or illegal drug use on or adjacent to the Project Site.

C. Personal protective equipment (PPE) such as hardhats, safety vests, eye protection, work boots, gloves, and any other equipment for a specific task shall be worn on the Project Site at all times.

D. Proof of successfully completing the OSHA 10 hours safety training course within the last 5 years prior to working on project site.

SECTION 2. TOOLS OF THE TRADE

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

SECTION 3. SUPERVISION

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

SECTION 4. TRAVEL ALLOWANCES

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

SECTION 5. FULL WORKDAY

Starting and quitting times shall occur at the staging areas as may be designated by the CM, with the understanding that on any single day, the staging area will be the same location as the employee's starting time and quitting time. On-site parking will be provided. The signatories reaffirm their policy of a fair day's work for a fair day's wage.

SECTION 6. COOPERATION AND WAIVER

PROJECT LABOR AGREEMENT

The Council, on its own behalf and on behalf of its affiliated Local Unions and their individual members, intend the provisions of this Agreement to control to the greatest extent permitted by law, notwithstanding any contrary provisions of any applicable prevailing wage, or other, law, and intend this Agreement to constitute an unequivocal, knowing and express waiver of the application to Project Work within the scope of this Agreement of any such prevailing wage law to the fullest extent permissible under the law, including specifically, but not limited to, provisions relating to shift, night, and similar differentials and premiums, holidays and holiday pay, and pay for hours not worked. The parties agree that the terms and conditions of this Agreement are prevailing in their industry and are consistent with the terms and conditions of employment that the Local Unions and their members have traditionally enjoyed in Westchester County

To the extent the provisions of this Agreement differ from the requirements of the applicable prevailing wage law, or any other law, the Unions, on their own behalf and on behalf of the individual employees they represent, intend the provisions of this Agreement to control to the maximum extent permitted by law.

ARTICLE 17 - SAVINGS AND SEPARABILITY

SECTION 1. THIS AGREEMENT

In the event that the application of any provision of this Agreement is enjoined, on either an interlocutory or permanent basis, or otherwise found in violation of law, or if such application may cause the loss of Project funding for all or any part of the Project, the provision involved (and/or its application to a particular part of the Project, as necessary) shall

PROJECT LABOR AGREEMENT

be rendered, temporarily or permanently, null and void, but where practicable the remainder of the Agreement shall remain in full force and effect to the extent allowed by law, unless the part or parts so found to be in violation of law are wholly inseparable from remaining provisions of the Agreement and/or are material to the purposes of the Agreement. In the event a court of competent jurisdiction finds any portion of the Agreement to be invalid, the parties to this Agreement will immediately enter into negotiations concerning the substance affected by such decision for the purpose of achieving conformity with the court determination and the intent of the parties hereto for contracts to be let in the future.

SECTION 2. THE BID SPECIFICATIONS

In the event that the Owner's bid specifications, or other action, requiring that a successful bidder become signatory to this Agreement is enjoined, on either an interlocutory or permanent basis, or otherwise found in violation of law, or may cause the loss of funding for all or any part of the Project, such requirement (and/or its application to a particular part of the Project, as necessary) shall be rendered, temporarily or permanently, null and void, but where practicable the Agreement shall remain in full force and effect to the extent allowed by law. In such event, the Agreement shall remain in effect for contracts already bid and awarded or in construction where the Contractor or sub-contractor voluntarily accepts the Agreement. The parties will enter into negotiations as to modifications to the Agreement to reflect the court action taken and the intent of the parties for contracts to be let in the future

SECTION 3. NON-LIABILITY

In the event of an occurrence referenced in Section 1 or Section 2 of this Article, neither the CM, the Contractor, any sub-contractor, nor any signatory Union shall be liable, directly or indirectly, for any action taken, or not taken, to comply with any court order, injunction or determination. Project bid specifications will be issued in conformance with court orders then

PROJECT LABOR AGREEMENT

in effect and no retroactive payments or other action will be required if the original court determination is ultimately reversed.

SECTION 4. NON-WAIVER

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

ARTICLE 18 - FUTURE CHANGES TO COLLECTIVE BARGAINING AGREEMENTS

SECTION 1. CHANGES TO AREA CONTRACTS

Exhibit B CBA's shall continue in full force and effect until the Contractor, the sub-contractor and/or Union parties to the Area Collective Bargaining Agreements which are the basis for Exhibit B CBA's notify the CM in writing of the mutually agreed upon changes in provision of such agreements which are applicable to the Project, and their effective dates. It is agreed that any provisions negotiated into the Exhibit B CBA's will not apply to work on this Project if such provisions are less favorable to this Project than those uniformly required of Contractors for construction work normally covered by those agreements; nor shall any provision be recognized or applied on this Project if it may be construed to apply exclusively, or predominantly, to work covered by this Project Agreement.

Any disagreement between signatories to this Agreement over the incorporation into the Exhibit B CBA's of provisions agreed upon in the renegotiation of Area Collective Bargaining Agreements shall be resolved in accordance with the procedure set forth in Article 9 of this Agreement.

SECTION 2. LABOR DISPUTES DURING AREA CONTRACT NEGOTIATIONS

The Unions agree that there will be no strikes, sympathy strikes, parades, bannerings, establishment of an inflatable rat or any similar display or signal, work stoppages, sympathy

PROJECT LABOR AGREEMENT

actions, picketing, hand billing, slowdowns or other disruptive activity or other violations of Article 7 affecting the Project by any Local Union involved in the renegotiation of Area Local Collective Bargaining Agreements, nor shall there be any lock-out on this Project affecting a Local Union during the course of such renegotiations.

ARTICLE 19 - WORKERS' COMPENSATION ADR

At the written option of the Contractor and with the written approval of the Building and Construction Trades Council of Westchester and Putnam Counties, New York, all Local Unions, Contractors and Sub-Contractors working on this project agree to be bound by the Collectively Bargained Workers Compensation Alternative Dispute Resolution Agreement [ADR Agreement] and to the ADR program set forth therein, by and between the Construction Industry Council of Westchester and the Hudson Valley, Inc. and the Building and Construction Trades Council of Westchester and Putnam Counties, New York, entered into on January 26, 2007, as amended.

ARTICLE 20 - DRUG FREE WORK PLACE; FIREARMS PROHIBITION

This Project Site is a Drug-Free Workplace. The use, consumption, sale, transfer, purchase and/or possession of a controlled substance, alcohol and/or firearms during working hours or while on the Project Site, and reporting for work under the influence of a controlled substance or alcohol are prohibited. The CM's substance abuse and firearms prohibition policy will apply to all individuals performing work on the Project Site and is attached as Exhibit D, and the CM will arrange for testing of employees of the Contractor or the

PROJECT LABOR AGREEMENT

Subcontractor in question through Clarity Testing Services at the Contractor's or Subcontractor's expense.

ARTICLE 21 - LABOR MANAGEMENT ALLIANCE

SECTION 1. LABOR MANAGEMENT ALLIANCE (LMA)

A. The Contractor and all Subcontractors performing Project Work agree to be bound by the provisions of the Westchester Mid-Hudson Labor Management Alliance (LMA), which is incorporated by reference in its entirety into this Agreement and to contribute 5 cents (\$0.05) per hour for each hour worked by members of an affiliate on the Project. The Contractor agrees to provide the LMA with a quarterly report of the names, addresses and contact information of the Subcontractors working on the project.

B. The Contractor agrees to withhold payments for any monies due to a Subcontractor who is delinquent in contributions to the LMA upon receipt of a Twenty One (21) day notice which was sent to the Subcontractor with notice of the delinquency and that the Contractor will be instructed to withhold payment of all monies due to the delinquent Subcontractor until the necessary contributions are made to the LMA.

ARTICLE 22 - MISCELLANEOUS

SECTION 1. NOTICES

Any notice, request, demand, instruction, or other document to be given or served will be in writing and will be delivered personally with a receipt requested thereof or by fax or e-mail or sent by Federal Express at the respective addresses set forth below To the CM, unless otherwise agreed to in writing, the terms and conditions of the Exhibit B CBA's, except as modified by this PLA, shall remain in full force and effect.

PROJECT LABOR AGREEMENT

SECTION 2. AMENDMENTS

Amendments to this Agreement, which may be required for operational efficiency or implementation consistency, may be established by mutual agreement of the parties to this Agreement.

SECTION 3. GOVERNING LAW

This Agreement will be governed by the laws of the United States and of the State of New York.

SECTION 4. DURATION OF AGREEMENT

This Agreement will remain in effect until no later than 60 calendar days after the CM substantially completes the demolition, building core and shell, and construction of the building interior and Tenant spaces which are to be occupied immediately by the Owner. The CM shall provide written notice to the Council that the Project Work is substantially complete in accordance with Article 22, Section 1, and the Agreement shall remain in effect until the end of the 60th calendar day following the date of notice. Notwithstanding the foregoing sentence, the Council and the Local Unions shall make no Claim to stand-by work to be performed in any part of the Project Site, or any facility, system or space, that the Owner has accepted, used, or occupied, regardless of whether the facility, system or space is used to support the construction, renovation or demolition work that has been awarded to the CM.

SECTION 5. COUNTERPARTS

This Agreement may be executed by facsimile or PDF and/or in one or more counterparts, and by the parties and Local Union signatories hereto in separate counterparts,

PROJECT LABOR AGREEMENT

each of which when executed shall be deemed to be an original but all of which taken together shall constitute one and the same Agreement.

IN WITNESS WHEREOF the parties have caused this Agreement to be executed.

CONSTRUCTION MANAGER

By: _____

DATE _____

(Name/Title)

BUILDING & CONSTRUCTION TRADES COUNCIL OF WESTCHESTER & PUTNAM
COUNTIES, New York, AFL-CIO on behalf of itself and the Local Unions listed in Exhibit "B"
attached

BY: _____

EDWARD DOYLE, SR., PRESIDENT

DATE _____

BY: _____

JEFF LOUGHLIN, VICE-PRESIDENT

DATE _____

BY: _____

DARIO BOCCAROSSA, SECRETARY-TREASURER

DATE _____

PROJECT LABOR AGREEMENT

EXHIBIT "A"

Project Labor Agreement - Letter of Assent

The undersigned party confirms that it agrees to be a party to and be bound by the Project Labor Agreement covering **VILLAGE/TOWN OF MOUNT KISCO WATER DEPARTMENT ADDITION AND RENOVATIONS** as such Agreement may, from time to time, be amended by the parties or interpreted pursuant to its terms. The terms of the Project Labor Agreement, its Schedules, Addenda and Exhibits are hereby incorporated as referenced herein.

Name of Contractor or Subcontractor: _____

Authorized Officer & Title: _____

Signature: _____ Date: _____

Address: _____

Phone: _____

PROJECT LABOR AGREEMENT

EXHIBIT "B"

CBA'S

BRICKLAYERS AND ALLIED CRAFT WORKERS LOCAL UNION 5

NORTHEAST REGIONAL COUNCIL OF CARPENTERS - LOCAL 279

INTERNATIONAL BROTHERHOOD OF ELECTRICAL WORKERS LOCAL #3

LABORERS INTERNATIONAL UNION OF NORTH AMERICA, LOCAL #235

INTERNATIONAL UNION OF OPERATING ENGINEERS, LOCAL #137

DISTRICT COUNCIL #9 INTERNATIONAL BROTHERHOOD OF PAINTERS AND
ALLIED TRADES AFL-CIO

PLUMBERS & STEAMFITTERS LOCAL 21

TEAMSTERS LOCAL #456

DOCKBUILDERS LOCAL UNION 1556

LOCAL UNION #40 OF THE INTERNATIONAL ASSOCIATION OF BRIDGE,
STRUCTURAL AND ORNAMENTAL IRON WORKERS

METALLIC LATHERS UNION LOCAL #46

INTERNATIONAL UNION OF OPERATING ENGINEERS, LOCAL #15D

TEAMSTERS LOCAL #813

TEAMSTERS LOCAL #814

PROJECT LABOR AGREEMENT

ASBESTOS WORKERS LOCAL #91 (INTERNATIONAL ASSOCIATION OF HEAT AND FROST INSULATORS AND ASBESTOS WORKERS)

GLAZIERS LOCAL 1087

BOILERMAKERS LOCAL #5

INTERNATIONAL BROTHERHOOD OF ELECTRICAL WORKERS LOCAL UNION 363

LOCAL ONE INTERNATIONAL UNION OF ELEVATOR CONSTRUCTORS OF NEW YORK AND NEW JERSEY (AFL-CIO)

IRON WORKERS DISTRICT COUNCIL OF GREATER NEW YORK ANVICINITY

ORNAMENTAL IRONWORKERS LOCAL UNION NO. 580

MILLWRIGHT AND MACHINERY ERECTORS LOCAL UNION NO. 740

IUOE LOCAL NO. 30 - OPERATING ENGINEERS

STONE DERRICKMEN AND RIGGERS LOCAL UNION NO. 197

ROAD SPRINKLER FITTERS LOCAL 669

UNITED UNION OF ROOFERS, WATERPROOFERS AND ALLIED WORKERS, LOCAL NO. 8, NEW YORK

SHEET METAL WORKERS' LOCAL UNION 38

BRIDGE PAINTERS LOCAL 806

PROJECT LABOR AGREEMENT

TILE, MARBLE & TERRAZZO BRICKLAYERS & ALLIED CRAFTSMEN LOCAL UNION
NO. 7 OF NEW YORK & NEW JERSEY

OPERATIVE PLASTERERS' AND CEMENT MASONS' INTERNATIONAL ASSOCIATION
LOCAL 262

UNITED CEMENT MASONS' UNION OF GREATER NEW YORK AND LONG ISLAND
LOCAL 780

HEAVY CONSTRUCTION LABORERS LOCAL 60

RESILIENT FLOOR COVERERS LOCAL 2287

PROJECT LABOR AGREEMENT

EXHIBIT "C"

PROJECT SITE AND PROJECT WORK

Description to follow



AIA[®] Document A312[™] – 2010

Performance Bond

CONTRACTOR:

(Name, legal status and address)

SURETY:

(Name, legal status and principal place of business)

OWNER:

(Name, legal status and address)

VILLAGE/TOWN OF MT. KISCO

104 MAIN STREET

MOUNT KISCO, NY 10549

CONSTRUCTION CONTRACT

Date:

Amount: \$

Description:

(Name and location)

WATER DEPT. BUILDING ADDITION

40 COLUMBUS AVENUE

MOUNT KISCO, NY 10549

BOND

Date:

(Not earlier than Construction Contract Date)

Amount: \$

Modifications to this Bond: ☐ None ☐ See Section 16

CONTRACTOR AS PRINCIPAL

Company: (Corporate Seal)

SURETY

Company: (Corporate Seal)

Signature: _____

Name and

Title:

(Any additional signatures appear on the last page of this Performance Bond.)

Signature: _____

Name and

Title:

(FOR INFORMATION ONLY — Name, address and telephone)

AGENT or BROKER:**OWNER'S REPRESENTATIVE:**

(Architect, Engineer or other party:)

ADDITIONS AND DELETIONS:

The author of this document has added information needed for its completion. The author may also have revised the text of the original AIA standard form. An *Additions and Deletions Report* that notes added information as well as revisions to the standard form text is available from the author and should be reviewed. A vertical line in the left margin of this document indicates where the author has added necessary information and where the author has added to or deleted from the original AIA text.

This document has important legal consequences. Consultation with an attorney is encouraged with respect to its completion or modification.

Any singular reference to Contractor, Surety, Owner or other party shall be considered plural where applicable.

§ 1 The Contractor and Surety, jointly and severally, bind themselves, their heirs, executors, administrators, successors and assigns to the Owner for the performance of the Construction Contract, which is incorporated herein by reference.

§ 2 If the Contractor performs the Construction Contract, the Surety and the Contractor shall have no obligation under this Bond, except when applicable to participate in a conference as provided in Section 3.

§ 3 If there is no Owner Default under the Construction Contract, the Surety's obligation under this Bond shall arise after

- .1 the Owner first provides notice to the Contractor and the Surety that the Owner is considering declaring a Contractor Default. Such notice shall indicate whether the Owner is requesting a conference among the Owner, Contractor and Surety to discuss the Contractor's performance. If the Owner does not request a conference, the Surety may, within five (5) business days after receipt of the Owner's notice, request such a conference. If the Surety timely requests a conference, the Owner shall attend. Unless the Owner agrees otherwise, any conference requested under this Section 3.1 shall be held within ten (10) business days of the Surety's receipt of the Owner's notice. If the Owner, the Contractor and the Surety agree, the Contractor shall be allowed a reasonable time to perform the Construction Contract, but such an agreement shall not waive the Owner's right, if any, subsequently to declare a Contractor Default;
- .2 the Owner declares a Contractor Default, terminates the Construction Contract and notifies the Surety; and
- .3 the Owner has agreed to pay the Balance of the Contract Price in accordance with the terms of the Construction Contract to the Surety or to a contractor selected to perform the Construction Contract.

§ 4 Failure on the part of the Owner to comply with the notice requirement in Section 3.1 shall not constitute a failure to comply with a condition precedent to the Surety's obligations, or release the Surety from its obligations, except to the extent the Surety demonstrates actual prejudice.

§ 5 When the Owner has satisfied the conditions of Section 3, the Surety shall promptly and at the Surety's expense take one of the following actions:

§ 5.1 Arrange for the Contractor, with the consent of the Owner, to perform and complete the Construction Contract;

§ 5.2 Undertake to perform and complete the Construction Contract itself, through its agents or independent contractors;

§ 5.3 Obtain bids or negotiated proposals from qualified contractors acceptable to the Owner for a contract for performance and completion of the Construction Contract, arrange for a contract to be prepared for execution by the Owner and a contractor selected with the Owner's concurrence, to be secured with performance and payment bonds executed by a qualified surety equivalent to the bonds issued on the Construction Contract, and pay to the Owner the amount of damages as described in Section 7 in excess of the Balance of the Contract Price incurred by the Owner as a result of the Contractor Default; or

§ 5.4 Waive its right to perform and complete, arrange for completion, or obtain a new contractor and with reasonable promptness under the circumstances:

- .1 After investigation, determine the amount for which it may be liable to the Owner and, as soon as practicable after the amount is determined, make payment to the Owner; or
- .2 Deny liability in whole or in part and notify the Owner, citing the reasons for denial.

§ 6 If the Surety does not proceed as provided in Section 5 with reasonable promptness, the Surety shall be deemed to be in default on this Bond seven days after receipt of an additional written notice from the Owner to the Surety demanding that the Surety perform its obligations under this Bond, and the Owner shall be entitled to enforce any remedy available to the Owner. If the Surety proceeds as provided in Section 5.4, and the Owner refuses the payment or the Surety has denied liability, in whole or in part, without further notice the Owner shall be entitled to enforce any remedy available to the Owner.

§ 7 If the Surety elects to act under Section 5.1, 5.2 or 5.3, then the responsibilities of the Surety to the Owner shall not be greater than those of the Contractor under the Construction Contract, and the responsibilities of the Owner to the Surety shall not be greater than those of the Owner under the Construction Contract. Subject to the commitment by the Owner to pay the Balance of the Contract Price, the Surety is obligated, without duplication, for

- .1 the responsibilities of the Contractor for correction of defective work and completion of the Construction Contract;
- .2 additional legal, design professional and delay costs resulting from the Contractor's Default, and resulting from the actions or failure to act of the Surety under Section 5; and
- .3 liquidated damages, or if no liquidated damages are specified in the Construction Contract, actual damages caused by delayed performance or non-performance of the Contractor.

§ 8 If the Surety elects to act under Section 5.1, 5.3 or 5.4, the Surety's liability is limited to the amount of this Bond.

§ 9 The Surety shall not be liable to the Owner or others for obligations of the Contractor that are unrelated to the Construction Contract, and the Balance of the Contract Price shall not be reduced or set off on account of any such unrelated obligations. No right of action shall accrue on this Bond to any person or entity other than the Owner or its heirs, executors, administrators, successors and assigns.

§ 10 The Surety hereby waives notice of any change, including changes of time, to the Construction Contract or to related subcontracts, purchase orders and other obligations.

§ 11 Any proceeding, legal or equitable, under this Bond may be instituted in any court of competent jurisdiction in the location in which the work or part of the work is located and shall be instituted within two years after a declaration of Contractor Default or within two years after the Contractor ceased working or within two years after the Surety refuses or fails to perform its obligations under this Bond, whichever occurs first. If the provisions of this Paragraph are void or prohibited by law, the minimum period of limitation available to sureties as a defense in the jurisdiction of the suit shall be applicable.

§ 12 Notice to the Surety, the Owner or the Contractor shall be mailed or delivered to the address shown on the page on which their signature appears.

§ 13 When this Bond has been furnished to comply with a statutory or other legal requirement in the location where the construction was to be performed, any provision in this Bond conflicting with said statutory or legal requirement shall be deemed deleted herefrom and provisions conforming to such statutory or other legal requirement shall be deemed incorporated herein. When so furnished, the intent is that this Bond shall be construed as a statutory bond and not as a common law bond.

§ 14 Definitions

§ 14.1 **Balance of the Contract Price.** The total amount payable by the Owner to the Contractor under the Construction Contract after all proper adjustments have been made, including allowance to the Contractor of any amounts received or to be received by the Owner in settlement of insurance or other claims for damages to which the Contractor is entitled, reduced by all valid and proper payments made to or on behalf of the Contractor under the Construction Contract.

§ 14.2 **Construction Contract.** The agreement between the Owner and Contractor identified on the cover page, including all Contract Documents and changes made to the agreement and the Contract Documents.

§ 14.3 **Contractor Default.** Failure of the Contractor, which has not been remedied or waived, to perform or otherwise to comply with a material term of the Construction Contract.

§ 14.4 **Owner Default.** Failure of the Owner, which has not been remedied or waived, to pay the Contractor as required under the Construction Contract or to perform and complete or comply with the other material terms of the Construction Contract.

§ 14.5 **Contract Documents.** All the documents that comprise the agreement between the Owner and Contractor.

§ 15 If this Bond is issued for an agreement between a Contractor and subcontractor, the term Contractor in this Bond shall be deemed to be Subcontractor and the term Owner shall be deemed to be Contractor.

§ 16 Modifications to this bond are as follows:

(Space is provided below for additional signatures of added parties, other than those appearing on the cover page.)

CONTRACTOR AS PRINCIPAL

Company: _____
(Corporate Seal)

Signature: _____
Name and Title: _____
Address: _____

SURETY

Company: _____
(Corporate Seal)

Signature: _____
Name and Title: _____
Address: _____

Init.

Additions and Deletions Report for **AIA[®] Document A312[™] – 2010**

This Additions and Deletions Report, as defined on page 1 of the associated document, reproduces below all text the author has added to the standard form AIA document in order to complete it, as well as any text the author may have added to or deleted from the original AIA text. Added text is shown underlined. Deleted text is indicated with a horizontal line through the original AIA text.

Note: This Additions and Deletions Report is provided for information purposes only and is not incorporated into or constitute any part of the associated AIA document. This Additions and Deletions Report and its associated document were generated simultaneously by AIA software at 15:25:48 on 01/10/2013.

Certification of Document's Authenticity

AIA® Document D401™ – 2003

I, _____, hereby certify, to the best of my knowledge, information and belief, that I created the attached final document simultaneously with its associated Additions and Deletions Report and this certification at 15:25:48 on 01/10/2013 under Order No. 6871475021_1 from AIA Contract Documents software and that in preparing the attached final document I made no changes to the original text of AIA® Document A312™ – 2010, Performance Bond, as published by the AIA in its software, other than those additions and deletions shown in the associated Additions and Deletions Report.

(Signed)

(Title)

(Dated)

DOCUMENT 006114 – MAINTENANCE BOND

KNOW ALL MEN BY THESE PRESENTS:

That We, _____

(hereinafter called the Principal)

as Principal and the _____, a _____ Corporation with an
office and place of business for the State of New York at _____ New York,
(hereinafter called the Surety) as Surety, are held and firmly bound unto the _____

_____ (hereinafter called the Oblige) as Oblige in the sum of _____
_____ (\$ _____) DOLLARS,

lawful money of the United States of America, for the payment whereof the Principal and Surety bind themselves, their
successors and assigns, jointly and severally, firmly by these presents.

Signed, sealed and dated this _____ day of _____, 2022.

WHEREAS, the Principal heretofore entered into a written contract with the Oblige for

_____ WHEREAS, said Contract provides that the Principal shall guarantee _____

NOW, THEREFORE, the condition of this obligation is such, that if the above Principal shall indemnify the Oblige
against loss by reason of his failure to make good at his own expense any defects or deficiencies in materials or
workmanship which may appear in the work under said contract with the period of 2 year(s) from the date of
acceptance of the work, then this obligation shall be void; otherwise to remain in full force and effect.

Principal

By: _____

By: _____



STATE OF)
COUNTY OF)

On this _____ day of _____ 20 _____ before me personally appeared the within named
_____ to me known, and known to me to be____
_____ the individual described in and who executed the within bond, and ____
_____ acknowledged to me that he _____
executed the same.

NOTARY PUBLIC

SUBMITTAL TRANSMITTAL FORM

Project	Water Dept. Building Addition 40 Columbus Avenue Mount Kisco, NY 10549			Submittal Number	
				Contract For	
				Contract #	
				Contractor	
				Subcontractor	
1st Submission Date		1st Resubmittal Date		2nd Resubmittal Date	
Specification Section		Paragraph		Drawing(s)	
Description					
Contents	<input type="checkbox"/> Product Data <input type="checkbox"/> Sample(s) <input type="checkbox"/> Test(s) <input type="checkbox"/> Drawing(s) <input type="checkbox"/> Other				
Manufacturer's Name					
CONTRACTOR'S APPROVAL				BDS REMARKS	
Date: _____ By: _____ <input type="checkbox"/> Submitted Product has been reviewed for release to A/E. <input type="checkbox"/> Submitted Product is as specified. <input type="checkbox"/> Submitted Product is equal to specified Product.					
ARCHITECT'S APPROVAL					
Date: _____ By: _____ <input type="checkbox"/> No Exception Taken <input type="checkbox"/> Make Corrections Noted <input type="checkbox"/> Rejected <input type="checkbox"/> Revise & Resubmit Reviewing is only for conformance with the Project's design concept and compliance with the information in the Contract Documents. The Contractor is responsible for quantities and dimensions to be confirmed and correlated at the site, for information that pertains solely to the fabrication processes or to the means, methods, techniques, sequences & procedures of construction, and for coordination of the Work of all trades. Any corrections on the submittal shall not be deemed an order for extra work.					

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TO OWNER:		PROJECT:		APPLICATION NO:	Distribution to:
The Village/Town of Mount Kisco		Water Dept. Building		PERIOD TO:	OWNER <input type="checkbox"/>
104 Main Street		Addition		CONTRACT FOR:	ARCHITECT <input type="checkbox"/>
Mount Kisco NY 10549		VIA ARCHITECT:		CONTRACT DATE:	CONTRACTOR <input type="checkbox"/>
FROM CONTRACTOR:		Bar Down Studio PO		PROJECT NOS:	FIELD <input type="checkbox"/>
		Box 721		/	OTHER <input type="checkbox"/>
		Beacon NY 12508			

The undersigned Contractor certifies that to the best of the Contractor's knowledge, information and belief the Work covered by this Application for Payment has been completed in accordance with the Contract Documents, that all amounts have been paid by the Contractor for Work for which previous Certificates for Payment were issued and payments received from the Owner, and that current payment shown herein is now due.

CONTRACTOR: _____

By: _____

State of: _____

County of: _____

Subscribed and sworn to before
me this _____ day of _____

Date: _____

Notary Public: _____

My commission expires: _____

Total Retainage (Lines 5a + 5b, or Total in Column I of G703)..... \$

(Line 4 minus Line 5 Total)

(Line 6 from prior Certificate)

9. BALANCE TO FINISH, INCLUDING RETAINAGE

(Line 3 minus Line 6)

CHANGE ORDER SUMMARY	ADDITIONS	DEDUCTIONS
Total changes approved in previous months by Owner	\$	\$
Total approved this month	\$	\$
TOTAL	\$	\$
NET CHANGES by Change Order	\$	

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010711ACD44

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Continuation Sheet

AIA Document G702™-1992, Application and Certificate for Payment, or G732™-2009, Application and Certificate for Payment, Construction Manager as Adviser Edition, containing Contractor's signed certification is attached.
In tabulations below, amounts are in US dollars.

Use Column I on Contracts where variable retainage for line items may apply.

APPLICATION NO:

APPLICATION DATE:

PERIOD TO:

ARCHITECT'S PROJECT NO: 21-01

A	B	C	D	E		F	G		H	I
ITEM NO.	DESCRIPTION OF WORK	SCHEDULED VALUE	WORK COMPLETED		MATERIALS PRESENTLY STORED (Not in D or E)	TOTAL COMPLETED AND STORED TO DATE (D+E+F)	% (G ÷ C)	BALANCE TO FINISH (C – G)	RETAINAGE (If variable rate)	
			FROM PREVIOUS APPLICATION (D + E)	THIS PERIOD						
	GRAND TOTAL									

CAUTION: You should sign an original AIA Contract Document, on which this text appears in RED. An original assures that changes will not be obscured.

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REQUEST FOR INTERPRETATION FORM

Product, Item, or System:			
Request Date:		RFI No.:	
Specification Section:		Paragraph Ref.:	
Contract Dwg. Reference(s):			
Describe Request:			
Signed:	<input type="checkbox"/> See Contractor's Attachments for Additional Description for Information		
Owner/Engineer/Architect Response:			
Engineer/Architect (Printed):	<input type="checkbox"/> See Engineer/Architect's Attachments for Additional Information		
<i>Engineer/Architect's Signature & Date</i>		<i>Response Accepted By Contractor Contractor's Signature & Date</i>	
<p>The Work shall be carried out in accordance with these supplemental instructions without change in Contract amount or Contract time for completion. Prior to proceeding with these instructions, indicate your acceptance of these instructions by signing where indicated and returning this form to the Engineer/Architect.</p>			

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AIA[®] Document G706[™] – 1994

Contractor's Affidavit of Payment of Debts and Claims

PROJECT: *(Name and address)*

WATER DEPT. BUILDING

ADDITION

40 COLUMBUS AVENUE

TO OWNER: *(Name and address)*

VILLAGE/TOWN OF MT. KISCO

104 MAIN STREET

MOUNT KISCO, NY 10549

ARCHITECT'S PROJECT NUMBER: 21-01

CONTRACT FOR:

CONTRACT DATED:

OWNER: ☐

ARCHITECT: ☐

CONTRACTOR: ☐

SURETY: ☐

OTHER: ☐

STATE OF:

COUNTY OF:

The undersigned hereby certifies that, except as listed below, payment has been made in full and all obligations have otherwise been satisfied for all materials and equipment furnished, for all work, labor, and services performed, and for all known indebtedness and claims against the Contractor for damages arising in any manner in connection with the performance of the Contract referenced above for which the Owner or Owner's property might in any way be held responsible or encumbered.

EXCEPTIONS:

SUPPORTING DOCUMENTS ATTACHED HERETO:

1. Consent of Surety to Final Payment. Whenever Surety is involved, Consent of Surety is required. AIA Document G707, Consent of Surety, may be used for this purpose

Indicate Attachment ☒ Yes ☐ No

The following supporting documents should be attached hereto if required by the Owner:

1. Contractor's Release or Waiver of Liens, conditional upon receipt of final payment.
2. Separate Releases or Waivers of Liens from Subcontractors and material and equipment suppliers, to the extent required by the Owner, accompanied by a list thereof.
3. Contractor's Affidavit of Release of Liens (AIA Document G706A).

CONTRACTOR: *(Name and address)*

BY:

(Signature of authorized representative)

(Printed name and title)

Subscribed and sworn to before me on this date:

Notary Public:

My Commission Expires:

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AIA[®] Document G706A[™] – 1994

Contractor's Affidavit of Release of Liens

PROJECT: *(Name and address)*

WATER DEPT. BUILDING
ADDITION
40 COLUMBUS AVENUE

TO OWNER: *(Name and address)*

THE VILLAGE/TOWN OF MOUNT KISCO
104 MAIN STREET
MOUNT KISCO NY 10549

ARCHITECT'S PROJECT

NUMBER: 21-01

CONTRACT FOR:

CONTRACT DATED:

OWNER: ☐

ARCHITECT: ☐

CONTRACTOR: ☐

SURETY: ☐

OTHER: ☐

STATE OF:
COUNTY OF:

The undersigned hereby certifies that to the best of the undersigned's knowledge, information and belief, except as listed below, the Releases or Waivers of Lien attached hereto include the Contractor, all Subcontractors, all suppliers of materials and equipment, and all performers of Work, labor or services who have or may have liens or encumbrances or the right to assert liens or encumbrances against any property of the Owner arising in any manner out of the performance of the Contract referenced above.

EXCEPTIONS:

SUPPORTING DOCUMENTS ATTACHED HERETO:

1. Contractor's Release or Waiver of Liens, conditional upon receipt of final payment.
2. Separate Releases or Waivers of Liens from Subcontractors and material and equipment suppliers, to the extent required by the Owner, accompanied by a list thereof.

CONTRACTOR: *(Name and address)*

BY:

(Signature of authorized representative)

(Printed name and title)

Subscribed and sworn to before me on this date:

Notary Public:

My Commission Expires:

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AIA[®] Document G707[™] – 1994

Consent Of Surety to Final Payment

OWNER	<input type="checkbox"/>
ARCHITECT	<input type="checkbox"/>
CONTRACTOR	<input type="checkbox"/>
SURETY	<input type="checkbox"/>
OTHER	<input type="checkbox"/>

PROJECT : *(Name and address)*
WATER DEPT. BUILDING ADDITION
40 COLUMBUS AVENUE, MOUNT KISCO NY
TO OWNER : *(Name and address)*
VILLAGE/TOWN MT. KISCO
104 MAIN STREET, MOUNT KISCO 10549

ARCHITECTS PROJECT NUMBER: 21-01

CONTRACT FOR:

CONTRACT DATED:

In accordance with the provisions of the Contract between the Owner and the Contractor as indicated above, the
(Insert name and address of Surety)

on bond of
(Insert name and address of Contractor)

, SURETY,

hereby approves of the final payment to the Contractor, and agrees that final payment to the Contractor shall not relieve the Surety of
any of its obligations to
(Insert name and address of Owner)

, CONTRACTOR,

as set forth in said Surety's bond.

, OWNER,

IN WITNESS WHEREOF, the Surety has hereunto set its hand on this date:
(Insert in writing the month followed by the numeric date and year.)

(Surety)

(Signature of authorized representative)

(Printed name and title)

Attest:
(Seal):

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GENERAL CONDITIONS OF THE CONTRACT FOR CONSTRUCTION

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101. DEFINITIONS

- a. Whenever used in any of the Contract Documents, the following meanings shall be given to the terms herein defined:
 - 1. The term "Contract" means the Contract executed by the Owner and the Contractor.
 - 2. The term "Owner" means the Village of Mt. Kisco, which is authorized to undertake this Contract.
 - 3. The term "Contractor" means the person, firm or corporation entering into the Contract with the Owner to perform and complete the work involved in this Contract.
 - 4. The term "Subcontractor" means a person, firm or corporation supplying labor for work at the site of the project for and under separate contract or agreement with the Contractor.
 - 5. The term "Project Area" means the area shown on the drawing in the immediate vicinity of the work, unless otherwise defined in the Special Conditions.
 - 6. The term "Architect" means the Architect of the Project, or such of his subordinates or assistants as have Project Architect status: or if a Consulting Architect is employed to perform construction management and inspection, then this term shall apply to said Consulting Architect and those subordinates and assistants that have Project Architect status. A list of authorized Project Architects will be furnished to the Contractor on request.
 - 7. The term "Village" means the Village of Mt. Kisco within which the Project Area is situated.
 - 8. The term "Contract Documents" means and shall include the Documents listed in Article 3 of the Agreement.
 - 9. The term "Drawings" or "Contract Drawings" means the drawings listed in the Schedule of Drawings.
 - 10. The term "Technical Specifications" or "Supplemental Technical Specifications" means that part of the Contract Documents which describes, outlines and stipulates, the quality of materials to be furnished; the quality of workmanship required; measurement and payment.
 - 11. The term "Addendum" or "Addenda" means any changes, revisions or clarifications of the Contract Documents which have been duly issued by the Owner to prospective Bidders prior to the time of receiving Bids.

102. SUPERINTENDENCE BY CONTRACTOR

- a. Except where the Contractor is an individual and gives his personal superintendence to the work, the Contractor shall provide a competent superintendent, satisfactory to the Owner, for the work at all times during working hours with full authority to act for him. The Contractor shall also provide an adequate staff for the proper coordination and expediting of his work. Should, in the opinion of the Owner, any language barrier exists between the superintendent and the Owner, the Contractor shall furnish a qualified interpreter.
- b. The Contractor shall lay out his work including all survey required and he shall be responsible for all work executed by him under the Contract. He shall verify all figures, elevations, etc. before proceeding with the work and will be held responsible for any error resulting from his failure to do so.

103. SUBCONTRACTS

- a. The Contractor shall not execute an agreement with any Subcontractor or permit any Subcontractor to perform any work included in this Contract until he has received written approval of such Subcontractor from the Owner.

- b. The Contractor shall be as fully responsible to the Owner for the acts and omissions of his Subcontractors, and of persons either directly or indirectly employed by them, as he is for the acts and omissions of persons directly employed by him. All subcontractors must have adequate superintendence on the work site when they are performing work.
- c. The Contractor shall cause appropriate provision to be inserted in all Subcontracts relative to the work to require compliance by each subcontractor with the applicable provisions of the Contract for the work embraced in this Contract.
- d. Nothing contained in the Contract shall create any contractual relation between any Subcontractor and the Owner.
- e. The Contractor shall not subcontract more than 50% of the total work of this contract. Any material purchased by the Contractor and not used by him in his work shall be considered a Subcontract.

104. OTHER CONTRACTS

- a. The Owner reserves the right to let other Contracts in connection with this work or to perform work related to this project with his own forces. The Contractor shall offer other Contractors and the Owner reasonable opportunity for the introduction and storage of their materials and the execution of their work, and shall properly connect and/or coordinate his work with theirs. The Contractor shall cooperate fully with such other Contractors, by scheduling his own work with that to be performed under other Contracts as may be directed by the Owner. The Contractor shall not permit or commit any act, which will interfere with the performance of work by any other Contractor as scheduled.
- b. Wherever work being done by the Owner or its forces, or other Contractors, is contiguous to work covered by this contract, the respective rights of the various interests involved shall be established by the Owner, to secure the completion of the various portions of the work in general harmony.
- c. If any part of the Contractor's work depends for proper execution or results upon the work of others, the Contractor shall inspect and promptly report to the Architect in writing any defects or deficiencies in such work that render it unsuitable for such proper execution and results.

105. RESPONSIBILITIES OF CONTRACTOR

- a. Except as otherwise specifically stated in the Contract Documents, the Contractor shall provide and pay for all materials, labor, tools equipment, water light, heat, power, transportation, superintendence, temporary construction of every nature, charges, levies, fees or other expenses and all other services and facilities of every nature whatsoever necessary for the performance of the Contract and to complete this Contract in every respect within the specified time.

106. FITTING AND COORDINATION OF THE WORK

- a. The Contractor shall be responsible for the proper fitting of all work and for the coordination of the operations of all trades, Subcontractors or Suppliers engaged upon this Contract. He shall be prepared to guarantee to each of the Subcontractors, the locations and measurements that they may require for the fitting of their work to all surrounding work. The Contractor shall, at his own expense, effect all cutting, fitting, or patching of his work required to make the same conform to the Contract Drawings and specifications and except with the consent of the Owner, not to cut or otherwise alter the work of any other Contractor.

107. MUTUAL RESPONSIBILITY OF CONTRACTOR

- a. If, through acts or neglect on the part of the Contractor, any other Contract or Subcontractor shall suffer loss or damage on the work, the Contractor shall settle with such other Contractor or Subcontractor by agreement or arbitration, if such other Contractor or Subcontractor will so settle. If such other Contractor or Subcontractor shall assert any claim against the Owner on account of

any damage alleged to have been so sustained, the Owner will notify the Contractor, who shall defend at his own expense any suit based upon such claim, and, in any judgment or claims against the owner shall pay or satisfy such judgment or claim and pay all costs and expenses in connection therewith and will in all other respects, including, but not limited to attorney's fees and court costs, hold harmless the Owner and Engineer.

108. ASSIGNMENT OR NOVATION

- a. The Contractor shall not assign or transfer, whether by an assignment or novation, any of its rights, duties, benefits, obligations, liabilities, or responsibilities under this Contract without the written consent of the Owner; provided, however, that assignments to banks, trust companies, or other financial institutions may be made without the consent of the Owner.
- b. No assignment of any of the Contractor's rights or benefits under the Contract is subject to a prior lien for labor performed, services rendered and materials, tools and equipment supplied for the performance of the work under this Contract in favor of all persons, firms or corporations rendering such labor or services or supplying such materials, tools or equipment.

109. PROGRESS SCHEDULE

- a. The Contractor shall submit within seven (7) calendar days after award a carefully prepared realistic Progress Schedule showing the proposed dates of starting and completing of each and every item of work on each and every section of work in accordance with these Specifications if applicable to this specific Contract. The Progress Schedule shall include as a minimum:
- b. The project name, number and geographic location.
- c. The contract time, contract beginning date, and ending date.
- d. The time of beginning and completion of each significant phase of this contract.
- e. The initial requisition will not be approved for payment until said schedule is submitted. Said schedule will be revised or updated monthly unless otherwise permitted by the Owner. No monthly payments will be approved without a revised/updated monthly Progress Schedule approved by the Owner.
- f. The Progress Schedule shall show the plan of construction and the proposed method of carrying out this work including a full statement of the equipment to be used.

110. COMMUNICATIONS

- a. All notices, demands, requests, instructions, approvals, proposals and claims must be in writing.
- b. Any notice to or demand upon the Contractor shall be sufficiently given if delivered at the office of the Contractor stated on the signature page of the Agreement (or at such other office as the Contractor may from time to time designate) in a sealed, postage-prepaid envelope or delivered with charges prepaid to any telegraph company for transmission, in each case addressed to such office.
- c. All papers required to be delivered to the Owner shall, unless otherwise specified in writing to the Contractor, be delivered to the Village of Mt. Kisco Village Hall, and any notice to or demand upon Owner shall be sufficiently given if so delivered, or if deposited in the United States mail in a sealed, postage- prepaid envelope or delivered with charges prepaid to any telegraph company for transmission to said Owner at such address, or to such other representatives of the Owner or to such other address as the may subsequently specify in writing to the Contractor for such purpose.
- d. Any such notice shall be deemed to have been given as of the time of actual delivery or (in case of mailing), when the same should have been received in due course of post, or in the case of telegrams, at the time of actual receipt, as the case may be.

111. PAYMENTS TO CONTRACTOR

a. Partial Payments

1. The Architect shall prepare an estimate of the work performed for partial payment as of a mutually agreed upon date at least 30 days after the beginning of work, and approximately every 30 days thereafter. The amount of the payment due the Contractor shall be determined by adding the total value of work completed to date and deducting five percent (5%) of the total amount, to be retained until final payment and (2) the amount of all previous payments. The total value of work completed to date shall be based on the estimated quantities of work completed and on the unit prices, if any, contained in the Agreement.
2. There will be no payments or partial payments to the Contractor for materials purchased and stored/stockpiled on the project site.
3. Monthly or partial payments made by the Owner to the Contractor are monies advanced for the purpose of assisting the Contractor to expedite the work of construction. All material and completed work covered by such monthly or partial payments shall remain the property of the Contractor, and he shall be responsible for the care and protection of all materials and work upon which payments have been made. Such payments shall not constitute a waiver of the right of the Owner to require the fulfillment of all terms of the Contract and the delivery of all improvements embraced in this Contract complete and satisfactory to the Owner in all details.

b. Final Payment

1. After final inspection and acceptance by the Owner of all work under the Contract, the Contractor shall prepare his requisition for final payment which shall be based upon the carefully measured or computed quantity of each item of work at the applicable unit prices stipulated in the Agreement. The total amount of the final payment due the Contractor under this Contract shall be the amount computed without retainage less all previous payments. Final payment to the Contractor shall be made subject to his furnishing the Owner with a release in satisfactory form of all claims against the Owner, arising under and by virtue of his Contract, other than such claims, if any as may be specifically excepted by the Contractor from the operation of the release as provided elsewhere herein.
2. The Owner, before paying the final estimate, may require the Contractor to furnish releases or receipts from all subcontractors having performed any work and all persons having supplied materials, equipment (installed on the Project) and services to the Contractor, if the Owner deems the same necessary in order to protect its interest. The Owner, however, may if it deems such action advisable, make payment in part or in full to the Contractor without requiring the furnishing of such releases or receipts of any payment so made shall in no way impair the obligations of any surety or sureties furnished under this Contract.
3. If it was necessary for the Owner to expend money for labor, materials or equipment on this project because the Contractor failed to perform satisfactorily or promptly, and a bill for such sum remains unpaid, the Owner may deduct this sum from partial payments or the final payment. Furthermore, if the specifications provide for certain work to be done by the Owner with the fee or cost to be borne by the Contractor, and a bill for such services remains unpaid, the Owner may deduct this sum from the partial or the final payment.
4. Withholding of any amount due the Owner under the section entitled "LIQUIDATED DAMAGES" shall be deducted from the final payment due the Contractor. At the Owner's option, liquidated damages may be deducted from any partial payment.

c. Withholding Payments

1. Notwithstanding the above, the Owner may withhold from any payment otherwise due the Contractor so much as may be necessary to protect the Owner and if it so elects may also withhold any amounts due from the Contractor to any Subcontractors or material dealers, for work performed or material furnished by them. The foregoing provisions shall be construed solely for the benefit of the Owner and will not require the Owner to determine or adjust any

claims or disputes between the Contractor and his Subcontractors or material dealers, or to withhold any monies for their protection unless the Owner elects to do so. The failure or refusal of the Owner to withhold any monies from the Contractor shall in no way impair the obligations of any surety or sureties under any bond or bonds furnished under this Contract.

d. Payments Subject to Submission of Certificates

1. Each payment to the Contractor by the Owner shall be made subject to submission by the Contractor of all written certifications required of him and his Sub-contractors by the Section entitled, CONTRACTOR'S CERTIFICATES under the GENERAL CONDITIONS.

112. CHANGES IN THE WORK

- a. The Owner may make changes in the work required to be performed by the Contractor under the Contract by making additions thereto, or by omitting work there from, without invalidating the Contract.
- b. Except for the purpose of affording protection against any emergency endangering life or property, the Contractor shall make no change in the materials used or in the specified manner of construction and/or installing the improvements or supply additional labor, services or materials beyond that actually required for the execution of the Contract, unless in pursuance of a written order from the Owner, authorizing the Contractor to proceed with the change. No claim for an adjustment of the Contract price will be valid unless so ordered.
- c. The Contractor agrees to perform any of the aforementioned changed work, along with all other required work found under the Contract, without delay and in accordance with good construction practices.
- d. These changes outlined above may be made without relieving or releasing the Contractor from any of his obligations under the Contract provisions, and without affecting the validity of the guaranty bonds, and without relieving or releasing the surety or sureties of said bonds. All such work shall be executed under the terms of the original Contract unless it is provided otherwise.
- e. All adjustments to the Contract payment provisions will be made in accordance with the following paragraphs.
- f. If applicable unit prices are contained in the Agreement (established as a result of either a Unit Price Bid or a Supplemental Schedule of Unit Prices), the Owner may order the Contractor to proceed with desired changes in the work, the value of such changes to be determined by the measured quantities involved in the applicable unit prices specified in the Contract.
- g. If applicable unit prices are not contained in the Agreement, the Owner shall, before ordering the Contractor to proceed with desired changes, request an itemized proposal from him covering the work involved in the change after which the procedure shall be as follows:
 1. If the change in the work involves additional work, the procedure shall be as follows:
 - (a) If the proposal is acceptable, the Owner will prepare the Change Order in accordance therewith for acceptance by the Contractor; or
 - (b) If the proposal is not acceptable and prompt agreement between the two parties cannot be reached, the Owner may order the Contractor to proceed with the work on a Cost-Plus Basis. A Cost-Plus Basis is defined as the net cost of the work to the Contractor plus an allowance to cover overhead and profit as stipulated below:
 - (c) "Net cost of the work" is defined as (1) gross cost of labor plus (2) net cost of materials plus (3) gross cost of equipment.
 - (d) "Gross cost of labor" is defined as the cost of labor plus fringe benefits.

- (e) "Cost of labor" is defined as the cost of required labor based on the prevailing rates established by the New York State Department of Labor and stated in the Contract Document. No part of any salary for employees above the grade of foreman, and having general supervision of this work, will be included in this item.
 - (f) "Fringe benefits" are defined as all insurance's, taxes and other benefits for the employee required by law or by union contract. The actual value of such fringe benefits shall be as listed in the New York State Department of Labor for each individual employee used in the work.
 - (g) "Net cost of materials" shall be defined as the cost of all materials incorporated in the work, including delivery charges, less any allowable cash discounts, as shown by receipted bills.
 - (h) "Gross cost of equipment" is defined as the "net cost of equipment" plus an escalation allowance from date of signing of the contract for increase in established cost of fuel and lubricants in the work area.
 - (i) "Net cost of equipment" shall be defined as a rental rate, which is reasonable and based on rental rates prevailing in the area where the work is to be done. Such rental rate shall be based on the rates published in the "Rental Rate Blue Book" and shall be agreed upon in writing before the work is begun.
 - (j) The cost of furnishing small tools and accessories and materials used for construction but not incorporated in the work shall be considered as part of the Contractor's overhead, and shall not be included in the "net cost of the work".
 - (k) The Contractor must provide a certified copy of payroll on a monthly basis.
 - (l) An allowance of 20% will be added for overhead and profit to "gross cost of labor" and "Net Cost of Materials" and is hereby stipulated to be in lieu of an actual determination of overhead and profit. The Contractor in submitting his bid agrees that this allowance shall be used, regardless of whether actual overhead and profit is more or less than this amount.
 - (m) No percentage for overhead and profit shall be added to the amounts of equipment rental prices agreed upon, but the price agreed upon shall be the total compensation allows for use of such equipment.
2. If the change in the work requires a reduction in the work involved, the procedure shall be as follows:
- (a) If the proposal is acceptable, the Owner will prepare the Change Order in accordance therewith for acceptance by the Contractor; or
 - (b) If the proposal is not acceptable and prompt agreement between the two parties cannot be reached, the Architect shall fix the cost value of the credit. The Owner may then order the Contractor to proceed with the work. Should the Contractor disagree with the cost value of the credit as fixed by the Architect, he may appeal the same in accordance with the procedures outlined in the GENERAL CONDITIONS.
- h. Each Change Order shall include in its final form:
- 1. A detailed description of the change in the work.
 - 2. The Contractor's proposal (if any) or a confirmed copy thereof.
 - 3. Definite statements as to the resulting change in the Contract price and/or time.

4. The statement that the Change Order is subject to the approval of the Owner.

- i. Any error or discrepancy in or between any of the Contract Documents shall be immediately reported to the Architect who shall make such corrections and interpretations as may be deemed necessary for the completion of the work in a satisfactory and acceptable manner.
- j. Change Orders shall in general be in writing. If a Contractor claims that a change order was given to him orally, his claim shall be invalid unless such oral change order was given by an authorized Architect as defined in Section 101.f of this Contract, and further unless such oral change order was confirmed in writing within 24 hours of the giving of the alleged oral change order.
- k. When change orders, or claims involve a subcontractor, no surcharge will be allowed the Contractor for handling, processing, supervision, or coordination.

113. CLAIMS FOR EXTRA COST

- a. All claims between parties, including all claims for additional compensation and/or additional time, arising out of, or in any way related to this Contract and/or the performance of the same, or its interpretation shall within ten (10) days of the event or action giving rise to the claim be presented to the Architect. All papers pertaining to claims shall be filed in quadruplicate. Such notice need not detail the amount of the claim but shall state the facts surrounding the claim in sufficient detail to identify the claim, together with its character and scope. In the meantime, the Contractor shall proceed with the work as directed. Any claim not presented within the time limit specified in this paragraph shall be deemed to have been waived, except that if the claim is of a continuing character and notice of the claim is not given within ten (10) days prior to the receipt by the Architect of notice thereof. The Contractor shall in no case allow any claim or dispute to delay the work.
- b. As soon as practicable after the final submission of all information the Owner shall make a determination of any claim. Said decision of the Owner shall be a condition precedent to any further action on the claim. However, upon certification in writing by the claimant the Owner shall be obliged to render a decision on said claim within sixty (60) days of the date of said certification. Should the Owner fail to render its decision within the aforementioned sixty (60) day period, its decision will not be a condition precedent to any further action on the part of the claimant.
- c. There shall be no added compensation paid for delay to the Contractor unless the Owner causes said delay by a material breach of this Contract, and compliance with the foregoing notice provisions shall be a condition precedent to the prosecution of any such claim. In any claim for delay except for "Excusable Delays and Extensions of Time" as defined in the GENERAL CONDITIONS SECTION "TERMINATION"; "DELAYS AND EXTENSIONS"; "LIQUIDATED DAMAGES" wherein it is alleged that the Contractor's equipment was caused to remain idle, only one half of the prevailing rental rates for use of said equipment will be considered as damages for idled equipment in order to allow for the absence of fair wear and tear, which is allowed for in prevailing rental rates for equipment usage.
- d. Claims for additional compensation for extra work, due to alleged errors in ground elevations, contour lines, or bench marks, will not be considered unless accompanied by certified survey data, made prior to the time the original ground was disturbed, clearly showing that errors exist which resulted, or would result, in handling more material, or performing more work, than would be reasonably estimated from the Drawings and maps issued.
- e. If, on the basis of the available evidence, the Owner determines that an adjustment of the Contract Price and/or Time is justifiable, the procedure shall be as provided in Sections - "CHANGES IN THE WORK" or "TERMINATIONS; DELAYS AND EXTENSIONS; LIQUIDATED DAMAGES" of the GENERAL CONDITIONS.
- f. In the event of an unfavorable decision by the Owner, the Contractor shall have the right to contest said decision as provided for under the provisions of this Contract.

114. NO OPTIONS PAID

- a. It shall be clearly understood that there will be no payment for materials incorporated into the work (other than that shown on the Contract Drawings or specified) unless ordered by the Architect.

115. TIME AND MATERIALS WORK NOTIFICATION

- a. Should the Contractor perform work in accordance with the General Conditions, "CHANGES IN THE WORK", he shall give a minimum of 24 hours advance written notice prior to his anticipated beginning any work on a Cost-Plus Basis, to the Owner.

116. TERMINATION; DELAYS AND EXTENSIONS; LIQUIDATED DAMAGES

- a. Termination of Contract for Convenience: For its own convenience the Owner may, at any time prior to the issuance of a Notice to Proceed, void the Contract by giving unequivocal and unconditional written notice of such avoidance to the Contractor and in the event of such avoidance the Owner will not be liable to the Contractor for any claims or losses, including anticipation of performance under the Contract.
 1. At any time subsequent to the Notice to Proceed the Owner, may at its own convenience, terminate the Contract by giving unequivocal and unconditional written notice of such termination to the Contractor. In the event of such termination by the Owner, the Owner shall be responsible to the Contractor for the following monies only, which monies shall be subject to legitimate changes of the Owner against the Contractor:
 2. All reasonable costs incurred by the Contractor in performance of or in anticipation of performance of the Contract provided the Contractor shall take all reasonable steps to mitigate such damages including the return and/or resale of materials ordered; and
 3. On Lump Sum projects, a mark-up of 10% for profit and 10% for overhead on the reasonable cost of the work that is completed and in place in accordance with the Contract Drawings and Specifications will be allowed. On unit price contracts, allowances for profit and overhead shall be considered to have been included in each of the Contractor's original unit prices bid. The Contractor shall remain responsible for the work completed, in accordance with the Contract provisions.
 4. Should any work under this contract be subject to, or terminated by the action of any third party, governmental unit or court due to any ecological or other reason the rights of the Contractor to recover from the Owner shall be determined as set forth above.
- b. Termination of Contract for Cause: In addition, the Owner may give notice in writing to the Contractor and his Surety of any material breach of the Contract by the Contractor to include but not be limited to any of the following:
 1. Failure to begin the work under the Contract within the time specified.
 2. Failure to perform the work with sufficient workmen, equipment or materials to ensure the prompt completion of said work.
 3. Unsuitable performance of the work or failure to perform anew such work as shall be rejected as defective and unsuitable.
 4. Neglecting or refusing to remove material rejected as defective and unsuitable.
 5. Discontinuing the suitable prosecution of the work for a period of 72 hours, excluding Sundays and holidays without written authorization of the Architect.
 6. Failure to commence discontinued work within 48 hours after notice to resume (excluding Sundays and holidays).

7. Becoming insolvent or declared bankrupt, or commits any act of bankruptcy or insolvency.
8. Allowing any final judgment to stand against him unsatisfied for a period of ten (10) calendar days.
9. Making any assignment for the benefit of creditors.
10. Violating any covenants contained in the Contract Documents.
11. Failure to eliminate unsafe conditions within 12 hours.
 - (a) The Contractor or Surety within a period often (10) calendar days after such notice shall take all practical action to correct said material breach. Should said action fail to meet with the approval of the Owner, the Owner, may at its discretion, order the Surety to complete the work or, without violating the Contract, take the prosecution of the work out of the hands of said Contractor and Surety.
 - (b) The Owner may appropriate or use any or all materials and equipment on the ground as may be suitable and acceptable and may enter into an agreement, either by negotiation or public letting, for the completion of said Contract according to the terms and provisions thereof, or use such other methods or combinations thereof, as in its opinion shall be required or desirable for the completion of said Contract in an acceptable manner. All costs and charges incurred by the Owner together with the cost of completing the work under Contract shall be deducted from monies due or which may become due said Contractor. In case such expense shall exceed the sum which would have been payable under the Contract, then the Contractor and the Surety shall be liable and shall pay to the Owner the amount of said excess.
- c. Excusable Delays and Extensions of Time. The right of the Contractor to proceed shall not be terminated nor shall the Contractor be charged with liquidated damages for any delays in the completion of the work due:
 1. To any acts of the Government, including controls or requisitioning of materials, equipment, tools, or by labor by reason of war, National Defense, or any other national emergency.
 2. To any acts of the Owner caused by an injunction or litigation against said Owner, by a third party.
 3. To causes not reasonably foreseeable by the parties to this Contract at the time of the execution of the Contract which are beyond the control and without the fault or negligence of the Contractor, including, but not restricted to, acts of God or of the public enemy, acts of another Contractor in performance of some other Contract with the Owner, fires, floods, epidemics, quarantine, restrictions, strikes, freight embargoes, and weather of unusual severity such as hurricanes, tornadoes, cyclones and other extreme weather conditions; and
 4. To any delay of any Subcontractor occasioned by any of the causes specified in subparagraphs 1, 2 and 3 of this paragraph "c".
 - (a) Provided, however, that the Contractor promptly notify the Owner within ten (10) days in writing of the cause of the delay. Upon receipt of such notification, the Owner shall ascertain the facts and the cause and the extent of delay. If, upon the basis of the facts and the terms of this Contract, the delay is properly excusable, the Owner shall extend the time for completing the work for a period of time commensurate with the period of excusable delay.
 - (b) No claim for damages or any claim other than for an extension of time as herein provided shall be made or asserted against the Owner by reason of any delay.
- d. Liquidated Damages for Delay. If the work is not completed within the time stipulated in Section 003113 'Preliminary Schedules', including any extensions of time for excusable delays as herein

provided, the Contractor shall pay to the Owner as fixed agreed, and as liquidated damages (it being impossible to determine the actual damages occasioned by the delay) for each calendar day of delay, until the work is completed, the amount as set forth below and the Contractor and his sureties shall be liable to the Owner for the amount thereof. Neither permission given by the Owner for the Contractor to continue the work after the time fixed for completion, nor the inspection and acceptance of such work, shall be deemed a waiver on the part of the Owner of any of his rights under this Contract.

1. The Contractor and his Sureties shall be liable for and shall pay to the Owner the sum of \$800.00 (Eight Hundred Dollars) as fixed, agreed and liquidated damages for each calendar day of delay from the above stipulated completion, or as modified in accordance with the GENERAL CONDITIONS, until such work is satisfactorily completed and accepted.

117. ARCHITECT'S AUTHORITY

- a. The Architect will decide all questions, which may arise in the relation to the work and the construction thereof. The Architect's estimates and decisions shall be final and conclusive, except as herein otherwise expressly provided. In case any question shall arise between the parties hereto relative to said Contract, the determination or decision of the Architect shall be a condition precedent to the right of the Contractor to receive any money or payment for work under this Contract affected in any manner or to any extent by such question.

118. TECHNICAL SPECIFICATIONS AND CONTRACT DRAWINGS

- a. Anything mentioned in the Technical Specifications and not shown on the Contract Drawings and not mentioned in the Technical Specifications shall be of like effect as if shown on or mentioned in both. In case of difference between the Contract Drawings and Technical Specifications, the Technical Specifications shall govern. In case of any discrepancy within the Contract Drawings or within the Technical specifications, the matter shall be immediately submitted to the Owner without whose decision said discrepancy shall not be adjusted by the Contractor, save only at his own risk and expense.

119. REQUESTS FOR SUPPLEMENTARY INFORMATION

- a. It shall be the responsibility of the Contractor to make timely request of the Owner for any additional information not already in his possession which should be furnished by the Owner under the terms of this Contract, and which he will require in the planning and execution of the work. Such requests may be submitted from time to time as the need is approached, but each shall be filed in ample time to permit appropriate action to be taken by all parties involved so as to avoid delay. Each request shall be in writing, and list the various items and latest date by which each will be required by the Contractor. The first list shall be submitted within two (2) weeks after Contract award and shall be as complete as possible at that time. The Contractor shall, if requested, furnish promptly any assistance and information the Architect may require in responding to these requests of the Contractor. The Contractor shall be fully responsible for any delay in his work or to others arising from his failure to comply fully with the provisions of this Section.

120. SHOP DRAWINGS

- a. Shop drawings are required for all manufactured items. In the case of reinforced concrete, details of reinforcing bars and form construction and materials shall be submitted in the same manner as shop drawings.
- b. All required shop drawings, machinery details, layout drawings, working drawings, material and equipment descriptions, etc., shall be submitted to the Architect in three (3) copies for review sufficiently in advance of requirements to afford ample time for checking, including time for correcting, resubmitting and rechecking if necessary. THE CONTRACTOR SHALL SIGN AND APPROVE ALL SHOP DRAWINGS PRIOR TO SUBMITTAL TO THE ARCHITECT. Two (2) weeks should be allowed for checking from the date of receipt by the Architect. The Contractor, with the approval of the Architect, may submit manufacturer's literature as a substitute for, or supplement to, the shop drawings, etc. The minimum size for any submission shall be 8 1/2" x 11

and the maximum size shall be 24" x 36".

- c. No construction, purchases, delivery, installation or work shall be done or made on any part or feature of this Contract which is dependent upon shop drawing review, until such review has been received from the Architect. If the Contractor proceeds without reviewed shop drawings, it shall be at his own risk. No claim by the Contractor, for extension of the Contract time will be granted by reason of his failure in this respect.
- d. Shop drawings, etc., or printed matter shall give all dimensions, sizes, etc., to enable the Architect to determine suitability of the construction, installation, material or layout for the purposes intended. Where needed for clarity, the drawings shall include outline, sectional views and detailed working dimensions and designations of the kind of material, machine work, finish, etc., required. The drawings to be submitted shall be coordinated by the Contractor with any other drawings previously reviewed, with the design and function of any equipment or structure and the Contract Drawings.
- e. By submitting shop drawings, etc., the Contractor thereby represents that he has determined and verified all field measurements, field construction criteria, materials, catalog numbers and similar data, or will do so and that he has checked and coordinated each shop drawing, etc., with the requirements of the work and of the Contract Documents.
- f. If any drawings show variations from the requirements of the Contract because of standard shop practice and or other reasons, the Contractor shall make specific mention of such variation in his letter of transmittal in order that, if acceptable, suitable action may be taken for proper adjustment of the contract price and/or time; otherwise, the Contractor will not be relieved of the responsibility for executing the work in accordance with the Contract even though the drawings have been reviewed.
- g. After review, the submittals will be stamped "Approved", "Approved as Noted", "Resubmit" or "Disapproved". Two (2) prints of "Approved" or "Approved as Noted" drawings will be returned to the Contractor for his use and distribution to his suppliers and/or Subcontractors. In the case of those stamped "Resubmit" or "Disapproved" two (2) prints will be returned to the Contractor who shall make all indicated corrections and resubmit (3) prints.
- h. In any submission that is noted as "Approved" or "Approved as Noted", the review shall not extend to details or dimensions and shall not relieve the Contractor from his responsibility for compliance with the Contract Drawings and specifications.
- i. When the Contractor proposes a revision to a previously submitted shop drawing, etc., three (3) copies shall be resubmitted for review. This re-submittal shall clearly indicate, in a revision block, the date, description and location of the revision. The letter of transmittal shall state the reasons for the revision.
- j. The contractor shall furnish as many copies of the submittals as is necessary for the proper coordination of the work, and shall maintain a complete set of the reviewed submissions at the site of the work at all times.
- k. Upon the final acceptance of the project, the Contractor shall, on request, furnish the Owner with a complete set of shop drawing tracings or reproducible cloth reproductions of the shop drawing tracings.
- l. There will be no direct payment made for any of the above submittals, or reproducible drawings if required, but the cost thereof shall be considered as included in the general cost of the work.

121. SAMPLES, CERTIFICATES AND TESTS

- a. The Contractor shall submit all samples, materials, certified test reports, materials certificates, certificates of compliance, affidavits, etc., as called for in the Contract Documents or required by the Architect, promptly after award of the Contract and acceptance of the Contractor's bonds. No such materials and/or equipment, etc., shall be manufactured or delivered to the site, except at

the Contractor's own risk, until the required samples/certificates/tests/etc., have been approved in writing by the Owner. Any delay in the work caused by late or improper submission of the above for approval shall not be considered just cause for an extension of the Contract time.

- b. Samples. Unless otherwise specified, the Contractor shall furnish the required samples without charge, and shall provide every facility for the securing of material samples. He shall provide means and assist in the verification of all scales, measures and other devices, which he operates. Samples to be submitted shall be taken by the Architect or a laboratory approved by the Owner, unless otherwise specified. All materials being used shall be subject to re- sampling and testing at any time during their preparation and/or use.
- c. All samples submitted by the Contractor shall be properly identified to include, but not be limited to, the project name, project number, item number and description of material, name of the producer, place of origin, and other detailed information which will assist the Architect passing upon the acceptability of the sample. Certified test reports, materials certificates and/or certificates of compliance required to be submitted with the samples or if permitted in lieu of samples, shall conform to the requirements stated hereafter.
- d. Certified Test Report. A certified test report shall be a document containing a list of the dimensional, chemical, metallurgical, electrical and physical results obtained from an actual test of the materials involved, and shall certify that the materials meet the requirements of the Contract drawings and specifications, and shall also include the following information:
 - 1. Item number and description of material;
 - 2. Date of manufacture;
 - 3. Date of testing;
 - 4. Name or organization to whom the material is consigned.
 - 5. Quantity of material represented, such as batch, lot, group, etc.;
 - 6. Means of identifying the consignment, such as label, marking, lot number, etc.;
 - 7. Date and method of shipment;
 - 8. Name of organization performing tests.
 - (a) The certified test report shall be signed by an authorized and responsible agent for the organization manufacturing the material, and it shall be notarized.
- e. Materials Certificate. A materials certificate shall be a document certifying that the materials, components and equipment furnished, conform to all requirements of the Contract Drawings and specifications. The document shall also include the following information:
 - 1. Project to which the material is consigned.
- f. Name of Contractor to whom material is supplied.
- g. Item number and description of material.
- h. Quantity of material represented by the certificate.
- i. Means of identifying the consignment, such as label, marking, lot numbers, etc.
- j. Date and method of shipment. The materials certificate shall be signed by an authorized and responsible agent for the organization supplying the material, and it shall be notarized.

- k. Certificate of Compliance. A certificate of compliance shall be a document certifying that the materials, components and equipment covered by the previously submitted certified test report and materials certificate, have been installed in the work and that conform to all the requirements of the Contract Drawings and specifications. The following information shall also be required on the document:
 - 1. Project number;
 - 2. Item number and description of material;
 - 3. Quantity represented by the certificate;
 - 4. Name of manufacturer.
 - 5. The certificate of compliance shall be signed by an authorized responsible agent for the prime Contractor, and shall be notarized.
- l. Tests. Tests as required by the Specifications will be made in accordance with the latest revision to the standard method in effect at the time of bidding of the American Society of Testing Materials, the New York State Dept. of Transportation, the American Water Works Association , the American Association of State Highway and Transportation Officials or any other organization the is recognized as an authority on a particular material unless otherwise specified on the Contract Drawings or Special Conditions. Representative preliminary samples of the material proposed for use shall be submitted, without charge, by the Contractor or producer for examination and tested in accordance with specified methods. All materials being used are subject to test or rejection at any time during their preparation and use.
- m. The Architect will reject materials whenever, in his judgment, they fail to meet the requirements of the specifications.
- n. The Owner reserves the right to re-test all materials, which have been tested and accepted at the source of supply. After the same have been delivered, and to reject all materials which, when re-tested, do not meet the requirements of the specifications.
- o. Approval/Acceptance. Approval of any materials shall be general only and shall not constitute a waiver of the Owner's right to demand full compliance with Contract Requirements. After actual deliveries, the Architect will have such check tests made as he deems necessary in each instance and may reject materials and equipment and accessories for cause, even though such materials and articles have been given general approval. If materials, equipment or accessories which fail to meet check tests have been incorporated in the work, the Architect will have the right to cause their removal and replacement by proper materials or to demand and secure such reparation by the Contractor as is equitable.
- p. The Architect may accept a material or combination of materials and, therefore, waive non-complying test results provided that all of the following conditions are met:
 - 1. Results of prior and subsequent series of tests of the material or materiel from the same sources are found satisfactory. The incidence and degree of nonconformance with the specification requirements are, in the Architect's judgment within reasonable and practical limits.
 - 2. The Contractor has diligently exercised material controls consistent with good practices in the Architect's judgment.
 - 3. No adverse effect on the value or serviceability of the completed work could result.
 - 4. The Architect may at his discretion waive testing of extremely minor quantities of material when such material is obtained from sources that are prevalently on test.
- q. Costs. Except as otherwise specifically stated in the Contract, the costs of sampling and testing

will be divided as follows:

1. The Contractor shall furnish without extra cost, including packing and delivery charges, all samples required for testing purposes, including those samples taken on the project by the Architect. The Owner shall pay all other testing costs of said samples.
2. The Contractor shall assume all costs of re-testing materials, which fail to meet Contract requirements.
3. The Contractor shall assume all costs of testing materials offered in substitution for those found deficient or for those specified.

122. MATERIALS AND WORKMANSHIP

- a. Unless otherwise specifically provided for in the Technical Specifications, all workmanship, equipment, materials and articles incorporated in the work shall be new and the best grade of the respective kinds for the purpose. Where equipment, materials, articles or workmanship are referred to in the Technical Specifications as "equal to" any particular standard, the Architect shall decide the question of equality.
- b. All work performed and all materials furnished shall be, in conformity with the lines, grades, cross sections, dimensions and material requirements, including tolerances shown on the Contract Drawings or indicated in the Specifications.
- c. The Contractor shall furnish to the Owner for approval the manufacturer's detailed specifications for all machinery, mechanical and other special equipment, which he contemplates installing together with full information as to type, performance characteristics and all other pertinent information as required, and shall likewise submit for approval as required full information concerning all other materials or articles which he proposes to incorporate in the work. See Section - SAMPLES, CERTIFICATES AND TESTS.
- d. Machinery, mechanical and other equipment, materials or articles installed or used without such prior approval shall be at the risk of subsequent rejection.
- e. Materials specified by reference to the number or symbol of a specific standard, such as an ASTM Standard, a Federal Specification or other similar standard, shall comply with requirements in the latest revision thereof and any amendment or supplement thereto in effect on the date of the Invitation for Bids, except as limited to type, class or grade, or modified in such reference. The standards referred to, except as modified in the Technical Specifications, shall have full force and effect as though printed therein.
- f. The Contractor shall employ only competent and skillful men to do the work and whenever the Architect shall notify the Contractor, in writing, that any man on the work is, in his opinion, incompetent or disorderly, the Contractor shall forthwith remove such person and shall not again employ him on any part of the work without the written consent of the Architect.
- g. The Owner may stop any worker, any part of the work under the Contract if the methods or conditions are such that unsatisfactory work might result, if improper materials or workmanship is being used, or unsafe conditions exist. Any action by the Owner under this provision shall not be deemed a cause of delay and no extensions of permitted time will be granted because of such action.
- h. In the event the materials furnished or the work performed deviates from the requirements of the Contract Drawings and Specifications, but, in the opinion of the Owner, constitutes substantial performance, the Owner may accept the same. Should the deviation in question result in a savings to the Contractor the Owner will be entitled to a credit in the full amount of said savings. Should the deviation in question result in an additional cost to the Contractor, the Owner will not be liable to the Contractor for such additional cost.
- i. If the materials or the finished product in which the materials are used or the work performed are

not in conformity with the Contract Drawings and Specifications and have resulted in an inferior or unsatisfactory product, the work and materials shall be removed and replaced or otherwise connected by and at the expense of the Contractor.

123. PERMITS AND CODES

- a. The Contractor shall give all notices required by and shall observe and comply with all Federal and State laws and Local by-laws, ordinances and regulations in any manner affecting the conduct of the work, and all such orders or decrees as may exist at present and those which may be enacted later, of bodies or tribunals having any jurisdiction or authority over the work. The Contractor shall indemnify and save harmless the Owner and Architect and all of its officers, agents and servants against any claim or liability arising from or based on the violation of any such law, bylaw, ordinance, regulation, order or decree, whether by himself or his employees. All construction, work and/or utility installations shall comply with all applicable ordinances and/or codes including any and all written waivers thereto.
- b. Before commencing any work, the Contractor shall examine the Contract Drawings and Specifications for compliance with applicable ordinances, codes, etc. and shall immediately report any discrepancy to the Owner. Where the requirements of the Contract Drawings and Specifications fail to comply with such applicable ordinances, codes, etc., the Owner will adjust the Contract by Change Order to conform to such ordinances, codes, etc., (unless waivers in writing covering the differences have been granted by the governing body or department) and make appropriate adjustment in the Contract Price.
- c. Should the Contractor fail to observe the foregoing provisions and proceed with the construction or work and/or install any utility at variance with any applicable ordinance, code, etc., including any written waivers (notwithstanding the fact that such installation is in compliance with the Contract Drawings and Specifications), the Contractor shall remove such work without cost to the Owner, but a Change Order will be issued to cover only the excess cost the Contractor would have been entitled to receive if the change had been made before the Contractor commenced work on the items involved.
- d. Unless otherwise specified, the Contractor shall at his own expense, secure and pay to the appropriate department of the Local/State/Federal Government the fees or charges for all permits including but not limited to those required for the making of water taps and the supplying of any equipment required by the regulations of the water district or company, Electrical Underwriters permits, and any other permits required by the regulatory body or any of its agencies.
- e. The Contractor shall comply with applicable Local/State/Federal laws, ordinances, codes, etc., governing noise, the disposal of surplus excavation, materials, debris and rubbish on or off the Project Area and commit no trespass on any public or private property in any operation due to or connected with the work under this Contract.

124. CARE OF WORK

- a. The Contractor shall be responsible for the proper care and protection of all materials delivered and work performed until completion and final acceptance, whether or not the same has been covered in whole or in part by payments made by the Owner.
- b. Materials shall be stored so as to insure the preservation of their quality and fitness for the work and shall be located so as to facilitate prompt inspection. When considered necessary, they shall be placed on wooden platforms or other hard, clean surfaces and not on the ground, and when directed, shall be placed in weatherproof buildings.
- c. Stored materials, even though approved before storage, shall be inspected prior to their use in the work and shall meet the requirements of the specifications at the time it is proposed to use them.
- d. The Contractor shall at his sole expense and without any additional cost to the Owner provide watchmen and/or other security measures as may be reasonably required to properly protect and care for materials and work completed, and to otherwise prevent property damage and/or personal injury.

- e. In an emergency affecting the safety of life or property, including adjoining property, the Contractor, without special instructions or authorization from the Owner, is authorized to act at his discretion to prevent such threatened loss or injury, and he shall so act. He shall likewise act if instructed to do so by the Owner. Any compensation claimed by the Contractor on account of such emergency work will be reviewed by the Owner to determine its validity. If compensation is determined to be valid, then it will be determined by the Owner as provided in the Section - CHANGES IN THE WORK under GENERAL CONDITIONS.
- f. The Contractor shall avoid damage as a result of his operations to existing sidewalks, streets, curbs, pavements, utilities (except those which are to be replaced or removed), adjoining property, etc., and he shall at his own expense completely repair any damage thereto caused by his operations. If any damage is not repaired or acceptable arrangements for repair are not made within a reasonable period of time, the Owner may act to repair such damage by utilizing its own forces or using another contractor employed for that purpose, and the costs of such repair shall be deducted from any payments due the Contractor. If a damage claim has been referred by the Contractor to his insurance company, such referral shall in no way relieve the Contractor of his responsibilities.
- g. The Contractor shall shore-up, brace, underpin, secure and protect as may be necessary, all foundations and other parts of existing structures adjacent to, adjoining, and in the vicinity of the site, which may be in any way affected by the excavations or other operations connected with the construction of this Contract. The Contractor shall be responsible for the giving of any and all required notices to any adjoining or adjacent property owner or other party before the commencement of any work. The Contractor shall indemnify and save harmless the Owner and the Architect from any damages on account of settlements or the loss of lateral support of adjoining property and from all loss or expense and all damages for which the Owner and the Architect may become liable in consequence of such injury or damage to the work or adjoining and adjacent structures and/or their premises.

125. ACCIDENT PREVENTION

- a. The Contractor shall exercise proper precautions and safety measures at all times for the protection of persons and/or property and shall be responsible for all injuries and/or damages to all persons and/or property, either on or off the site, which occur as a result of his prosecution of the work under this Contract. The safety provisions of all applicable Local/State/Federal laws and building and construction codes shall be observed and the Contractor shall take or cause to be taken such additional safety and health measures as the Owner may determine to be reasonably necessary.
- b. Machinery, equipment and trucks shall be properly guarded, and operational hazards shall be eliminated in accordance with the provisions and intent of the latest rules and regulations of OSHA, to the extent that such provisions are not in contravention of applicable law. The Contractor's attention is also called to the Section - SAFETY PROVISIONS of the GENERAL CONDITIONS.
- c. The Contractor shall maintain an accurate record of all cases of death, occupational disease, and injury requiring medical attention or causing loss of time from work, arising out of and in the course of employment of the work under this Contract in accordance with the requirements of the applicable State/Local/Federal regulations. The Contractor shall promptly furnish the Owner with reports concerning these matters.
- d. The Contractor shall indemnify and save harmless the Owner, Bar Down Studio (the Architect) and their consultants from any and all claims for damages resulting from personal injury, death and/or property damage, suffered or alleged to have been suffered, by any person as a result of any work conducted under this Contract. See also the Section INDEMNITY CLAUSE of the GENERAL CONDITIONS.

126. USE OF PREMISES

- a. The Contractor shall confine his equipment, storage of materials, and construction operations to the Contract Limits as shown on the Drawings and as prescribed by ordinances or permits, or as

may be desired by the Owner, and shall not unreasonably encumber the site or public rights of way with his materials and construction equipment.

- b. The Contractor shall comply with all instructions of the Owner, Architect and the ordinances, codes, etc., of the Local/State/Federal Government, regarding signs, advertising, traffic, fires, explosives, danger signals, barricades, etc.

127. REMOVAL OF DEBRIS, CLEANING, ETC.

- a. The Contractor shall, periodically or as directed during the progress of the work, keep the Project Area and public rights of way reasonably clear. Upon completion of the work, prior to final inspection, he shall remove all temporary construction facilities, debris and unused material provided for the work, and restore the whole site of the work to a condition satisfactory to the Architect. The cost of all required clean-up shall be included in the various prices bid under this Contract.

128. LAYOUT OF WORK

- a. The Contractor shall perform all layout work necessary for the satisfactory execution of the construction as shown on the Contract Drawings and all costs in connection therewith shall be included in the contract price.
- b. The Contractor shall employ competent personnel and all work shall be subject to the approval of the Architect.
- c. The Contractor shall be held responsible for the protecting and safeguarding of all control points and bench marks set by the Architect and his own forces. Any replacement or re-establishment of control points or benchmarks by the Architect shall be at the expense of the Contractor.
- d. The required horizontal and vertical control necessary to perform this work is furnished on the Contract Drawings.

129. INSPECTION/ACCEPTANCE OF THE WORK

- a. All materials and workmanship shall be subject to inspection, examination or test by the Owner and the Architect to determine the acceptability of the work at any and all times during manufacture or construction and at any and all places where such manufacture or construction is carried on and the Contractor shall provide proper facilities for such access and inspection. The Owner or Architect shall have the right to reject defective material and workmanship or require its correction. The Owner or Architect shall have the right to reject materials, which have not been approved prior to incorporation in the work, and the right to reject work that has been performed without inspection. Rejected materials shall be removed and replaced without charge. Rejected workmanship shall be corrected if possible to the Architect's satisfaction without additional charge. If in the opinion of the Architect correction is not feasible, or if correction has been attempted but is not satisfactory to the Architect, the work must be removed and replaced without additional charge. If the Contractor fails to proceed at once with the correction or replacement of rejected workmanship or defective material, the Owner may by contract or otherwise have the defects remedied or rejected materials removed from the Project Area and charge the cost of the same against any monies which are due or may become due the Contractor, without prejudice to any rights or remedies of the Owner.
- b. Neither inspection, testing, approval nor acceptance of the work in whole or in part by the Owner or its agents shall relieve the Contractor or his sureties of the full responsibility for materials furnished or work performed not in strict accordance with the Contract.
- c. The assignment of a part-time or full-time inspector to this project will in no way relieve the Contractor of the requirement to comply with all of the specifications.

- d. Where the Contractor has been directed by the Owner or Architect to leave certain items of work exposed for inspection, and he fails to do so, he will be required to uncover such work, at his own expense.

130. FINAL INSPECTION

- a. When the improvements embraced in this Contract are substantially completed, The Contractor shall notify the Owner in writing that the work will be ready for final inspection on a definite date which shall be stated in the notice. The notice will be given at least ten (10) days prior to the date stated for final inspection, and bear the signed concurrence of the representative of the Owner having charge of inspection. If the Owner determines that the status of the improvements is as represented, he will make the arrangements necessary to have final inspection commenced on the date stated in the notice, or as soon thereafter as is practicable. The inspection party may also include the representative of the Village of Mt. Kisco having charge of improvements of like character when such improvements are later to be accepted by the Village.

131. INSURANCE

- a. The insurance requirements for this contract are specified in the Insurance Section of this document.

132. WARRANTY OF TITLE

- a. No material, supplies or equipment, incorporated or to be incorporated in the work shall be purchased subject to any chattel mortgage or under a conditional sale or other agreement by which an interest therein or in any part thereof is retained by the seller or supplier. The Contractor shall warrant good title to all materials, supplies and equipment installed or incorporated in the work and upon completion of all work, shall deliver the same together with all improvements and appurtenances constructed or placed thereon by him to the Owner free from any claims, liens or charges. Neither the Contractor nor any person, firm or corporation furnishing any material or labor for any work covered by this Contract shall have any right to a lien upon any improvement or appurtenance thereon. Nothing contained in this paragraph, however, shall defeat or impair the right of person furnishing materials or labor to recover under any law permitting such persons to look to funds due the Contractor in the hands of the Owner. The provisions of this paragraph shall be inserted in all subcontracts and material contracts and notice of its provisions shall be given to all persons furnishing materials for the work when no formal contract is entered into for such materials.

133. GENERAL GUARANTEE

- a. Neither the final certificate of payment nor any provisions in the Contract nor partial or entire use of the improvements embraced in this Contract by the Owner or the public shall constitute an acceptance of work not done in accordance with the Contract or relieve the Contractor of liability in respect to any express warranties or responsibility for faulty materials and workmanship. The Contractor shall promptly remedy any defects in the work and pay for any damage to other work resulting therefrom, which shall appear within a period of one year from the date of final payment.

134. NO ARBITRATION

- a. All claims, counterclaims, disputes and other matters in question between the Owner and the Contractor, not otherwise resolved, arising out of or relating to this agreement or its breach shall be decided in a court of competent jurisdiction. The Owner and the Contractor hereby agree that there shall be no requirement for arbitration of any controversies or disputes hereunder, all such matters to be resolved at law.

135. RISK OF LOSS

- a. The Owner assumes no responsibility for the condition of existing buildings and structures and other property on the Project Area not for their continuance in the condition existing at the time of issuance of the Invitation for Bids or thereafter. No adjustment of Contract Price or allowance for

any change in conditions which may occur after the Invitation for Bids has been issued will be made except as provided for herein.

136. REQUIRED PROVISIONS DEEMED INSERTED

- a. Each and every provision of law and clause required by law to be inserted in this Contract shall be deemed to be inserted herein and the Contract shall be read and enforced as though it were included herein, and if through mistake or otherwise any such provision is not inserted, or is not correctly inserted, then upon the application of either party the Contract shall forthwith be physically amended to make such insertion or correction.

137. CORRECTIONS

- a. The Architect shall have the right to correct any errors or omissions in the Contract, specifications or Contract Drawings when such corrections are necessary for the proper expression of their intent.
- b. Such corrections shall take effect from the time that the Architect gives notice thereof, and any alterations in the work rendered necessary thereby shall be made as corrected. Any conflict between the approved Contract Drawings and specifications, or any disagreement in measurements upon the Contract Drawings must be submitted to the Architect before construction of the work.

138. SAFETY PROVISIONS

- a. The safety provisions of applicable laws, building and construction codes and the safety codes approved by the Owner shall be observed.
- b. The provisions of the Federal Occupational Safety and Health Administration's "Occupational Safety and Health Standards" and "Safety and Health Regulations for Construction" shall be observed.
- c. Should at any time during the work under this Contract any Local/State/Federal safety inspector visit the site for the purpose of a safety inspection, the Contractor shall immediately notify the Architect's representative on the job site.

139. CONNECTING TO EXISTING WORK

- a. The Contractor shall remove such existing masonry, concrete, equipment and p1pmg as is necessary, in order to make the proper connections to the existing work at the locations shown. Also, he shall make the necessary pipe line, roadway and other connections at the several points in order than on completion of this Contract, water, sewage, or storm water, as the case may be, will flow through the several pipe lines and structures. Unless otherwise specified herein, no extra payment will be made for this work, but the entire cost of the same shall be included in the unit or lump sum prices bid for the various items of the work to be done under this Contract.

140. EXISTING IMPROVEMENTS

- a. The Contractor shall conduct his work so as to minimize damage to existing improvements, except where specifically stated otherwise in the specifications or drawings; it will be the responsibility of the Contractor to restore, as nearly as practical, to their original conditions all improvements on public or private property damaged by his operations.

141. ACCESS TO SITE

- a. All costs of the removal and restoration to original condition of walls, fences, structures, utility lines, poles, guy wires and anchors, and other improvements required for passage of the Contractor's equipment shall be borne by the Contractor. The Contractor shall notify the proper authorities of the Village of Mt. Kisco and the Owner and all utilities of any intended modification or disruption to their property prior to the start of construction and shall cooperate with them in the

scheduling and performance of his operation.

- b. The Contractor shall be responsible for and reimburse the Owner and others for any and all losses, damage or expense which the Owner and/or Local Government or those others may suffer, either directly or indirectly or through any claims of any person or party, for any trespass outside the spaces provided by the Owner to the Contractor or any violation or disregard of the terms and conditions established for the use or occupancy of those rights or for negligence in the exercise of those rights.
- c. The Owner may retain or deduct from any sum or sums due or to become due to the Contractor such amount or amounts as may be proper to insure the Owner against loss or expense by reason of the failure of the Contractor to observe the limits and conditions of the rights-of-way, rights-of-access, etc., provided by the Owner.

142. INDEMNITY CLAUSE

- a. The Contractor shall sign and be held to Indemnification Agreement at the end of this document.

143. DISPUTES

- a. All disputes arising between the parties arising out of, or in any way related to this Contract and/or the performance of the same, or its interpretation, shall within ten (10) days of the event or action giving rise to the dispute be presented to the Architect. All papers pertaining to the dispute shall be filed in quadruplicate. Such notice shall state the facts surrounding the dispute in sufficient detail to identify the dispute, together with its character and scope. In the meantime, the Contractor shall proceed with the work under this Contract as directed. Any dispute not presented within the time limit specified in this paragraph shall be deemed to have been waived, except that if the dispute is of a continuing character and notice of the dispute is not given within ten (10) days of its commencement, the dispute will be considered only for a period commencing ten (10) days prior to the receipt by the Architect of notice thereof. The Contractor shall in no case allow any dispute to delay the work under this Contract.
- b. As soon as practicable after the final submission of all information the Owner shall make a determination of the dispute. Said decision of the Owner shall be a condition precedent to any further action on the dispute. However, upon certification in writing by the claimant that the dispute has been submitted in its final form the Owner shall be obliged to render a decision on said dispute within sixty (60) days of the date of said certification. Should the
- c. Owner fail to render its decision within the aforementioned sixty- (60) day period, its decision will not be a condition precedent to any further action on the part of the claimant.
- d. Each decision by the Owner will be in writing and will be mailed to the Contractor by registered or certified mail, return receipt requested, directed to his last known address.
- e. In the event of an unfavorable decision by the Owner, the Contractor shall have the right to contest said decision as provided for under the provisions of this Contract. The Contractor shall in no case allow the dispute or decision to delay any work but shall notify the Owner promptly that he is proceeding with the work under protest and he may then except the matter in question from the final release.

144. "OR EQUAL" CLAUSE, UNLESS OTHERWISE SPECIFIED:

- a. Whenever a material, article or piece of equipment other than the pumps and VSD units, is identified on the Contract Drawings or in the specifications by reference to manufacturers' or vendors' names, trade names, catalog numbers, etc., the intent is to establish a standard. Any material, article, or equipment of other manufacturers and vendors of equally high quality (particularly with regard to points specified in the specifications) which will perform equivalently within the design ranges specified will be equally acceptable provided that the material, article or equipment so proposed is, in the opinion of the Architect, of equal substance and function. Further the manufacturer must agree to comply fully with the warranty requirements of the specifications. The Contractor may not assume that the Architect will approve substitute

equipment and non-approval of said equipment will form no basis for a claim for additional compensation by the Contractor. No substitute equipment shall be purchased or installed by the Contractor without the Architect's written approval. If the Architect's approval is obtained for alternate equipment, the Contractor shall, at his own expense, make any changes in the structures, building, piping or electrical necessary to accommodate the equipment and if Architecting is required due to substitution of other material the Contractor shall reimburse the owner for the Architecting service. The Contractor must pay for any laboratory testing required to establish the equality of his proposal.

145. CONSTRUCTION, EXCAVATION AND DEMOLITION OPERATIONS AT OR NEAR UNDERGROUND FACILITIES

- a. The Contractor's attention is directed to the State of New York, Department of Labor, Board of Standards and Appeals Industrial Code Rule 753 - "Construction, Excavation and Demolition Operations at or near Underground Facilities" effective April 1, 1975 and any amendments thereto.
- b. The Contractor will be required to comply with all applicable requirements of Industrial Code Rule 53.
- c. Requests for copies by mail should be directed to the State of New York, Department of Labor, Office of Public Information, State Office Building Campus, Albany, New York 12201; or, single copies may be obtained by applying in person at the Department's office in Albany or in New York City at the Department of Labor, Two World Trade Center, New York, New York 10047.

146. REVIEW BY OWNER

- a. The Owner, its authorized representatives and agents shall, at all times have access to and be permitted to observe and review all work, materials, equipment, payrolls, personnel records, employment conditions, material invoices and other relevant data and records pertaining to this
- b. Contract, provided, however, that all instructions and approval with respect to the work will be given to the Contractor only by the Owner through its authorized representatives or agents.

147. DEDUCTIONS FOR UNCORRECTED WORK

- a. If the Owner deems it not expedient to require the Contractor to correct work not done in accordance with the Contract Documents, an equitable deduction from the Contract Price will be made by agreement between the Contractor and the Owner and subject to settlement, in case of dispute, as herein provided.

148. PATENTS

- a. The Contractor shall hold and save the Owner and Architect, their officers, and employees, harmless from liability of any nature or kind, including but not limited to court costs and attorney's fees, for or on account of, any patented or unpatented invention, process, article or appliance manufactured or used in the performance of the Contract, which has been recommended by the Contractor, including its use by the Owner, unless otherwise specifically stipulated in the Technical Specifications.

149. INFORMATION FROM OWNER

- a. In addition to showing the construction under this Contract, the drawings may show certain information obtained by the Owner regarding conditions and features, which exist at the site of the work, both at and below the surface of the ground. The Owner and the Architect expressly disclaim any responsibility for the accuracy or completeness of the information given on the drawings with regard to the existing conditions and features and the Contractor will not be entitled to any extra compensation on account of inaccuracy or incompleteness of such information. The information, which is shown, is only for the convenience of the Contractor, who must verify this information to his own satisfaction.

150. EXISTING UTILITIES, STRUCTURES AND FIXTURES

- a. The Contractor will be required, at no additional expense to the Owner, to do everything necessary to support, protect and sustain all sewer, water, gas mains or service pipes; electric light, power poles, telephone or telegraph poles, manholes, valve boxes, concrete gutters, guide rails conduits and any and all utilities, structures or fixtures laid across or along the site of the work. In case any of the said utilities, structures or fixtures are damaged by the Contractor, they shall be repaired by the Contractor at his own expense, or by the authorities having control of the same and the expense of said repairs shall be deducted from the monies due or to become due the Contractor under this Contract.
- b. If the Contractor desires temporary changes of location for his convenience for any reason whatsoever, of water lines, gas lines, sewer lines, wire lines, service connections, water and gas meter boxes, valve boxes, light standards, cableways, signals and any other utilities, structures or fixtures, he shall satisfy the Architect and Owner that the proposed relocation does not interfere with his or other Contractor's operations, or the requirements of the Contract Drawings and does not cause an obstruction or a hazard to traffic. The Contractor shall make his own request to the utility companies, pipe owners or other parties affected for such relocation work. Such relocation work for the convenience of the Contractor shall be made solely at the Contractor's expense.
- c. The Contractor shall not remove or relocate any utility, structure or fixture without the written approval of the owner of that utility, structure or fixture unless otherwise shown on the Contract Drawings, specifications or ordered by the Architect.

151. HOURS OF WORK

- a. No work shall be done on the job before 3:30 p.m. nor after 12:30 a.m. unless the Owner is notified, nor shall any work be done on Saturdays, Sundays, or legal holidays unless Contractor shall have given Owner written request at least forty-eight (48) hours in advance. Owner will make no additional payment for overtime work under any circumstances unless the Architect has given a prior written order. The Contractor shall comply with the any municipal Noise Ordinance.

152. EMERGENCY WORK

- a. If in the opinion of the Owner the work is carried on in such fashion that the public safety, private property, or utilities are endangered, or that the work is carried on in such a manner as to create unnecessary inconvenience to the public, the Owner shall, immediately upon giving notice, be authorized to undertake such corrective measures as he may deem to be necessary. The cost of such work shall be deducted from payments due the Contractor under this contract.

153. PROTECTION

- a. The Contractor shall protect and maintain all property, structures and utilities, public or private and shall provide whatever means are required to do so, as part of this contract

154. PAYMENT FOR GENERAL CONDITIONS

- a. The cost of the performance of any work required by these General Conditions shall be considered to be a part of the Contractor's Base Bid if the contract is a Lump Sum Contract, and spread out among all the unit prices if the contract is a Unit Price Contract. There will be no additional payment for work required by these General Conditions.

155. DAMAGE TO PRIVATE PROPERTY

- a. If the Contractor damages private property or facilities outside the designated work area (which work area is to be restored under the restoration provisions of the contract), he shall restore the private property or facilities promptly and completely in the same manner as specified under the restoration provisions of these specifications. If he does not do so within a reasonable period of time, as determined by the Owner, the Owner may retain or deduct from any sum or sums due to the Contractor such amount or amounts as are necessary to correct the condition and employ its

own forces or another contractor to do the corrective work. The fact that the Contractor has referred damage claim to his insurance carrier shall not relieve him of liability for prompt and full restoration of damage. For purposes of this section of the contract, the Owner will treat what are essentially private facilities within a public right-of-way (including but not limited to mail boxes, shrubs, flowers and other plantings, walls, light poles, etc.) in the same manner as described above for private property.

156. RESTORATION

- a. All man-made and natural features in the construction site disturbed or removed for the proper completion of the work shall be reset or replaced. All man-made or natural features damaged or destroyed shall be repaired or restored to a condition equal to or better than that existing at the start of the work, with materials equal to or better than the original ones. In cases where it is impossible to replace an item with an equivalent item the Contractor may, subject to the approval of the Architect, substitute other similar items whose total value shall equal that of the destroyed one.
- b. If the contract documents contain more detailed or more stringent specifications for restoration than in this section, the more detailed or stringent specifications shall take precedence over this section. If the contract documents do not contain detailed specifications for restoration, then this section expresses the intent of the Owner; all published specifications of the Owner containing details of construction applicable to items of restoration (e.g. grass, pavement, etc.) shall be deemed included in these contract documents as if set forth in full, if not actually printed herein.
- c. If the contract documents contain a specific payment clause for restoration, then that clause shall apply; otherwise, payment for restoration shall be as described in Section 156.

INDEMNIFICATION AGREEMENT

The Contractor agrees to protect, defend, indemnify and hold the Village of Mt. Kisco, Bar Down Studio, and any agents, officers, employees and consultants of any of them; free and harmless from and against any and all losses, penalties, damages, settlements, costs, charges, professional fees or other expenses or liabilities of every kind and character arising out of or relating to any and all claims, liens, demands, obligations, actions, proceedings or causes of action of every kind and character in connection with or arising directly or indirectly out of this agreement and/or the performance hereof: without limiting the generality of the foregoing, any and all such claims, etc., relating to personal injury, death, damage to property, defects in materials or workmanship, actual or alleged infringement of any patent, trademark, copyright (or application for any thereof) or of any other tangible or intangible personal or property right, or any actual or alleged violation of any applicable statute, ordinance, administrative order, rule or regulation, decree of any court, shall be included in the indemnity hereunder. The Contractor further agrees to investigate, handle, respond to, provide defense for and defend any such claims, etc., at his sole expense and agrees to bear all other costs and expenses related thereto, even if it (claims, etc.), is groundless, false or fraudulent. In any case in which such indemnification would violate Section 5-322.1 of the New York General Obligations Law, or any other applicable legal prohibition, the foregoing provisions concerning indemnification shall not be construed to indemnify the Owner for damage arising out of bodily injury to persons or damage to property caused by or resulting from the sole negligence of the Owner, or its employees.

SIGNED AND SEALED this _____ day of _____ A.D. 2022

In the presence of:

{ _____ (Seal)

PRINCIPAL

WITNESS

{ _____

SPECIAL CONDITIONS

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Davis Bacon Wage Rates and State Prevailing Wages can be found in Section 007343.1. Note that it is the Contractor's responsibility to pay the higher wage for the employee's job classification.

INTRODUCTION

COMPLIANCE INFORMATION WESTCHESTER URBAN COUNTY AND PARTICIPATING MUNICIPALITIES

This project is funded with a grant from the federal Community Development Block Grant program administered by Westchester County.

By submitting a bid for this project, a contractor and all subcontractors agree to comply with these federal requirements:

- Equal Employment Opportunity and Affirmative Action
(Pages 5 to 13)
- Minority and Women-Owned Business Enterprise Goals
(Page 6)
- Davis Bacon Labor Reporting Requirements and Section 3
Requirements
(Pages 17 to 23)

Bidders must sign pages 10, 11, 15, 16, and 17 in order for their bids to be considered valid.

For more information regarding these materials, telephone:

John Estrow
Payroll Coordinator
Westchester County
Planning Department
(914) 995-2407



**EQUAL EMPLOYMENT OPPORTUNITY AND
AFFIRMATIVE ACTION**

CERTIFICATION BY BIDDER

NOTE:

The attached document is from the U.S. Department of Housing and Urban Development. By signing this document, contractors and subcontractors agree to comply with the federal equal employment opportunity requirements. The attached document serves as the bidder's Affirmative Action Plan.

AFFIRMATIVE ACTION PLAN
FOR
WESTCHESTER COUNTY COMMUNITY
DEVELOPMENT BLOCK GRANT PROJECTS

BID CONDITIONS

AFFIRMATIVE ACTION REQUIREMENTS

EQUAL EMPLOYMENT OPPORTUNITY

For All Non-Exempt Federal and Federally-
Assisted Construction Contracts to be
Awarded in Westchester County, New York

Part I: The provisions of this Part I apply to bidders, contractors and subcontractors with respect to those construction trades for which they are parties to collective bargaining agreements with a labor organization or organizations and who together with such labor organizations have agreed to the Westchester County, New York Area Equal Employment Opportunity Agreement (but only as to those trades as to which there are commitments by labor organizations to specific goals of minority employee utilization) between the Building Trades Employers Association of Westchester County, the Builder's Institute of Westchester and Putnam Counties, various labor organizations, general and specialty contractors and their associations and the minority coalition, together with all implementing agreements that have been and may hereafter be developed pursuant thereto, all of which documents are incorporated herein by reference and are hereinafter cumulatively referred to as the Westchester County Plan.

Any bidder, contractor or subcontractor using one or more trades of construction employees must comply with either Part I or Part II of these Bid Conditions as to each such trade. Thus, a bidder, contractor or subcontractor may be in compliance with these conditions by its inclusion, with its union, in the Westchester Plan as to trade "A", provided there is set forth in the Westchester Plan a specific commitment by that union to a goal of minority employee utilization for such trade "A", thereby meeting the provisions of this Part I, and by its commitment to Part II in regard to trade "B" in the instance in which it is not included in the Westchester Plan and, therefore, cannot meet the provisions of this Part I.

To be eligible for award of a contract under Part I of this invitation, a bidder or subcontractor must execute the certification required by Part III hereof.

Part II: A. Coverage. The provisions of this Part II shall be applicable to those bidders, contractors and subcontractors, who, in regard to those construction trades to be utilized on the project to which these bid conditions pertain:

1. Are not or hereafter cease to be signatories to the Westchester County Plan referred to in Part I hereof;
2. Are signatories to the Westchester County Plan but are not parties to collective bargaining agreements;

3. Are signatories to the Westchester County Plan but are parties to collective bargaining agreements with labor organizations who are not or hereafter cease to be signatories to the Westchester County Plan;

4. Are signatories to the Westchester County Plan but as to which no specific commitment to goals of minority employee utilization by labor organization have been executed pursuant to the Westchester County Plan; or

5. Are no longer participating in an affirmative action plan acceptable to the Director, OFCC, including the Westchester County Plan.

B. Requirement - An Affirmative Action Plan. The bidders, contractors and subcontractors described in paragraphs 1 through 5 above will not be eligible for award of a contract under this Invitation for Bids, unless it certifies as prescribed in paragraph 2b of the certification specified in Part III hereof that it adopts the minimum goals and timetables of minority employee utilization ¹ and specific affirmative action steps set forth in Section B-1 and 2 of this Part II directed at increasing minority employee utilization by means of applying good faith efforts to carrying out such steps; or is deemed to have adopted such a program pursuant to Section B.3 of this Part II.

1. Goals and Timetables. The goals of minority employee utilization required of the bidder and subcontractors are applicable to each trade not otherwise bound by the provisions of Part I hereof which will be used on the project in Westchester County New York (hereinafter referred to as the Westchester area):

Goals of Minority Employee Utilization Expressed in Percentage Terms

In accordance with the Westchester-Putnam Home Town Plan Agreement, the female goal which now pertains is 6.9%. The goal for minorities is 22.6%.

The percentage goals of minority employee utilization above are expressed in terms of hours of training and employment as a proportion of the total hours to be worked by the bidder's, contractor's and subcontractor's entire work force in that trade on all projects (both federal and non-federal in the Westchester County area during the performance of its contract or subcontract. The hours for minority work and training must be substantially uniform throughout the length of the contract, on all projects and for each of the trades. Further, the transfer of minority employees or trainees from employer-to-employer or from project-to-project for the sole purpose of meeting the contractor's or subcontractor's goal shall be a violation of these conditions. In reaching the goals of minority employee utilization required of bidders, contractors and subcontractors pursuant to this Part II, every effort shall be made to find and employ qualified journeymen. Provided, however, and pursuant to the requirements of Department of Labor regulations, 24 CFR 5a, apprentices or trainees shall be employed on all projects subject to the

¹ 1. "Minority" is defined as including Black (Non-Hispanic Origin), Hispanic, Asian or Pacific Islander, and American Indian or Alaskan Native, and includes both men and women.

requirements of these Bid Conditions and, where feasible, 25 percent of apprentices or trainees employed on each project shall be in their first year of apprenticeship or training.

In order that the nonworking training hours of trainees may be counted in meeting this goal, such trainees must be employed by the contractor during the training period. The contractor must have made a commitment to employ the trainees at the completion of their training subject to the availability of employment opportunities and the trainees must be trained pursuant to established training programs which must be the equivalent of the training programs now or hereafter provided for in the Westchester County Plan with respect to the nature, extent and duration of training offered.

A contractor or subcontractor shall be deemed to be in compliance with the terms and requirements of this Part II by the employment and training of minorities in the appropriate percentage of his aggregate work force in the Westchester County area for each trade for which it is committed to a goal under this Part II.

However, no contractor or subcontractor shall be found in noncompliance solely on account of its failure to meet its goals within its timetables, but such contractor shall be given the opportunity to demonstrate that it has instituted all of the specific affirmative action steps specified in this Part II and has made every good faith effort to make these steps work toward the attainment of its goals within its timetables, all to the purpose of expanding minority employee utilization on all of its projects in the Westchester County area.

In all cases, the compliance of a bidder, contractor or subcontractor will be determined in accordance with its respective obligations under the terms of these Bid Conditions. Therefore, contractors or subcontractors who are governed by the provisions of this Part II shall be subject to the requirements of that Part regardless of the obligations of its prime contractor or lower tier subcontractors.

All bidders and all contractors and subcontractors performing or to perform work on projects subject to these Bid Conditions hereby agree to inform their subcontractors of their respective obligations under the terms and requirements of these Bid Conditions, including the provisions relating to goals of minority employment and training.

2. Specific Affirmative Action Steps. Bidders, contractors and subcontractors subject to this Part II must engage in affirmative action directed at increasing minority employee utilization, which is at least as extensive and as specific as the following steps:

- a. The contractor shall notify community organizations that the contractor has employment opportunities available and shall maintain records of the organizations' response.
- b. The contractor shall maintain a file of the names and addresses of each minority worker referred to him and what action was taken with respect to each such referred worker, and if the worker was not employed, the

reasons therefor. If such worker was not sent to the union hiring hall for referral or if such worker was not employed by the contractor, the contractor's file shall document this and the reasons therefor.

c. The contractor shall promptly notify the HUD New York Area Office (agency) when the union or unions with whom the contractor has a collective bargaining agreement has not referred to the contractor a minority worker sent by the contractor or the contractor has other information that the union referral process has impeded him in his efforts to meet his goal.

d. The contractor shall participate in training programs in the area, especially those funded by the Department of Labor.

e. The contractor shall disseminate his EEO policy within his own organization by including it in any policy manual; by publicizing it in his company newspapers, annual reports, etc.; by conducting staff, employee and union representatives' meetings to explain and discuss the policy; by posting of the policy; and by specific review of the policy with minority employees.

f. The contractor shall disseminate his EEO policy externally by informing and discussing it with all recruitment sources; by advertising in news media, specifically including minority news media; and by notifying and discussing it with all subcontractors and suppliers.

g. The contractor shall make specific and constant personal (both written and oral) recruitment efforts directed at all minority organizations, schools with minority students, minority recruitment organizations and minority training organizations, within the contractor's recruitment area.

h. The contractor shall make specific efforts to encourage present minority employees to recruit their friends and relatives.

i. The contractor shall validate all employee specifications, selection requirements, tests, etc.

j. The contractor shall make every effort to promote after-school, summer and vacation employment to minority youth.

k. The contractor shall develop on-the-job training opportunities and participate and assist in any association or employer-group training program relevant to the contractor's employee needs consistent with its obligations under this Part II.

l. The contractor shall continually inventory and evaluate all minority personnel for promotion opportunities and encourage minority employees to seek such opportunities.

m. The contractor shall make sure that seniority practices, job classifications, etc., do not have a discriminatory effect.

n. The contractor shall make certain that all facilities and company activities are non-segregated.

o. The contractor shall continually monitor all personnel activities to ensure that his EEO policy is being carried out.

p. The contractor shall solicit bids for subcontracts from available minority subcontractors engaged in the trades covered by these Bid Conditions.

3. Contractors and Subcontractors Deemed to be Bound by Part II. In the event that a contractor or subcontractor, who is at the time of bidding eligible under Part I of these Bid Conditions, is no longer participating in an affirmative action plan acceptable to the Director of the Office of Federal Compliance, including the Westchester County Plan, s/he shall be deemed to be committed to Part II of these Bid Conditions; s/he shall be considered to be committed to the minority employee utilization percentage goal of the minimum range for that trade for the appropriate year.

4. Subsequent Signatory to the Westchester County Plan. Any contractor or subcontractor subject to the requirements of this Part II for any trade at the time of submission of a bid who together with the labor organization with whom it has a collective bargaining agreement subsequently becomes a signatory to the Westchester County Plan, either individually or through an association, may meet the requirements under these Bid Conditions for such trade, if such contractor or subcontractor executes and submits a new certification committing to Part I of these Bid Conditions. No contractor or subcontractors shall be deemed to be subject to the requirements of Part I until such certification is executed and submitted.

5. Non-discrimination. In no event may a contractor or subcontractor utilize the goals, timetables or affirmative action steps required by this Part II in such a manner as to cause or result in discrimination against any person on account of race, color, religion, sex or national origin.

Part III: Certifications.

A. Bidders' Certifications. A bidder will not be eligible for award of a contract under this Invitation for Bids unless such bidder has submitted as a part of the bid the following certification, which will be deemed a part of the resulting contract:

BIDDERS' CERTIFICATION

_____ (Bidder) certifies that:

1. It intends to use the following listed construction trades in the work under this contract: _____

_____.

2. (a) As to those trades set forth in the proceeding paragraph one hereof for which it is eligible under Part I of those Bid Conditions for participation in the Westchester County Plan, it will comply with the Westchester County Plan on all construction work (both federal and non-federal) in the Westchester County area within the scope of coverage of that Plan, those trades being:

_____ and/or by these Bid Conditions to comply with Part II of these Bid Conditions, it adopts the minimum minority employee utilization goals and the specific affirmative action steps contained in said Part II, for all construction work (both federal and non-federal) in the Westchester County area subject to these Bid Conditions, those trades being:

_____, and

3. It will obtain from each of its subcontractors and submit to the contracting or administering agency prior to the award of any subcontract under this contract the subcontractor certification required by these Bid Conditions.

(Date)

(Signature of Authorized Representative of Bidder)

Typed/Printed Signature

8. Subcontractors' Certifications. Prior to the award of any subcontract under this Invitation for Bids, regardless of tier, the prospective subcontractor must execute and submit to the Prime Contractor the following certification, which will be deemed a part of the resulting subcontract:

SUBCONTRACTORS' CERTIFICATION

_____ (Subcontractor) certifies that:

1. It intends to use the following listed construction trades in the work under the subcontract: _____
_____;

2. (A) As to those trades set forth in the preceding paragraph one hereof for which it is eligible under Part I of these Bid Conditions for participation in the Westchester County Plan, it will comply with the Westchester County Plan on all construction work (both federal and non-federal) in the Westchester County area subject to these Bid Conditions, those trades being: _____

_____, and/or

(b) As to those trades for which it is required by these Bid Conditions to comply with Part II of these Bid Conditions, it adopts the minimum minority employee utilization goals and the specific affirmative action steps contained in said Part II for all construction work (both federal and non-federal) in the Westchester County area subject to these Bid Conditions, those trades being:

_____, and

3. It will obtain from each of its subcontractors prior to the award of any subcontract under this subcontract the subcontractor certification required by these Bid Conditions.

(Date)

(Signature of Authorized Representative of Bidder)

Typed/Printed Signature

The said subcontractors' certification must become a part of all subcontracts under the prime contract. Any subcontract executed without such incorporated certification shall be void.

C. Materiality and Responsiveness. The certifications required to be made by the bidder pursuant to these Bid Conditions is material, and will govern the bidder's performance on the project and will be a made a part of the bid. Failure to submit the certification will render the bid nonresponsive.

Part IV: Compliance and Enforcement. Contractors are responsible for informing their subcontractors (regardless of tier) as to their respective obligations under Parts I and II hereof (as applicable). Bidders, contractors and subcontractors hereby agree to refrain from entering into any contract or contract modification subject to Executive Order 11246, as amended of September 24, 1965, with a contractor debarred from, or who is determined not to be a "responsible" bidder for, Government contracts and federally-assisted construction contracts pursuant to the Executive Order. The bidder, contractor or subcontractor shall carry out such sanctions and penalties for violation of the equal opportunity clause including suspension, termination and cancellation of existing subcontracts as may be imposed or ordered by the administering agency, the contracting agency or the Office of Federal Contract Compliance pursuant to the Executive Order. Any bidder, or contractor or subcontractor who shall fail to carry out such sanctions and penalties shall be deemed to be in noncompliance with these Bid Conditions and Executive Order 11246, as amended.

Nothing herein is intended to relieve any contractor or subcontractor during the term of its contract on this project from compliance with Executive Order 11246, as amended, and the Equal Opportunity Clause of its contract, with respect to matters not covered in the Westchester County Plan or in Part II of these Bid Conditions.

Violation of any substantial requirement in the Westchester County Plan by a contractor or subcontractor covered by Part I of these Bid Conditions including the failure of such contractor or subcontractor to make a good faith effort to meet its fair share of the trade's goals of minority employee utilization, or of the requirements of Part II hereof by a contractor or subcontractor who is covered by Part II shall be deemed to be noncompliance by such contractor or subcontractor with the Equal Opportunity Clause of the contract, and shall be grounds for imposition of the sanctions and penalties provided at Section 209(a) of Executive Order 11246, as amended.

Each agency shall review its contractors' and subcontractors' employment practices during the performance of the contract. If the agency determines that the Westchester County Plan no longer represents effective affirmative action, it shall so notify the Office of Federal Contract Compliance which shall be solely responsible for any final determination of that question and the consequences thereof.

In regard to Part II of these conditions, if the contractor or subcontractor meets its goals or if the contractor or subcontractor can demonstrate that it has made every good faith effort to meet these goals, the contractor or

subcontractor shall be presumed to be in compliance with Executive Order 11246, as amended, the implementing regulations and its obligations under these Bid Conditions and no formal sanctions or proceedings leading toward sanctions shall be instituted unless the agency otherwise determines that the contractor or subcontractor is not providing equal employment opportunities. In judging whether a contractor or subcontractor has met its goals, the agency will consider each contractor's or subcontractor's minority employee utilization and will not take into consideration the minority employee utilization of its subcontractors. Where the agency finds that the contractor or subcontractor has failed to comply with the requirements of Executive Order 11246, as amended, the implementing regulations and its obligations under these Bid Conditions, the agency shall take such action and impose such sanctions as may be appropriate under the Executive Order and the regulations. When the agency proceeds with such formal action it has the burden of proving that the contractor has not met the requirements of these Bid Conditions, but the contractor's failure to meet the goals shall shift to the contractor the requirement to come forward with evidence to show that he has met the "good faith" requirements of these Bid Conditions by instituting at least the Specific Affirmative Action steps listed above and by making every good faith effort to make those steps work toward the attainment of its goals within its timetables. The pendency of such formal proceedings shall be taken into consideration by Federal agencies in determining whether such contractor or subcontractor can comply with the requirements of Executive Order 11246, as amended, and is therefore a "responsible prospective contractor" within the meaning of the Federal procurement regulations.

It shall be no excuse that the union with which the contractor has a collective bargaining agreement providing for exclusive referral failed to refer minority employees.

The procedures set forth in these conditions shall not apply to any contract when the head of the contracting or administering agency determines that such contract is essential to the national security and that its award without following such procedures is necessary to the national security. Upon making such a determination, the agency head will notify, in writing, the Director of the Office of Federal Contract Compliance within thirty days.

Requests for exemptions from these Bid Conditions must be made in writing, with justification, to the Director, Office of Federal Contract Compliance, U.S. Department of Labor, Washington, DC 20210, and shall be forwarded through and with the endorsement of the agency head.

Contractors and subcontractors must keep such records and file such reports relating to the provisions of these Bid Conditions as shall be required by the contracting or administering agency or the office of Federal Contract Compliance.

For the information of bidders, a copy of the Westchester County Plan may be obtained from the contracting officer.

Section 3 Compliance

Certification by Bidder

NOTE:

The attached certification and Section 3 Plan must be signed by all bidders. This certificate indicates that the bidder will make every effort to follow the federal Section 3 requirements.

A fact sheet describing Section 3 is also attached.

Section 3 Bidders Certification

Training, Employment and Contracting Opportunities for Businesses and Lower Income Persons

A. The work to be performed under this contract is subject to the requirements of section 3 of the Housing and Urban Development Act of 1968, as amended, 12 U.S.C. 1701u (section 3). The purpose of section 3 is to ensure that employment and other economic opportunities generated by HUD assistance or HUD-assisted projects covered by section 3, shall, to the greatest extent feasible, be directed to low- and very low-income persons, particularly persons who are recipients of HUD assistance for housing.

B. The parties to this contract agree to comply with HUD's regulations in 24 CFR part 135, which implement section 3. As evidenced by their execution of this contract, the parties to this contract certify that they are under no contractual or other impediment that would prevent them from complying with the part 135 regulations.

C. The contractor agrees to send to each labor organization or representative of workers with which the contractor has a collective bargaining agreement or other understanding, if any, a notice advising the labor organization or workers' representative of the contractor's commitments under this section 3 clause, and will post copies of the notice in conspicuous places at the work site where both employees and applicants for training and employment positions can see the notice. The notice shall describe the section 3 preference, shall set forth minimum number and job titles subject to hire, availability of apprenticeship and training positions, the qualifications for each; and the name and location of the person(s) taking applications for each of the positions; and the anticipated date the work shall begin.

D. The contractor agrees to include this section 3 clause in every subcontract subject to compliance with regulations in 24 CFR part 135, and agrees to take appropriate action, as provided in an applicable provision of the subcontract or in this section 3 clause, upon a finding that the subcontractor is in violation of the regulations in 24 CFR part 135. The contractor will not subcontract with any subcontractor where the contractor has notice or knowledge that the subcontractor has been found in violation of the regulations in 24 CFR part 135.

E. The contractor will certify that any vacant employment positions, including training positions, that are filled (1) after the contractor is selected but before the contract is executed, and (2) with persons other than those to whom the regulations of 24 CFR part 135 require employment opportunities to be directed, were not filled to circumvent the contractor's obligations under 24 CFR part 135.

F. Noncompliance with HUD's regulations in 24 CFR part 135 may result in sanctions, termination of this contract for default, and debarment or suspension from future HUD assisted contracts.

COMPANY NAME: _____

ADDRESS: _____

OFFICIAL SIGNATURE: _____

TITLE _____

Name		Address
1.		
2.		
3.		
4.		
5.		

If No, Do You Have an EEO and Section 3 Affirmative Action Plan? Yes ☐ No ☐

Date: _____

WAGE RATE CERTIFICATION

The project assisted under this agreement is subject to the requirements of the Davis-Bacon Act (the Act), 40 USC 276a. The Act requires that all construction employees of both contractors and subcontractors working on a federally-funded or assisted construction project be paid the current prevailing Davis-Bacon wages (wages).

The wages are those included in the bid package. By submitting a bid and by signing this form, a bidding contractor agrees to pay his/her construction employees the current prevailing Davis-Bacon wages as included in the bid package and to assure that any sub-contractors used on the project also pay their construction employees the wages included in the bid package.

Since this project is subject to the requirements of both Federal and State Labor Standards, the Contractor is required to pay the higher of the two rates for the job classification.

Company Name: _____

Federal ID #: _____

Address: _____

Signature of Authorized Representative: _____

Printed Name/Title of Authorized
Representative: _____

SECTION 3: PROVIDING ECONOMIC OPPORTUNITIES THROUGH HUD PROGRAMS

A FACT SHEET

What is Section 3?

Section 3 is a provision of the Housing and Urban Development Act of 1968 which requires that programs of direct financial assistance administered by the U.S. Department of Housing and Urban Development (HUD) provide, to the greatest extent feasible, opportunities for job training and employment to lower income residents in connection with projects in their neighborhoods. Further, to the greatest extent feasible, contracts in connection with these projects are to be awarded to local businesses. Section 3 is a tool for fostering local economic development, neighborhood economic improvement and individual self sufficiency.

Who Must Comply with Section 3 Requirements?

Section 3 applies to financial assistance awarded, provided or otherwise made available to a project or activity under a program administered by HUD in aid of housing, urban planning, redevelopment, development or renewal, public or community facilities and new community development. Section 3 does not apply to financial assistance made available solely in the form of insurance or guaranty or to tenant-based assistance. Recipients of Section 3 covered assistance include but are not limited to, states, units of local government, public housing agencies, Indian housing authorities, public and private nonprofit organizations, private agencies, developers, builders, community development housing organizations, resident management corporations and resident councils. Also, contractors who perform work in connection with projects funded under covered programs must comply with Section 3 requirements.

- ◆ Low Income Public Housing Programs
- ◆ Community Development Block Grant Programs
- ◆ Homeless Assistance Programs
- ◆ HOPE Programs
- ◆ HOME Programs
- ◆ National Affordable Housing Act Programs
- ◆ Fair Housing Initiatives Program
- ◆ Fair Housing Assistance Program

What Does Section 3 Require?

Recipients and contractors must make a good faith effort to utilize Section 3 area residents as trainees and employees in connection with the project. Targeted recruitment and the selection of Section 3 area residents for available positions are two examples of good faith efforts to meet this requirement.

Recipients and contractors must make a good faith effort to award contracts to Section 3 business concerns for work in connection with the project. An example of a good faith effort to meet this requirement is the implementation of an affirmative action plan which includes targets for the number and dollar value for awarding contracts to Section 3 business concerns.

Recipients and contractors must keep records and submit reports to HUD documenting the good faith efforts taken and the results of these actions. Examples of such documentation include letters to community organizations, employment development and business development centers; copies of solicitation for bids or proposals; and copies of affirmative action plans.

Federal Labor Standards Provisions

U.S. Department of Housing and Urban Development

Applicability

The Project or Program to which the construction work covered by this contract pertains is being assisted by the United States of America and the following Federal Labor Standards Provisions are included in this Contract pursuant to the provisions applicable to such Federal assistance.

A.1. (i) **Minimum Wages.** All laborers and mechanics employed or working upon the site of the work (or under the United States Housing Act of 1937 or under the Housing Act of 1949 in the construction or development of the project), will be paid unconditionally and not less often than once a week, and without subsequent deduction or rebate on any account (except such payroll deductions as are permitted by regulations issued by the Secretary of Labor under the Copeland Act (29 CFR Part 3), the full amount of wages and bona fide fringe benefits (or cash equivalents thereof) due at time of payment computed at rates not less than those contained in the wage of determination of the Secretary of Labor which is attached hereto and made a part hereof, regardless of any contractual relationship which might be alleged to exist between the contractor and such laborers and mechanics. Contributions made or costs reasonably anticipated for bona fide fringe benefits under Section 1(b)(2) of the Davis-Bacon Act on behalf of laborers or mechanics are considered wages paid to such laborers or mechanics, subject to the provisions of 29 CFR 5.5(a)(1)(iv); also, regular contributions made or costs incurred for more than a weekly period (but not less often than quarterly) under plans, funds, and programs, which cover the particular weekly period, are determined to be constructively made or incurred during such weekly period.

Such laborers and mechanics shall be paid the appropriate wage rate and fringe benefits on the wage determination for the classification of work actually performed, without regard to skill, except as provided in 29 CFR Part 5.5(a)(4). Laborers or mechanics performing work in more than one classification may be compensated at the rate specified for each classification for the time actually worked therein, provided, that the employer's payroll records accurately set forth the time spent in each classification in which work is performed. The wage determination (including any additional classification and wage rates confirmed under 29 CFR Part 5.5(a)(1)(ii)) shall be posted at all times by the contractor and its subcontractors at the site of the work in a prominent and accessible place where it can be easily seen by the workers.

(ii) (a) Any class of laborers or mechanics which is not listed in the wage determination and which is to be employed under the contract shall be classified in conformance with the wage determination. HUD shall approve an additional classification and wage rate and fringe benefits therefore only when the following criteria have been met:

(1) The work to be performed by the classification requested is not performed by a classification in the wage determination; and

(2) The classification is utilized in the area by the construction industry; and

(3) The proposed wage rate, including any bona fide fringe benefits, bears a reasonable relationship to the wage rates contained in the wage determination.

(b) If the contractor and the laborers and mechanics to be employed in the classification (if known), or their representatives, and HUD or its designee agree on the classification and wage rate (including the amount designated for fringe benefits where appropriate), a report of the action taken shall be sent by HUD or its designee to the Administrator of the Wage and Hour Division, Employment Standards Administration, U.S. Department of Labor, Washington, DC 20210. The Administrator, or an authorized representative, will approve, modify, or disapprove every additional classification action within 30 days of receipt and so advise HUD or its designee or will notify HUD or its designee within the 30-day period that additional time is necessary. (Approved by the Office of Management and Budget under OMB Control Number 1215-0140).

(c) In the event the contractor, the laborers or mechanics to be employed in the classification or their representatives, and HUD or its designee do not agree on the proposed classification and wage rates (including the amount designated for fringe benefits, where appropriate) HUD or its designee shall refer the questions, including the views of all interested parties and the recommendation of HUD or its designee, to the Administrator for determination. The Administrator, or an authorized representative, will issue a determination within 30 days of receipt and so advise HUD or its designee or will notify HUD or its designee within the 30-day period that additional time is necessary. (Approved by the Office of Management and Budget under OMB Control Number 1215-0140).

(d) The wage rate (including fringe benefits where appropriate) determined pursuant to subparagraphs (1)(b) or (c) of this paragraph, shall be paid to all workers performing work in the classification under this contract from the first day on which work is performed in the classification.

(iii) Whenever the minimum wage rate prescribed in the contract for a class of laborers or mechanics includes a fringe benefit which is not expressed as an hourly rate, the contractor shall either pay the benefit as stated in the wage determination or shall pay another bona fide fringe benefit or an hourly cash equivalent thereof.

(iv) If the contractor does not make payments to a trustee or other third person, the contractor may consider as part of the wages of any laborer or mechanic the amount of any costs reasonably anticipated in providing bona fide fringe benefits under a plan or program, provided that the Secretary of Labor has found, upon the written request of the contractor, that the applicable standards of the Davis-Bacon Act have been met. The secretary of Labor may require the contractor to set aside in a separate account assets for the meeting of obligations under the plan or program. (Approved by the Office of Management and Budget under OMB Control Number 1215-0140).

2. **Withholding.** HUD or its designee shall upon its own action or upon written request of an authorized representative of the Department of Labor withhold or cause to be withheld from the contractor under this contract or any other federal contract with the same prime contractor, or any other Federally-assisted contract subject to Davis-Bacon prevailing wage requirements, which is held by the same prime contractor so much of the accrued payments or advances as may be considered necessary to pay laborers and mechanics, including apprentices, trainees and helpers, employed by the contractor or subcontractor the full amount of wages required by the contract in the event of failure to pay any laborer or mechanic, including any apprentice trainee or helper, employed or working on the site of the work (or under the United States Housing act of 1937 or under the Housing Act of 1949 in the construction or development of the project), all or part of the wages required by the contract. HUD or its designee may, after written notice to the contractor, sponsor, applicant or owner, take such action as may be necessary to cause the suspension of any further payment, advance or guarantee of funds until such violations have ceased. HUD or its designee may, after written notice to the contractor, disburse such amounts withheld for and on account of the contractor or subcontractor to the respective employees to whom they are due. The Comptroller General shall make such disbursements in the case of direct Davis-Bacon Act contracts.

3 (l) **Payrolls and Basic Records.** Payrolls and basic records relating thereto shall be maintained by the contractor during the course of the work preserved for a period of three years thereafter for all laborers and mechanics working at the site of the work (or under the United States Housing Act of 1937, or under the Housing Act of 1949, in the construction or development of the project). Such records shall contain the name, address, and social security number of each such work, his or her correct classification, hourly rates of wages paid (including rates of contributions or costs anticipated for bona fide fringe benefits or cash equivalents thereof of the types described in Section 1(b)(2)(B) of the Davis Bacon Act), daily and weekly number of hours worked, deductions made and actual wages paid. Whenever the Secretary of Labor has found under 29 CFR 5.5 (a) (1)(iv) that the wages of any laborer or mechanic include the amount of any costs reasonably anticipated in providing benefits under a plan or program described in Section 1(b)(2)(B) of the Davis-Bacon Act, the contractor shall maintain records which show that the commitment to provide such benefit is enforceable, that the plan or program is financially responsible, and that the plan or program has been communicated in writing to the laborers or mechanics affected, and records which show the costs anticipated or the actual cost incurred in providing such benefits. Contractors employing apprentices or trainees under approved programs shall maintain written evidence of the registration of apprenticeship programs and certification of trainee programs, the registration of the apprentices and trainees, and the ratios and wage rates prescribed in the applicable programs. (Approved by the Office of Management and Budget under OMB Control Numbers 1215-0140 and 1215-00017).

(ii)(a) The contractor shall submit weekly for each week in which any contract work is performed a copy of all payrolls to HUD or its designee if the agency is a party to the contract, but if the agency is not such a party, the contractor will submit the payrolls to the applicant, sponsor, or owner, as the case might be, for transmission to HUD or its designee. The payrolls submitted shall set out accurately and completely all of the information required to be maintained under 29 CFR Part 5.5(a)(3)(i). This information may be submitted in any form desired. Optional Form WH-347 is available for this purpose and may be purchased from the Superintendent of Documents (Federal Stock Number 029-005-00014-1), U.S. Government Printing Office, Washington, DC 20402. The prime contractor is responsible for the submission of copies of payrolls by all subcontractors. (Approved by the Office of Management and Budget under OMB Control Number 1215-0149).

(b) Each payroll submitted shall be accompanied by a "Statement of Compliance", signed by the contractor or subcontractor or his or her agency who pays or supervises the payment of the persons employed under the contract and shall certify the following:

(1) That the payroll for the payroll period contains the information required to be maintained under 29 CFR Part 5.5 (a)(3)(i) and that such information is correct and complete.

(2) That each laborer or mechanic (including each helper, apprentice, and trainee) employed on the contract during the payroll period has been paid the full weekly wages earned, without rebate, either directly or indirectly, and that no deductions have been made either directly or indirectly from the full wages earned, other than permissible deductions as set forth in 29 CFR Part 3;

(3) That each laborer or mechanic has been paid not less than the applicable wage rates and fringe benefits or cash equivalents for the classification of work performed, as specified in the applicable wage determination incorporated into the contract.

(c) The weekly submission of a properly executed certification set forth on the reverse side of Optional Form WH-347 shall satisfy the requirement for submission of the "Statement of Compliance" required by paragraph A.3(ii)(b) of this section.

(d) The falsification of any of the above certifications may subject the contractor or subcontractor to civil or criminal prosecution under Section 1001 of Title 18 and Section 231 of Title 31 of the United States Code.

(iii) The contractor or subcontractor shall make the records required under paragraph A.3(i) of this section available for inspection, copying or transcription by authorized representatives of HUD or its designee or the Department of Labor, and shall permit such representatives to interview employees during working hours on the job. If the contractor or subcontractor fails to submit the required records or make them available, HUD or its designee may, after written notice to the contractor, sponsor, applicant, or owner, take such action as may be necessary to cause the suspension of any further payment, advance or guarantee of funds. Furthermore, failure to submit the required records upon request or to make such records available may be grounds for debarment action pursuant to 29 CFR Part 5.12.

4 (l) Apprentices and Trainees. Apprentices. Apprentices will be permitted to work at less than the predetermined rate for the work they performed when they are employed pursuant to and individually registered in a bona fide apprenticeship program registered with the U.S. Department of Labor, Employment and Training Administration, Bureau of Apprenticeship and Training, or with a State Apprenticeship Agency recognized by the Bureau, or if a person is employed in his or her first 90 days of probationary employment as an apprentice in such an apprenticeship program, who is not individually registered in the program, but who has been certified by the Bureau of Apprenticeship and Training or a State Apprenticeship Agency (where appropriate) to be eligible for probationary employment as an apprentice. The allowable ratio of apprentices to journeymen on the job site in any craft shall not be greater than the ratio permitted to the contractor as to the entire work force under the registered program. Any worker listed on a payroll at an apprentice wage rate, who is not registered or otherwise employed as stated above, shall be paid not less than the applicable wage rate on the wage determination for the work actually performed. Where a contractor is performing construction on a project in a locality other than that in which the program is registered, the ratios and wage rates (expressed in percentages of the journeyman's hourly rate) specified in the contractor's or subcontractor's registered program shall be observed. Every apprentice must be paid at not less than the rate specified in the registered program for the apprentice's level of progress, expressed as a percentage of the journeymen hourly rate specified in the applicable wage determination. Apprentices shall be paid fringe benefits in accordance with the provisions of the apprenticeship program. If the apprenticeship program does not specify fringe benefits, apprentices must be paid the full amount of fringe benefits listed on the wage determination for the applicable classification. If the administrator determines that a different practice prevails for the applicable apprentice classification, fringe shall be paid in accordance with that determination. In the event the Bureau of Apprenticeship and Training, or a State Apprenticeship Agency recognized by the Bureau, withdraws approval of an apprenticeship program, the contractor will no longer be permitted to utilize apprentices at less than the applicable predetermined rate for the work performed until an acceptable program is approved.

(ii) **Trainees.** Except as provided in 29 CFR 5.16, trainees will not be permitted to work at less than the predetermined rate for the work performed unless they are employed pursuant to and individually registered in a program which has received prior approval, evidenced by formal certification by the U.S. Department of Labor, Employment and Training Administration. Every trainee must be paid at not less than the rate specified in the approved program for the trainee's level of progress, expressed as a percentage of the journeyman hourly rate specified in the applicable wage determination. Trainees shall be paid fringe benefits in accordance with the

provisions of the trainee program. If the trainee program does not mention fringe benefits, trainees shall be paid the full amount of fringe benefits listed on the wage determination unless the Administrator of the Wage and Hour Division determines that there is an apprenticeship program associated with the corresponding journeyman wage rate on the wage determination which provides for less than full fringe benefits for apprentices. Any employee listed on the payroll at a trainee rate who is not registered and participating in a training plan approved by the Employment and Training Administration shall be paid not less than the applicable wage rate on the wage determination for the work actually performed. In addition, any trainee performing work on the job site in excess of the ratio permitted under the registered program shall be paid not less than the applicable wage rate on the wage determination for the work actually performed. In the event the Employment and Training Administration withdraws approval of a training program, the contractor will no longer be permitted to utilize trainees at less than the acceptable predetermined rate for the work performed until an acceptable program is approved.

(iii) **Equal Employment Opportunity.** The utilization of apprentices, trainees and journeymen under this part shall be in conformity with the equal opportunity requirements of Executive Order 11246, as amended, and 29 CFR Part 30.

5. **Compliance with Copeland Act Requirements.** The contractor shall comply with the requirements of 29 CFR Part 3 which are incorporated by reference in this contract.

6. **Subcontracts.** The contractor or subcontractor will insert in any subcontracts the clauses contained in 29 CFR 5.5(a)(1) through (10) and such other clauses as HUD or its designee may by appropriate instructions require, and also a clause requiring the subcontractors to include these clauses in any lower tier subcontracts. The prime contractor shall be responsible for the compliance by any subcontractor or lower tier subcontractor with all contract clauses in 29 CFR Part 5.5.

7. **Contracts Termination: Debarment.** A breach of the contract clauses in 29 CFR 5.5 may be grounds for termination of the contract, and for debarment as a contractor and a subcontractor as provided in 29 CFR 5.12.

8. **Compliance with Davis-Bacon and Related Act Requirements.** All rulings and interpretations of the Davis-Bacon and Related Acts contained in 29 CFR Parts 1, 3 and 5 are herein incorporated by reference in this contract.

9. **Disputes Concerning Labor Standards.** Disputes arising out of the labor standards provisions of this contract shall not be subject to the general disputes clause of this contract. Such disputes shall be resolved in accordance with the procedures of the Department of Labor set forth in 29 CFR Parts 5, 6, and 7. Disputes within the meaning of this clause include disputes between the contractor (or any of its subcontractors) and HUD or its designee, the U.S. Department of Labor, or the employees or their representatives.

10. (i) **Certification of Eligibility.** By entering into this contract, the contractor certifies that neither it (nor he or she) nor any person or firm who has an interest in the contractor's firm is a person or firm ineligible to be awarded Government contracts by virtue of Section 3(a) of the Davis-Bacon Act or 29 CFR 5.12(a)(1) or to be awarded HUD contracts or participate in HUD programs pursuant to 24 CFR Part 24.

(ii) No part of this contract shall be subcontracted to any person or firm ineligible for award of a Government contract by virtue of Section 3(a) of the Davis-Bacon Act or 29 CFR 5.12(a)(1) or to be awarded HUD contracts or participate in HUD programs pursuant to 24 CFR Part 24.

(iii) The penalty for making false statements is prescribed in the U.S. Criminal Code, 18 U.S.C., "Federal Housing Administration Transactions" provides in part, "Whoever, for the purpose of .. influencing in any way the action of such administration makes, utters or publishes any statement, knowing the same to be false, shall be fined not more than \$5,000 or imprisoned not more than two years, or both".

11. **Complaints, Proceedings or Testimony by Employees.** No laborer or mechanic to whom the wage, salary, or other labor standards provisions of this Contract are applicable shall be discharged or in any other manner discriminated against by the Contractor or any subcontractor because such employee has filed any complaint or instituted or caused to be instituted any proceeding or has testified or is about to testify in any proceeding under or relating to the labor standards applicable under this Contract to his employer.

B. **Contract Work Hours and Safety Standards.** As used in this paragraph, the terms "laborers" and "mechanics" include watchmen and guards.

(1) **Overtime Requirements.** No contractor or subcontractor contracting for any part of the contract work which may require or involve the employment of laborers or mechanics shall require or permit any such laborer or mechanic in any workweek in which he or she is employed on such work to work in excess of eight hours in any calendar day or in excess of forty hours in such workweek unless such laborer or mechanic receives compensation at a rate not less than one and one-half times the basic rate of pay for all hours worked in excess of eight hours in any calendar day or in excess of forty hours in such workweek, whichever is greater.

(2) **Violation: Liability for Unpaid Wages: Liquidated Damages.** In the event of any violation of the clause set forth in subparagraph (1) of this paragraph, the contractor and any subcontractor responsible therefor shall be liable to the unpaid wages. In addition, such contractor and subcontractor shall be liable to the United States (in the case of work done under the contract for the District of Columbia or a territory, to such District or to such territory), for liquidated damages. Such liquidated damages shall be computed with respect to each individual laborer or mechanic, including watchmen and guards, employed in violation of the clause set forth in subparagraph (1) of this paragraph, in the sum of \$10 for each calendar day on which such individual was required or permitted to work in excess of eight hours or in excess of the standard workweek of forty hours without payment of the overtime wages required by the clause set forth in subparagraph (1) of this paragraph.

(3) **Withholding for Unpaid Wages and Liquidated Damages.** HUD or its designee shall upon its own action or upon written request of an authorized representative of the Department of Labor, withhold or cause to be withheld, from any moneys payable on account of work performed by the contractor or subcontractor under any such contract or any other Federal contract with the same prime contract, or any other Federally-assisted contract subject to the contract Work Hours and Safety Standards Act, which is held by the same prime contractor such sums as may be determined to be necessary to satisfy any liabilities of such contractor or subcontractor for unpaid wages and liquidated damages as provided in the clause set forth in subparagraph (2) of this paragraph.

(4) **Subcontracts.** The contractor or subcontractor shall insert in any subcontracts the clauses set forth in subparagraph (1) through (4) of this paragraph and also a clause requiring the subcontractors to include these clauses in any lower tier subcontracts. The prime contractor shall be responsible for compliance by any subcontractor or lower tier subcontractor with the clauses set forth in subparagraphs (1) through (4) of this paragraph.

C. **Health and Safety**

(1) No laborer or mechanic shall be required to work in surroundings or under working conditions which are unsanitary, hazardous, or dangerous to his health and safety as determined under construction safety and health standards promulgated by the Secretary of Labor by regulation.

(2) The Contractor shall comply with all regulations issued by the Secretary of Labor pursuant to Title 29, Part 1926 (formerly part 1518) and failure to comply may result in imposition of sanctions pursuant to the Contract Work Hours and Safety Standards Act (Public Law 91-54.83, Stat 96).

(3) The Contractor shall include the provisions of this Article in every subcontract so that such provisions will be binding on each subcontractor. The contractor shall take such action with respect to any subcontract as the secretary of Housing and Urban Development or the Secretary of Labor shall direct as a means of enforcing such provisions.

D. **Anti-Discrimination**

Section 109 of Title I of the Housing and Community: Section 109 prohibits discrimination on the basis of race, color, national origin, sex or religion in programs and activities receiving financial assistance from HUD's Community Development and Block Grant Program. Section 109 also directs that the prohibitions against discrimination on the basis of age under the Age Discrimination Act and the prohibitions against discrimination on the basis of disability under Section 504 shall apply to programs or activities receiving Federal financial assistance under Title I programs.

REQUIRED DISCLOSURE OF RELATIONSHIPS TO MUNICIPALITY

(Prior to execution of a contract by the Municipality, a potential Municipality contractor must complete, sign and return this form to the Municipality)

Contract Name and/or ID No.:

(To be filled in by Municipality)

Name of Contractor:

(To be filled in by Contractor)

A.) Related Employees:

1. Are any of the employees that you will use to carry out this contract with the Municipality also an officer or employee of the Municipality, or the spouse, or the child or dependent of such Municipality officer or employee?

Yes _____ No _____

If yes, please provide details: _____

B.) Related Owners:

1. If you are the owner of the Contractor, are you or your spouse, an officer or employee of the Municipality?

Yes _____ No _____

If yes, please provide details: _____

To answer the following question, the following definition of the word "interest" shall be used:

Interest means a direct or indirect pecuniary or material benefit accruing to a Municipality officer or employee, his or her spouse, child or dependent, whether as the result of a contract with the Municipality or otherwise. For the purpose of this chapter, a Municipality officer or employee shall be deemed to have an "interest" in the contract of:

- i. His/her spouse, children and dependents, except a contract of employment with the Municipality;**
- ii. A firm, partnership or association of which such officer or employee is a member or employee;**
- iii. A corporation of which such officer or employee is an officer, director or employee; and**
- iv. A corporation of which more than five (5) percent of the outstanding capital stock is owned by any of the aforesaid parties.**



2. Do any officers or employees of the Municipality have an **interest** in the Contractor or in any subcontractor that will be used for this contract?

Yes _____ No _____

If yes, please provide details: _____

Authorized Company Official shall sign below and type or print
information below the signature line:

Name:

Title:

Date:

CONTRACTORS INSURANCE REQUIREMENTS

- 1) The Contractor, prior to signing of the contract, shall provide to the Village of Mt. Kisco and maintain throughout the life of the contract, at his own cost and expense, proof of the following insurance by insurance companies licensed in the State of New York.
 - a) Workmen's Compensation. The Contractor shall take out and maintain during the life of this contract the statutory Workmen's Compensation, Disability, and Employer's Liability insurance for all of his employees to be engaged in work on the project under this Contract, and, in case any such work is sublet, the Contractor shall require the Subcontractor similarly to provide Workmen's Compensation, Disability, and Employer's Liability Insurance for all of the latter's employees to be engaged in such work.
 - b) General Liability Insurance with a single limit of liability per occurrence for bodily injury and property damage of \$1,000,000. The Certificate of Insurance shall indicate the following coverage:
 - i) Premises - Operations;
 - ii) Any deductibles shall not be the liability of the Village of Mt. Kisco, New York.
 - c) Automobile Liability Insurance with the single limit of liability per occurrence for bodily injury and per occurrence for property damage at \$1,000,000. This insurance shall include coverage for:
 - i) Owned automobiles;
 - ii) Hired automobiles;
 - iii) Non-owned automobiles.
 - d) Owners and Contractors Protective Liability Policy - \$1,000,000 single limit endorsed that the Village of Mt. Kisco is not responsible for the premium.
 - e) Umbrella Liability Insurance Policy - \$5,000,000 single limit endorsed that the
 - i) Village of Mt. Kisco is not responsible for the premium.
 - f) Property Damage - Property Damage Insurance shall include the legal liability of its Contractor for loss or damage to property of the Village of Mt. Kisco.
 - g) Unemployment Insurance - The Contractor for the agreed consideration, promises and agrees to pay the contributions measured by the wages of his employees required by State Unemployment Insurance Law and all amendments thereto, and to accept the account of any contribution measured by the wages as aforesaid of employees of the Contractor and his subcontractors assessed against the Owner under the authority of said law.
- 2) The Contractor shall obtain and maintain in full force and effect all of his insurance policies with a reputable insurer licensed to do business in the State of New York with at least a Best rating of A-.
- 3) All policies and certificates of the Contractor shall contain clauses as follows:
 - a) The insurance companies issuing the policy or policies shall have no recourse against the Village of Mt. Kisco, New York for payment of any premium or for assessments under any form of policy.
 - b) Any and all deductibles in the above described insurance policies shall be assumed by and be for the account of, and at the sole risk of the Contractor.
 - c) In case of cancellation or material change in any of the policies, thirty (30) days notice shall be given to the Village of Mt. Kisco, New York, by registered mail, return receipt requested.

- 4) All property losses shall be made payable to and adjusted with the Village of Mt. Kisco.
- 5) All policies of insurance shall be acceptable to and approved by the Department of Law prior to the inception of any work.
- 6) Other coverages may be required by the Village of Mt. Kisco based on specific need.
- 7) If, at any time, any of the said policies shall be or become unsatisfactory to the Village of Mt. Kisco, as to form or substance, or if a company issuing such a policy shall be or become unsatisfactory to the Village of Mt. Kisco the Contractor shall promptly obtain a new policy, submit same to the Village of Mt. Kisco, for approval and submit a certificate thereof as hereinafter provided. Upon failure of the Contractor to furnish, deliver and maintain such insurance as above provide, this Contract, at the election of the Village of Mt. Kisco, may be forthwith declared suspended, discontinued or terminated. Failure of the Contractor to take out and/or to maintain or the taking out and/or maintenance of any required insurance, shall not relieve the Contractor for any liability under the contract, nor shall the insurance requirements be construed to conflict with the obligations of the Contractor.
- 8) In the event that claims in excess of these amounts are filed by reason of any operations under the contract, the amounts of excess of such claims, or any portion thereof, may be withheld from payment due or to become due the Contractor until such time as the Contractor shall furnish additional security covering such claims.
- 9) The Insurance Policy shall be endorsed to name the Village of Mt. Kisco, Bar Down Studio, and any directors, officers, employees, consultants, subsidiaries, and affiliates, as additional insured on
 - a) all policies and Hold Harmless documents, and shall stipulate that this insurance is primary, that any other insurance or self-insurance maintained by the Village of Mt. Kisco and Bar Down Studio shall be excess only and shall not be called upon to contribute with this insurance. ISO Additional Insured Endorsement form number CG2010 1185 under GL. Contractors Form B must be utilized and accompany the Certificate of Insurance.
- 10) Copies of the insurance policies shall be submitted to the Village of Mt. Kisco attorney for approval prior to the signing of the Contract.

SECTION 007319 – HEALTH AND SAFETY REQUIREMENTS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Special Conditions and other Division 01 Specification Sections, apply to this Section.

1.2 PROJECT SITE SAFETY

- A. The Prime Contractor, not the Architect, or the entity recognized as Construction Site representative, is responsible for Project site safety.

1.3 SAFETY AND HEALTH REGULATIONS

- A. The Prime Contractor, and any entity working for the Prime Contractor, shall comply with the U.S. Department of Labor Safety and Health Regulations for construction promulgated under the Occupational Safety and Health Act of 1970 (PL 91-54), latest revisions and with the latest requirements of the "Right to Know" laws and the New York State Labor Law.
- B. In order to protect the general public and the lives and health of his/her employees under the Contract, the Prime Contractor shall comply with all pertinent provisions of the latest issues of the Federal Register, Bureau of Labor Standards, Safety and Health Regulations; New York State Industrial Code Rule 30 pertaining to Tunneling Operations; New York State Industrial Code Rule 23 pertaining to Trenching Operations; and the "Manual of Accident Prevention in Construction" issued by the Associated General Contractors of America, Inc., and shall maintain an accurate record of all cases of death, occupational disease, and injury requiring medical attention or causing loss of time from work under this Contract. In case of a conflict between the above noted authorities, the most stringent shall prevail.
- C. The Prime Contractor shall have on the project site at all times, while work is in progress, at least one person skilled in safety and health procedures and familiar with State and Federal safety and health regulations whose responsibility shall be to observe methods and procedures. He shall have the duty and authority to stop and correct all unsafe and unhealthy conditions.
- D. Toxic, noxious or otherwise hazardous fumes, gases or dusts, etc. from welding, cadwelding, painting, grinding, sawing, sweeping or any other operations shall be kept to the absolute minimum and shall be vented directly to the outside by the Contractor, and only used when authorized by the Architect.
- E. The Prime Contractor to submit to the Architect and Construction Site Representative, prior to first payment application approval, 2 copies of Safety Data Sheets (SDS) for all material used on site. The Prime Contractor shall also keep one (1) complete set of Safety Data Sheets (SDS) onsite at all times.
 - 1. These reference materials shall be updated continuously throughout the Project, as additional materials are added to/brought to the Project site.

1.4 SAFETY AND FIRST AID

- A. The Prime Contractor shall at all times exercise caution of his/her operations and shall be responsible for the safety and protection of all persons on or about the site arising out of or relating to his/her Work. All hazards shall be avoided or guarded in accordance with the provisions of the Manual of Accident Prevention in Construction of the AGCA, unless such provisions contravene local law. The safety provisions of all applicable laws, codes and ordinances shall be observed.
- B. The Prime Contractor shall provide and maintain at the Site, at each location where work is in progress, as part of his/her plant, an approved first aid kit. Ready access thereto shall be provided at all times when persons are employed on the work site.

- C. The Prime Contractor shall take due precautions against infectious diseases, and shall arrange for the immediate isolation and removal from the Site of any employee who becomes ill or is injured while engaged on the work site.
- D. The Prime Contractor shall, upon request of the Architect and/or Construction Site Representative, immediately correct all conditions that constitute a clear and present danger to persons as interpreted by the Architect and/or Construction Site Representative. If such danger is not so corrected, the Owner or the Architect will employ other persons to do such work and the expense thereof shall be deducted from any monies due or to become due to the Prime Contractor.
- E. Clean up of the Prime Contractor's, and/or their subcontractor's, materials and/or debris shall be deemed a safety and health issue.

1.5 ACCIDENTS AND ACCIDENT REPORTS

- A. Notify Architect immediately of any accidents involving Prime Contractor, subcontractor or supplier personnel on site.
- B. Within 24 hours of the occurrence, the Prime Contractor shall submit a written accident report, to the Architect, fully detailing the occurrence.

1.6 TOOL BOX SAFETY MEETINGS

- A. The Prime Contractor shall hold weekly toolbox safety meetings with his/her own workers. Records of these meetings shall be forwarded to the Owner, through the Construction Site Representative's office, each week.
 - 1. Failure to comply with this requirement shall result in Applications for Payment not being reviewed and processed.

END OF SECTION 007319

SECTION 007343 - WAGE RATE REQUIREMENTS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Special Conditions and other Division 1 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. The labor on this contract shall be performed in all respects in full accordance with the Labor Law of the State of New York. In accordance with Section 220, Subdivision 3, and Section 220-D, of the Labor Law, the Industrial Commissioner has designated as the minimum hourly rates to be paid to employees on the work the rates shown on the attached schedules which shall be posted in a prominent and convenient place for the inspection of the Contractor's employees. Article 8, Section 220 of the Labor Law, as amended by Chapter 750 of the Laws of 1956, provides, among other things, that it shall be the duty of the fiscal officer to make a determination of the schedule of wages and supplementals to be paid to all laborers, workmen and mechanics employed on public works projects. The amount of supplemental listed on the enclosed schedule does not necessarily include all types of prevailing supplements.
- B. The Contractor shall make provision for disability benefits, workman's compensation, unemployment insurance and social security, as required by law.
- C. Every Contractor and Subcontractor shall submit to the Contracting Agency, within thirty (30) days after issuance of its first payroll and every thirty (30) days thereafter, a transcript of the original payrolls, subscribed and affirmed as true in accordance with the general provisions of laws Covering Workers on Public Works Contracts.
- D. Copies of Wage rates prepared by the New York State Department of Labor can be obtained online as follows:
 - 1. <https://apps.labor.ny.gov/wpp/showFindProject.do?method=showIt>
 - 2. Enter the PRC number: 2021011749
 - 3. In the event that the Contractor does not have web access or is unable to access the Department's website, please fax a written request for a printed copy of the schedule to the Central Office of the Bureau of Public Works at (518) 485-1870.
- E. Copies of Davis-Bacon Wage Rates are appended hereto.

PART 2 – PRODUCTS (Not Used)

PART 3 – EXECUTION (Not Used)

"General Decision Number: NY20200017 02/28/2020

Superseded General Decision Number: NY20190017

State: New York

Construction Types: Building, Heavy, Highway and Residential

County: Westchester County in New York.

BUILDING CONSTRUCTION PROJECTS, RESIDENTIAL CONSTRUCTION PROJECTS (consisting of single family homes and apartments up to and including 4 stories), AND HEAVY AND HIGHWAY CONSTRUCTION PROJECTS

Note: Under Executive Order (EO) 13658, an hourly minimum wage of \$10.80 for calendar year 2020 applies to all contracts subject to the Davis-Bacon Act for which the contract is awarded (and any solicitation was issued) on or after January 1, 2015. If this contract is covered by the EO, the contractor must pay all workers in any classification listed on this wage determination at least \$10.80 per hour (or the applicable wage rate listed on this wage determination, if it is higher) for all hours spent performing on the contract in calendar year 2020. If this contract is covered by the EO and a classification considered necessary for performance of work on the contract does not appear on this wage determination, the contractor must pay workers in that classification at least the wage rate determined through the conformance process set forth in 29 CFR 5.5(a)(1)(ii) (or the EO minimum wage rate, if it is higher than the conformed wage rate). The EO minimum wage rate will be adjusted annually. Please note that this EO applies to the above-mentioned types of contracts entered into by the federal government that are subject to the Davis-Bacon Act itself, but it does not apply to contracts subject only to the Davis-Bacon Related Acts, including those set forth at 29 CFR 5.1(a)(2)-(60). Additional information on contractor requirements and worker protections under the EO is available at www.dol.gov/whd/govcontracts.

Modification Number	Publication Date
0	01/03/2020
1	02/07/2020
2	02/28/2020

ASBE0091-003 05/27/2019

	Rates	Fringes
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HAZARDOUS MATERIAL HANDLER (Duties limited to preparation, wetting, stripping, removal, scraping, vacuuming, bagging and disposing of all insulation materials whether they contain asbestos or not from mechanical systems).....\$ 42.62	40.85
Insulator/asbestos worker (Includes application of all insulating materials, protective coverings, coatings, and finishes to all	

types of mechanical sytems).....\$ 42.62 40.85

BOIL0005-001 01/01/2017

	Rates	Fringes
BOILERMAKER.....	\$ 55.23	33%+24.12+a

FOOTNOTE:

a. PAID HOLIDAYS: New Year's Day, Thanksgiving Day, Memorial Day, Independence Day, Labor Day and Good Friday, Friday after Thanksgiving, Christmas Eve Day and New Year's Eve

BRNY0001-003 06/01/2018

	Rates	Fringes
Pointer, cleaner and caulker.....	\$ 41.96	33.38

BRNY0004-001 07/01/2019

	Rates	Fringes
MARBLE MASON.....	\$ 59.44	36.88

BRNY0005-006 06/01/2018

HEAVY & HIGHWAY CONSTRUCTION

	Rates	Fringes
BRICKLAYER Bricklayers, Stone Masons, Cement Masons, Plasterers, Pointers, Caulkers and Cleaner.....	\$ 41.96	33.38

BRNY0005-007 06/01/2019

BUILDING/RESIDENTIAL CONSTRUCTION

	Rates	Fringes
Bricklayer, Cement Mason, Plasterer & Stonemason.....	\$ 42.09	34.50

BRNY0007-001 07/01/2019

	Rates	Fringes
TERRAZZO FINISHER.....	\$ 54.81	36.42
TERRAZZO WORKER/SETTER.....	\$ 56.41	36.44

BRNY0020-001 07/01/2019

	Rates	Fringes
MARBLE FINISHER.....	\$ 47.41	34.64

BRNY0024-001 01/01/2018

	Rates	Fringes
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BRICKLAYER

MARBLE POLISHERS.....	\$ 40.89	26.69
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BRNY0052-001 12/03/2018

	Rates	Fringes
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Tile Layer.....	\$ 51.40	27.81
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BRNY0088-001 07/01/2019

	Rates	Fringes
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TILE FINISHER.....	\$ 54.81	36.42
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CARP0279-001 07/01/2019

	Rates	Fringes
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Carpenters:

Building.....	\$ 45.30	30.55
Heavy & Highway.....	\$ 45.30	30.55
Residential.....	\$ 36.23	24.47

CARP0740-001 07/01/2019

	Rates	Fringes
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MILLWRIGHT.....	\$ 54.20	53.06
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CARP1556-007 07/01/2019

	Rates	Fringes
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Diver Tender.....	\$ 49.14	50.98
Diver.....	\$ 69.22	50.98

CARP1556-009 07/01/2019

	Rates	Fringes
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Dock Builder & Piledrivermen.....	\$ 54.63	50.98
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CARP1556-011 07/01/2019

	Rates	Fringes
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Carpenters:

TIMBERMEN.....	\$ 50.05	50.28
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CARP2287-001 07/01/2015

	Rates	Fringes
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Carpenters:

Soft Floor Layers.....	\$ 50.50	45.18
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ELEC0003-003 04/28/2016

	Rates	Fringes
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ELECTRICIAN (Teledata Technician).....	\$ 50.75	43.704
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a. \$2.00 per hour not to exceed \$14.00 per day.

 ELEC1249-001 05/16/2019

	Rates	Fringes
ELECTRICIAN (LIGHTING AND TRAFFIC SIGNAL WORK Including any and all Fiber Optic Cable necessary for Traffic Signal Systems, Traffic monitoring systems and Road Weather Information systems)		
Flagman.....	\$ 30.10	6.75%+24.15
Ground Digging Machine Operator.....	\$ 45.14	6.75%+24.15
Ground Truck Driver.....	\$ 40.13	6.75%+24.15
Tractor, Trailer Unit.....	\$ 40.13	6.75%+24.15
Lineman & Technician.....	\$ 50.16	6.75%+24.15
Mechanic.....	\$ 40.13	6.75%+24.15

FOOTNOTE:

a. PAID HOLIDAYS: New Years Day, Memorial Day, Independence Day, Labor Day, Thanksgiving Day, Christmas Day, President's Day, Good Friday, Decoration Day, Election Day for the President of the Untied States and Election Day for the Governor of the State of New York provided the employee works two days before and two days after the holiday

 ELEC1249-006 05/06/2019

	Rates	Fringes
ELECTRICIAN (LINE CONSTRUCTION)		
Substation and switching structures pipetype cable, underground fuilid and gas filled transmission conduit and cable installation, fiber optic ground wire, fiber optic shield wire or any other like product having ground protection or fiber optic capabilities, maintenance jobs or projects; rail-road catenary installation and maintenance bonding of rails; Overhead & underground distribution work & Maintenance; Overhead and under- ground transmission line work:		
Cable Splicer.....	\$ 60.29	6.75%+24.15
Flagman.....	\$ 32.89	6.75%+24.15
Groundman digging machine operator.....	\$ 49.33	6.75%+24.15
Groundman truck driver (tractor trailer unit)....	\$ 43.85	6.75%+24.15
Groundman truck driver;....	\$ 43.85	6.75%+24.15
Lineman & Technician.....	\$ 54.81	6.75%+24.15
Mechanic.....	\$ 43.85	6.75%+24.15

PAID HOLIDAYS:

a. New Year's Day, President's Day, Memorial Day, Good Friday, Independence Day, Labor Day, Thanksgiving Day, Christmas Day, and Election Day for the President of the United States and Election Day for the Governor of New York State, provided the employee works two days before or two days after the holiday.

ELEC1249-009 01/01/2019

	Rates	Fringes
ELECTRICIAN (LINE CONSTRUCTION)		
TELEPHONE, CATV FIBEROPTICS CABLE AND EQUIPMENT		
Cable Splicer.....	\$ 32.78	3%+4.93
Groundman.....	\$ 16.49	3%+4.93
Installer Repairman-Teledata Lineman/Technician-Equipment Operator.....	\$ 31.12	3%+4.93

ELEV0001-002 03/17/2018

	Rates	Fringes
ELEVATOR MECHANIC		
Elevator Constructor.....	\$ 64.48	42.103+a+b
Modernization and Repair....	\$ 50.49	40.399+a+b

FOOTNOTE:

a. PAID HOLIDAYS: New Year's Day, Good Friday, President's Day, Memorial Day, Independence Day, Labor Day, Columbus Day, Veteran's Day, Thanksgiving Day, Friday after Thanksgiving, and Christmas Day.

b. PAID VACATION: An employee who has worked less than 5 years shall receive vacation pay credit on the basis of 4% of his hourly rate for all hours worked; an employee who has worked 5 to 15 years shall receive vacation pay credit on the basis of 6% of his hourly rate for all hours worked; an employee who has worked 15 or more years shall receive vacation pay credit on the basis of 8% of his hourly rate for all hours worked.

ELEV0138-003 01/01/2020

WESTCHESTER COUNTY (Towns of Bedford, Cortland, Lewisboro, Mt. Kisco, North Salem, Pound Ridge, Somers, and Yorktown)

	Rates	Fringes
ELEVATOR MECHANIC.....	\$ 60.49	34.765+a+b

FOOTNOTE:

a. Vacation: 6%/under 5 years based on regular hourly rate for all hours worked. 8%/over 5 years based on regular hourly rate for all hours worked.

b. PAID HOLIDAYS: New Year's Day; Memorial Day; Independence Day; Labor Day; Veterans' Day; Thanksgiving Day; the Friday after Thanksgiving Day; and Christmas Day.

 ENGI0137-005 03/06/2017

BUILDING & RESIDENTIAL CONSTRUCTION

	Rates	Fringes
Power equipment operators:		
GROUP 1-A.....	\$ 53.95	28.52+a
GROUP 1-B.....	\$ 49.68	28.52+a
GROUP 2-A.....	\$ 52.03	28.52+a
GROUP 3-A.....	\$ 50.11	28.52+a
GROUP 3-B.....	\$ 47.67	28.52+a
GROUP 4-A.....	\$ 49.60	28.52+a
GROUP 4-B.....	\$ 41.85	28.52+a
GROUP 5.....	\$ 45.17	28.52+a
GROUP 5-A.....	\$ 56.63	28.52+a
GROUP 5-B.....	\$ 42.83	28.52+a
GROUP 6.....	\$ 44.92	28.52+a

NOTES: Hazmat: 20% above regular rate

Pumping operation Premium .50

Crane Operators (100-149 ft) 2.00

Crane Operators (149 ft +) 3.00

Loader Operators (over 5 cu y) .50

Shovel Operators (over 4 cu yd) 1.00

FOOTNOTE:

a. New Years Day, Memorial Day, Independence Day, Labor Day Thanksgiving Day, Christmas Day, plus Lincoln's Birthday, Washington's Birthday, Good Friday, Columbus Day, November Election Day, Veteran's Day.

POWER EQUIPMENT OPERATORS CLASSIFICATION

GROUP 1-A: Carrier- trailer horse; concret-portable hoist; crane & hoist engineer-steel (concrete, material, super structure sub- structure); derrick (stone-steel); elevator & cage; hoist- single/double or triple drum; hoist-portable mobile unit; hoist engineer-concert (crane-derrick-mine hoist); hoist engineer- material; overhead crane; power house plant; telephies (cableway); whirly; maintenance engineer; Lull hiliift or similar; hydraulic crane 25 ton and over; cherry picker 25 tons and over; backhoe Oliver 88; fordson; dynahoe; dual purpose and similar machines; Barber Green Loader-euclid loader or similar type; conway or similar mucking macking machines; dragline; gradall; shovel; backhoe etc. (crawler or truck); front end loaders; hydraulic boom; jersey spreader; lift slab console; letournequ or tounapull (scrapers over 20 yds struck); mucking machines; pavement breaker (air ram); paver (concrete); road boring machine; road mix machines; ross carrier and similar machines; post hole digger; shovel (tunnels); side boom; spreader (asphalt); scoopmobile-tractor-shovel over 1 1/2 yds. trenching machines vermeer concrete saw trencher and similar; tractor type demolition equipment; winch truck (a frame); hydraulic crane over 10 ton up to 25 ton); cherry picker over 10 ton

up to 25 ton)

GROUP 1-B: Compressor (steel erection); pulse meter and push button buzz box; elevator; mechanic (outside) all types; welder; scrapers 20 yds struck and under; machine pulling sheep's foot roller; vibratory rollers; roller 4 tons and over.

GROUP 2-A: Compactor self-propelled; grader; bulldoze D7 and similar tractors with a draw bar horsepower of 100 or over; bulldozer D6 and under; welder; scraper 20 yds struck and under; machine pulling sheep's foot roller; vibratory rollers.

GROUP 3-A: Asphalt plant; boiler (high pressure); concrete mixing plants; concrete pump; firemen; forklift; forklift (electric); joy drill or similar tractor drilling machine; loader - 1 1/2 yards and under; locomotive (all sizes); mixer concrete - 21E and over; portable asphalt plant; portable batch plant; portable crusher; quarry master; stone crusher; well drilling machine and well point system; cherry picker under 10 tons; hydraulic crane under 10 tons; concert buffy; one yard an up ride on dumper (benford or similar).

GROUP 3-B: Compressor over 125 cu. feet; conveyor belt machine regardless of size; lighting unit (portable & generator); welding machine (steel erection and excavation); and compressor plant; stud machine; ladder hoist.

GROUP 4-A: Air tractor drill; batch plant; bending machine; concrete breaker; concrete spreader; curb cutter machine; farm tractor (all types); finishing machine-concrete; hepavac clean air machine (all similar types: removal of asbestos etc.); material hopper-sand-stone-cement; mixer-concrete-under 21E; mulching grass spreader; pump-gypsum, etc., pump-plaster-grout -fireproofing; shop mechanic (not employed on job site); roller under 4 ton; spreading and fine grading machine; steel cutting machine; syphon pump-air-steam; tar joint machine; turbo jet burner or similar equipment; vibrator (1 to 5); fine grading machine; roof hoist (tugger hoist); television cameras-water- sewer-gas-etc.

GROUP 4-B: Compressor to 125 feet; dust; dust collector; heater all types; pump; pump station (water and sewer); steam jenny; sweeper; chipper; mulcher.

GROUP 5: Motorized roller (walk behind)

GROUP 5-A: Master Mechanic

GROUP 5-B: Utility Man

GROUP 6: Warehouse Man

ENGI0137-006 03/06/2017

HEAVY & HIGHWAY

Rates

Fringes

Power equipment operators:

GROUP 1.....	\$ 58.54	28.15+a
GROUP 1-A.....	\$ 51.68	28.15+a
GROUP 1-B.....	\$ 54.42	28.15+a
GROUP 2-A.....	\$ 49.52	28.15+a
GROUP 2-B.....	\$ 51.05	28.15+a
GROUP 3.....	\$ 48.67	28.15+a
GROUP 4-A.....	\$ 44.29	28.15+a
GROUP 4-B.....	\$ 38.13	28.15+a
GROUP 5.....	\$ 54.69	28.15+a
GROUP 5-A-1.....	\$ 54.69	28.15+a
GROUP 5-A-2.....	\$ 66.22	28.15+a
GROUP 5-A-3.....	\$ 63.97	28.15+a
GROUP 5-A-4.....	\$ 60.03	28.15+a
GROUP 5-A-5.....	\$ 50.65	28.15+a

POWER EQUIPMENT OPERATORS CLASSIFICATIONS (HEAVY & HIGHWAY)

GROUP 1: Boom Truck; Cherry Picker; Clamshell; Crane,
(Crawler, Truck); Dragline; Rough Terrain Crane

GROUP 1-A: Auger; Auto Grader; Dynahoe and Dual purpose and similar machines; Boat Captain; Boring Machine (all types); Bull Dozer-all sizes; Central Mix Plant Operator; Chipper-all types; Close circuit t.v.; Compactor with Blade; Concrete Portable Hoist; C.M.I. or similar; Conway or similar mucking machines; Gradall, Shovel Backhoe, etc. Grader; Derrick, (Stone- Steel; Elevator & cage, materials or passengers; Front end loaders over 1 1/2 yds.; Hoist Single, Double, Triple Drum, Hoist Portable Mobile Unit; Hoist Engineer-Concrete (Crane-Derrick-Mine Hoist); Hoist Engineer-Material, Hydraulic Boom; Letourneau or Tournapull (Scrapers over 20 yds. struck); Log Skidder; Movable Concrete Barrier Transfer & Transport Vehicle; mucking machines; overhead crane; paver (concrete); pulsemeter; push button (buzz box) elevator; road mix machines; Robot Hammer (brock or similar), Ross carrier and similar machines; shovels (tunnels); side boom; Slip Form Machine; spreader (asphalt); scoopmobile-tractor-shovel over 1 1/2 yards; trenching machines; telephies- vermeer concrete saw trencher and/or similar; tractor-type demolition equipment, Whirly

GROUP 1-B: Road Paver, Asphalt

GROUP 2-A: Ballast Regulators; Compactor self-propelled; Cow Tracks; Fusion Machine; Rail Anchor Machines; Roller 4 ton and over; Scrapers - 20 yards struck; Switch Tampers; Vibratory roller, etc.

GROUP 2-B: Mechanic (outside) all types

GROUP 3-A: Air tractor drill; asphalt plant; batch plant; boiler (high pressure; concrete breaker; concrete pump concrete spreader; curb cutter machine; farm tractor (all types); finishing machine (concrete); fine grading machine; fireman; forklift; forklift (electric); joy drill or similar tractor drilling machine; loader - 1 1/2 yards and under; locomotive (all sizes), maintenance engineer; machine pulling sheeps foot roller; material hopper; mixer concrete - 21-E and over; mulching grass spreader; portable asphalt plant, portable batch plant, portable crusher; powerhouse plant; quarry master; roller under 4 ton; spreading and fine grading machine; steel cutting machine; stone crusher; sweeper; turbojet burner or similar; well drilling machine ; winch truck "A" frame. John Henry Drill

or similar.

GROUP 4-A: Service men (fuel or grease truck).

GROUP 4-B: Oiler; Compressor - compressor plant; paint compressor-steel erection; conveyor belt machine; lighting unit (portable & generator); oiler; pumps - pump station-water-sewer- gypsum- plaster, etc.; roller-motorized (walk-behind); welding machine (steel erection excavation); well point system; bending machine; dust collector; mixer - concrete under 21-E; heater all types; steam jenny; syphon pump-air-steam; tar joint machine; vibrator (1 to 5); Compressor Truck Mounted (2-6)

GROUP 5: Oiler

GROUP 5-A-1: Master Mechanic

GROUP 5-A-2: Engineer - all tower cranes, all climbing cranes and all cranes of 100 ton capacity or greater (3900 Manitowac or similar) irrespective of manufacturer and regardless of how the same is rigged (except for pile rigs).

GROUP 5-A-3: Engineer-- Pile Driver

GROUP 5-A-4: Hoist Engineer- Steel -Sub Structure

GROUP 5-A-5: Jersey-spreader, pavement breaker (air ram); Post Hole Digger

NOTES:

Loader Operator (over 5 cu yds) .50

Shovel Operators (over 4 cu yd) 1.00

Hazmat premium over regular rate 20%

CRANES:

100 ft- 149 ft: receive \$2.00 more than Group 1 rate

149 ft and over receive \$3.00 more than Group 1 rate

FOOTNOTE:

a. PAID HOLIDAYS: New Year's Day; Lincoln's Birthday; Good Friday; Memorial Day; Independence Day; Labor Day; Veterans Day; Columbus Day; November Election Day; Thanksgiving Day; and Christmas Day

IRON0040-001 07/01/2019

WESTCHESTER COUNTY

	Rates	Fringes
IRONWORKER, STRUCTURAL.....	\$ 51.45	78.42

IRON0046-003 07/01/2019

	Rates	Fringes
IRONWORKER METALLIC LATHERS AND REINFORCING IRONWORKERS.....	\$ 44.65	46.67

IRON0197-001 07/01/2019

Rates	Fringes
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IRONWORKER

STONE DERRICKMAN.....\$ 50.91	54.11
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IRON0580-001 07/01/2019

Rates	Fringes
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IRONWORKER, ORNAMENTAL.....\$ 45.15	55.62
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LAB00060-002 03/31/2019

HEAVY/HIGHWAY

Rates	Fringes
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Laborers:

GROUP 1.....\$ 42.17	22.23+a
GROUP 2.....\$ 40.82	22.23+a
GROUP 3.....\$ 40.42	22.23+a
GROUP 4.....\$ 40.07	22.23+a
GROUP 5.....\$ 39.72	22.23+a
GROUP 6.....\$ 33.37	22.23+a
GROUP 7.....\$ 41.72	22.23+a
SHAFT AND TUNNEL IN FREE AIR	
GROUP 1.....\$ 48.15	29.25+a
GROUP 2.....\$ 50.30	29.25+a
GROUP 4.....\$ 56.70	29.25+a

LABORERS CLASSIFICATIONS (HEAVY/HIGHWAY):

GROUP 1: Blasters.

GROUP 2: Burner, Jumbo Driller, Joy Driller, Wagon Driller, Air Track Driller, Hydraulic Driller, Concrete Form Aligner, Concrete Form and Curb Form Highway (Steel), Asphalt Screedman, Asphalt Raker.

GROUP 3: Asphalt Curb Machine Operator, Jeep Operator, Pavement Breaker Operator, Power Saw Operator, Jack Hammer Driller. All types of pneumatic tools gasoline driller, concrete saw, gunniting, railroad spike puller and sandblasting, pipe layer, deck winches on scows, power buggy operator, power wheelbarrow operator.

GROUP 4: General concrete laborers-anything pertaining to concrete, aggregate or concrete material handling, puddlers, asphalt worker, rock scalers, vibrator operator, bit grinder, concrete grinder, air tampers and all tampers not covered by any other classification, form pin puller, pumps and their operation, service of air power, epoxy and waterproofing worker, fine grade person between forms, barco rammer, guard and guide rail and link fence, steel kings.

GROUP 5: Common laborers, signal person and pit person, truck spotters, powder person, landscape and nursery person, dump person.

GROUP 6: Flagperson

GROUP 7: Asbestos and Toxic Waste laborer

SHAFT AND TUNNEL IN FREE AIR CLASSIFICATIONS

GROUP 1: Outside laborers

GROUP 2: Blaster, Concrete and form setters, drill runners, air tuggers, chippers, pneumatic tools, and source of airpower, pumps and their operations, vibrator operators, Puddlers, Chuck tenders, nippers, concrete laborers tunnel sewer and water pipeliners, boring, Laborers, Powder carriers, signalmen, and Brakemen

GROUP 4: Miners

FOOTNOTE: a. PAID HOLIDAYS: New Year's Day, Lincoln's Birthday, Washington's Birthday, Good Friday, Memorial Day, Independence Day, Labor Day, Columbus Day, November Election Day, Veterans' Day, Thanksgiving Day and Christmas Day.

LAB00235-001 05/01/2016

BUILDING

	Rates	Fringes
LABORER.....	\$ 33.30	26.25

LAB00235-002 05/01/2016

RESIDENTIAL

	Rates	Fringes
LABORER.....	\$ 26.80	19.55

PAIN0009-003 05/01/2019

	Rates	Fringes
PAINTER		
GLAZIERS.....	\$ 46.05	43.37
Painters, Paperhanger, Drywall Finishers & Lead Abatement Worker.....	\$ 45.70	27.67
Spray, Scaffold, Sandblasting.....	\$ 48.70	27.67

PAIN0806-001 10/01/2018

	Rates	Fringes
Painters:		
Structural Steel and Bridge.	\$ 49.50	41.88

PLUM0021-003 05/01/2018

	Rates	Fringes
Plumber and Steamfitter		
Zone 1.....	\$ 55.66	34.11

ROOF0008-003 07/01/2019

	Rates	Fringes
ROOFER.....	\$ 43.50	33.87

SFNY0669-002 04/01/2019

	Rates	Fringes
SPRINKLER FITTER.....	\$ 45.42	25.54

SHEE0038-001 07/01/2019

	Rates	Fringes
Sheet metal worker.....	\$ 44.74	42.51

TEAM0456-001 07/01/2018		

HEAVY & HIGHWAY CONSTRUCION

	Rates	Fringes
Truck drivers:		
GROUP 1.....	\$ 43.47	29.17+a
GROUP 2.....	\$ 40.72	29.17+a
GROUP 3.....	\$ 41.17	29.17+a
GROUP 4.....	\$ 41.34	29.17+a
GROUP 5.....	\$ 40.72	29.17+a
GROUP 6.....	\$ 41.47	29.17+a
GROUP 7.....	\$ 42.22	29.17+a
GROUP 8.....	\$ 42.59	29.17+a
GROUP 9.....	\$ 42.09	29.17+a
GROUP 10.....	\$ 42.72	29.17+a
GROUP 11.....	\$ 42.47	29.17+a

Hazardous/Toxic Waste - An additional 20% of the basic hourly wage rate set forth in this wage determination.

CLASSIFICATION DESCRIPTIONS

GROUP 1: Lowboy (carrying equipment)
 GROUP 2: Straight jobs: 6-Wheeler, 10-Wheeler, A-Frame Trucks (inside cab), Winch Truck (inside cab), Dynamite Truck, Seeding Truck, Mulching Truck, Agitator Truck, Water Truck, Cement Trucks (all types), Suburbans, Station Wagons, Cars, Pickups.
 GROUP 3: Fuel and tire trucks.
 GROUP 4: Tractor trailers (all types)
 GROUP 5: 14 Wheeler
 GROUP 6: Athey wagon, Belly dumps, Articulated Dumps, Trailer wagons.
 GROUP 7: Darts.
 GROUP 8: RXS
 GROUP 9: Off Road Equipment (Under 40 Tons): Euclid
 GROUP 10: Off Road Equipment (Over 40 Tons) Euclid, DJB
 GROUP 11: Off Road Equipment (Under 40 Tons) DJB

a. PAID HOLIDAYS: New Year's Day, Lincoln's Birthday, President's Day, Decoration Day, Independence Day, Labor Day, November Election Day, Thanksgiving Day, Day after Thanksgiving and Christmas Day, provided employee works two or more days in the calendar week in which the holiday falls.

PAID VACATION: 4 weeks paid vacation after 20 years of service and 30 days of employment in current contract year; 3 weeks after 10 years of seniority service; 3 weeks after 10 years and 60 days of employment in contract year, 3 weeks and 1 day after 16 years of seniority service, 3 weeks and 2 days after 17 years of seniority service; 3 weeks and 3 days after 18 years of seniority service; 3 weeks and 4 days after 19 years of seniority service; The third week and every additional day shall be granted to employee in the calendar year in which he completes his tenth or other years of seniority service; 2 weeks after 130 days of employment in the calendar year; 2 weeks after 5 years and 90 days seniority service in calander year; 1

week and 1 additional day for each additional 18 days of employment not exceeding 10 days in any one calendar year after 90 days of employment. Casual employees 1 day for every 18 days of employment. An employee who does not qualify for vacation shall be paid pro rata on a daily basis. Holiday shall be counted as days worked for vacation benefits.

LEGAL SERVICES FUND: Employer shall contribute \$.20 to the fund on the same basis for all hours paid to employees in the form of holiday pay or vacation pay. In addition to the benefits paid for Health-Welfare and Pension for up to 40 hours worked an additional \$.25 is paid for each hour worked. The employer shall grant 3 calendar days off without loss of pay to an employee who has death in his/her immediate family, inclusive of the day of the funeral.

WELDERS - Receive rate prescribed for craft performing operation to which welding is incidental.

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Note: Executive Order (EO) 13706, Establishing Paid Sick Leave for Federal Contractors applies to all contracts subject to the Davis-Bacon Act for which the contract is awarded (and any solicitation was issued) on or after January 1, 2017. If this contract is covered by the EO, the contractor must provide employees with 1 hour of paid sick leave for every 30 hours they work, up to 56 hours of paid sick leave each year. Employees must be permitted to use paid sick leave for their own illness, injury or other health-related needs, including preventive care; to assist a family member (or person who is like family to the employee) who is ill, injured, or has other health-related needs, including preventive care; or for reasons resulting from, or to assist a family member (or person who is like family to the employee) who is a victim of, domestic violence, sexual assault, or stalking. Additional information on contractor requirements and worker protections under the EO is available at www.dol.gov/whd/govcontracts.

Unlisted classifications needed for work not included within the scope of the classifications listed may be added after award only as provided in the labor standards contract clauses (29CFR 5.5 (a) (1) (ii)).

The body of each wage determination lists the classification and wage rates that have been found to be prevailing for the cited type(s) of construction in the area covered by the wage determination. The classifications are listed in alphabetical order of "identifiers" that indicate whether the particular rate is a union rate (current union negotiated rate for local), a survey rate (weighted average rate) or a union average rate (weighted union average rate).

Union Rate Identifiers

A four letter classification abbreviation identifier enclosed in dotted lines beginning with characters other than "SU" or "UAVG" denotes that the union classification and rate were

prevailing for that classification in the survey. Example: PLUM0198-005 07/01/2014. PLUM is an abbreviation identifier of the union which prevailed in the survey for this classification, which in this example would be Plumbers. 0198 indicates the local union number or district council number where applicable, i.e., Plumbers Local 0198. The next number, 005 in the example, is an internal number used in processing the wage determination. 07/01/2014 is the effective date of the most current negotiated rate, which in this example is July 1, 2014.

Union prevailing wage rates are updated to reflect all rate changes in the collective bargaining agreement (CBA) governing this classification and rate.

Survey Rate Identifiers

Classifications listed under the "SU" identifier indicate that no one rate prevailed for this classification in the survey and the published rate is derived by computing a weighted average rate based on all the rates reported in the survey for that classification. As this weighted average rate includes all rates reported in the survey, it may include both union and non-union rates. Example: SULA2012-007 5/13/2014. SU indicates the rates are survey rates based on a weighted average calculation of rates and are not majority rates. LA indicates the State of Louisiana. 2012 is the year of survey on which these classifications and rates are based. The next number, 007 in the example, is an internal number used in producing the wage determination. 5/13/2014 indicates the survey completion date for the classifications and rates under that identifier.

Survey wage rates are not updated and remain in effect until a new survey is conducted.

Union Average Rate Identifiers

Classification(s) listed under the UAVG identifier indicate that no single majority rate prevailed for those classifications; however, 100% of the data reported for the classifications was union data. EXAMPLE: UAVG-OH-0010 08/29/2014. UAVG indicates that the rate is a weighted union average rate. OH indicates the state. The next number, 0010 in the example, is an internal number used in producing the wage determination. 08/29/2014 indicates the survey completion date for the classifications and rates under that identifier.

A UAVG rate will be updated once a year, usually in January of each year, to reflect a weighted average of the current negotiated/CBA rate of the union locals from which the rate is based.

WAGE DETERMINATION APPEALS PROCESS

1.) Has there been an initial decision in the matter? This can be:

- * an existing published wage determination
- * a survey underlying a wage determination
- * a Wage and Hour Division letter setting forth a position on a wage determination matter

* a conformance (additional classification and rate) ruling

On survey related matters, initial contact, including requests for summaries of surveys, should be with the Wage and Hour Regional Office for the area in which the survey was conducted because those Regional Offices have responsibility for the Davis-Bacon survey program. If the response from this initial contact is not satisfactory, then the process described in 2.) and 3.) should be followed.

With regard to any other matter not yet ripe for the formal process described here, initial contact should be with the Branch of Construction Wage Determinations. Write to:

Branch of Construction Wage Determinations
Wage and Hour Division
U.S. Department of Labor
200 Constitution Avenue, N.W.
Washington, DC 20210

2.) If the answer to the question in 1.) is yes, then an interested party (those affected by the action) can request review and reconsideration from the Wage and Hour Administrator (See 29 CFR Part 1.8 and 29 CFR Part 7). Write to:

Wage and Hour Administrator
U.S. Department of Labor
200 Constitution Avenue, N.W.
Washington, DC 20210

The request should be accompanied by a full statement of the interested party's position and by any information (wage payment data, project description, area practice material, etc.) that the requestor considers relevant to the issue.

3.) If the decision of the Administrator is not favorable, an interested party may appeal directly to the Administrative Review Board (formerly the Wage Appeals Board). Write to:

Administrative Review Board
U.S. Department of Labor
200 Constitution Avenue, N.W.
Washington, DC 20210

4.) All decisions by the Administrative Review Board are final.

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END OF GENERAL DECISION"

SECTION 011000 - SUMMARY

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Special Conditions and other Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. Section Includes:

- 1. Project information.
 - 2. Work under separate contracts.
 - 3. Owner-furnished products.
 - 4. Access to site.
 - 5. Coordination with occupants.
 - 6. Work restrictions.
 - 7. Specification and drawing conventions.

- B. Related Requirements:

- 1. Section 015000 "Temporary Facilities and Controls" for limitations and procedures governing temporary use of Owner's facilities.

1.3 PROJECT INFORMATION

- A. Project Identification: Water Department Building Addition

- 1. Project Location: 40 Columbus Avenue, Mount Kisco NY 10549

- B. Owner: Village/Town of Mount Kisco

- 1. Owner's Representative: Edward Brancati, ebrancati@mountkisco.ny.gov.

- C. Architect: Bar Down Studio, dana@bardownstudio.com.

1.4 WORK UNDER SEPARATE CONTRACTS

- A. General: Cooperate fully with separate contractors so work on those contracts may be carried out smoothly, without interfering with or delaying work under this Contract or other contracts. Coordinate the Work of this Contract with work performed under separate contracts.

- B. Concurrent Work: Owner will award separate contract(s) for the following construction operations at Project site. Those operations will be conducted simultaneously with work under this Contract.

- 1. Fire Alarm Contract: To Perfection Detection for installation of a building-wide monitored fire alarm system.

1.5 OWNER-FURNISHED PRODUCTS

- A. Owner will furnish products indicated. The Work includes receiving, unloading, handling, storing, protecting, and installing Owner-furnished products and making building services connections.
- B. Owner-Furnished Products:
 - 1. Washer and dryer.
 - 2. Lockers.
 - 3. Hoist and trolley.

1.6 ACCESS TO SITE

- A. General: Contractor shall have full use of Project site for construction operations during construction period. Contractor's use of Project site is limited only by Owner's right to perform work or to retain other contractors on portions of Project.
 - 1. Adequate protection shall be provided at the end of every work shift to allow continued use of the facility.
- B. Use of Site: Limit use of Project site to work in areas indicated. Do not disturb portions of Project site beyond areas in which the Work is indicated.
 - 1. Driveways, Walkways and Entrances: Keep driveways and entrances serving premises clear and available to Owner, Owner's employees, and emergency vehicles at all times. Do not use these areas for parking or storage of materials.
 - a. Schedule deliveries to minimize use of driveways and entrances by construction operations.
 - b. Schedule deliveries to minimize space and time requirements for storage of materials and equipment on-site.
- C. Condition of Existing Building: Maintain portions of existing building affected by construction operations in a weathertight condition throughout construction period. Repair damage caused by construction operations.

1.7 OCCUPANTS

- A. Partial Owner Occupancy: Owner will occupy the premises during entire construction period, with the exception of areas under construction. Cooperate with Owner during construction operations to minimize conflicts and facilitate Owner usage. Perform the Work so as not to interfere with Owner's operations. Maintain existing exits unless otherwise indicated.
 - 1. Maintain access to existing walkways, corridors, and other adjacent occupied or used facilities. Do not close or obstruct walkways, corridors, or other occupied or used facilities without written permission from Owner and authorities having jurisdiction.
 - 2. Provide not less than 72 hours' notice to Owner of activities that will affect Owner's operations.

1.8 WORK RESTRICTIONS

- A. Work Restrictions, General: Comply with restrictions on construction operations.
 - 1. Comply with limitations on use of public streets and with other requirements of authorities having jurisdiction.
- B. On-Site Work Hours: Limit work in the existing building to normal business working hours of 6:30 a.m. to 3:30 p.m., Monday through Friday, unless otherwise indicated.

1. Weekend Hours: Saturday 8:30 a.m. – 3:30 p.m upon written request and approval.
 2. Early Morning Hours: 6:30 a.m. – 8:30 a.m.
 3. Hours for Utility Shutdowns: 6:30 a.m. – 8:30 a.m.
- C. Existing Utility Interruptions: Do not interrupt utilities serving facilities occupied by Owner or others unless permitted under the following conditions and then only after providing temporary utility services according to requirements indicated:
1. Notify Owner not less than two days in advance of proposed utility interruptions.
 2. Obtain Owner's written permission before proceeding with utility interruptions.
- D. Noise, Vibration, and Odors: Coordinate operations that may result in high levels of noise and vibration, odors, or other disruption to Owner occupancy with Owner.
1. Notify Owner not less than two days in advance of proposed disruptive operations.
 2. Obtain Owner's written permission before proceeding with disruptive operations.
- E. Controlled Substances: Use of tobacco products and other controlled substances within the existing building is not permitted.
- F. Employee Identification: Provide identification tags for Contractor personnel working on Project site. Require personnel to use identification tags at all times.
- 1.9 SPECIFICATION AND DRAWING CONVENTIONS
- A. Specification Content: The Specifications use certain conventions for the style of language and the intended meaning of certain terms, words, and phrases when used in particular situations. These conventions are as follows:
1. Imperative mood and streamlined language are generally used in the Specifications. The words "shall," "shall be," or "shall comply with," depending on the context, are implied where a colon (:) is used within a sentence or phrase.
 2. Specification requirements are to be performed by Contractor unless specifically stated otherwise.
- B. Division 01 General Requirements: Requirements of Sections in Division 01 apply to the Work of all Sections in the Specifications.
- C. Drawing Coordination: Requirements for materials and products identified on Drawings are described in detail in the Specifications. One or more of the following are used on Drawings to identify materials and products:
1. Terminology: Materials and products are identified by the typical generic terms used in the individual Specifications Sections.
 2. Abbreviations: Materials and products are identified by abbreviations published as part of the U.S. National CAD Standard and scheduled on Drawings.
 3. Keynoting: Materials and products are identified by reference keynotes referencing Specification Section numbers found in this Project Manual.

- 1.10 Schedule Updating: Revise Contractor's construction schedule after each progress meeting where revisions to the schedule have been made or recognized. Issue revised schedule concurrently with the report of each meeting.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION (Not Used)

END OF SECTION 011000

SECTION 012100 - ALLOWANCES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Special Conditions and other Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. Section includes administrative and procedural requirements governing allowances.
 - 1. Certain items are specified in the Contract Documents by allowances. Allowances have been established in lieu of additional requirements and to defer selection of actual materials and equipment to a later date when direction will be provided to Contractor. If necessary, additional requirements will be issued by Change Order.
- B. Types of allowances include the following:
 - 1. Contingency allowances.

1.3 SELECTION AND PURCHASE

- A. At the earliest practical date after award of the Contract, advise Architect of the date when final selection and purchase of each product or system described by an allowance must be completed to avoid delaying the Work.
- B. At Architect's request, obtain proposals for each allowance for use in making final selections. Include recommendations that are relevant to performing the Work.
- C. Purchase products and systems selected by Architect from the designated supplier.

1.4 ACTION SUBMITTALS

- A. Submit proposals for purchase of products or systems included in allowances, in the form specified for Change Orders.

1.5 INFORMATIONAL SUBMITTALS

- A. Submit invoices or delivery slips to show actual quantities of materials delivered to the site for use in fulfillment of each allowance.
- B. Submit time sheets and other documentation to show labor time and cost for installation of allowance items that include installation as part of the allowance.
- C. Coordinate and process submittals for allowance items in same manner as for other portions of the Work.

1.6 COORDINATION

- A. Coordinate allowance items with other portions of the Work. Furnish templates as required to coordinate installation.

1.7 CONTINGENCY ALLOWANCES

- A. Use the contingency allowance only as directed by Architect for Owner's purposes and only by Change Orders that indicate amounts to be charged to the allowance.
- B. Contractor's overhead, profit, and related costs for products and equipment ordered by Owner under the contingency allowance are included in the allowance and are not part of the Contract Sum. These costs include delivery, installation, taxes, insurance, equipment rental, and similar costs.
- C. Change Orders authorizing use of funds from the contingency allowance will include Contractor's related costs and reasonable overhead and profit margins.
- D. At Project closeout, credit unused amounts remaining in the contingency allowance to Owner by Change Order.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine products covered by an allowance promptly on delivery for damage or defects. Return damaged or defective products to manufacturer for replacement.

3.2 PREPARATION

- A. Coordinate materials and their installation for each allowance with related materials and installations to ensure that each allowance item is completely integrated and interfaced with related work.

3.3 SCHEDULE OF ALLOWANCES

- A. General Construction Contract (GC)
 - 1. Contingency Allowance No. GC-1, Contingency Allowance: Include a contingency allowance of \$100,000.00 for use according to Owner's written instructions.
- B. Electrical Construction Contract (EC)
 - 1. Contingency Allowance No. GC-1, Contingency Allowance: Include a contingency allowance of \$20,000.00 for use according to Owner's written instructions.
- C. Plumbing Construction Contract (PC)
 - 1. Contingency Allowance No. GC-1, Contingency Allowance: Include a contingency allowance of \$20,000.00 for use according to Owner's written instructions.

END OF SECTION 012100

SECTION 012300 - ALTERNATES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Special Conditions and other Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. This Section includes administrative and procedural requirements for alternates.

1.3 DEFINITIONS

- A. Alternate: An amount proposed by bidders and stated on the Bid Form for certain work defined in the Bidding Requirements that may be added to or deducted from the Base Bid amount if Owner decides to accept a corresponding change either in the amount of construction to be completed or in the products, materials, equipment, systems, or installation methods described in the Contract Documents.
 - 1. The cost or credit for each alternate is the net addition to or deduction from the Contract Sum to incorporate alternate into the Work. No other adjustments are made to the Contract Sum.

1.4 PROCEDURES

- A. Coordination: Modify or adjust affected adjacent work as necessary to completely integrate work of the alternate into Project.
 - 1. Include as part of each alternate, miscellaneous devices, accessory objects, and similar items incidental to or required for a complete installation whether or not indicated as part of alternate.
- B. Notification: Immediately following award of the Contract, notify each party involved, in writing, of the status of each alternate. Indicate if alternates have been accepted, rejected, or deferred for later consideration. Include a complete description of negotiated modifications to alternates.
- C. Execute accepted alternates under the same conditions as other work of the Contract.
- D. Schedule: A Schedule of Alternates is included at the end of this Section identifying each Alternate by number and describes basic changes to be incorporated into the Work only when that Alternate is made part of the Work by specific provision in the Owner/Contractor Agreement. Specification Sections referenced in schedule contain requirements for materials necessary to achieve the work described under each alternate.

PART 2 - PRODUCTS (Not Used)

PART 3 - SCHEDULE OF ALTERNATES

- A. Alternate 01: Mezzanine at Existing Building
 - 1. Alternate shall include all material and labor to construct mezzanine including but not limited to:
 - a. Steel stair and rails, precast plank floor, Door 202.2, and second floor shelving.

END OF SECTION 012300

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SECTION 012500 - SUBSTITUTION PROCEDURES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Special Conditions and other Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. Section includes administrative and procedural requirements for substitutions.
- B. The Architect will consider requests for substitutions prior to award of the Contract
- C. Related sections:
 - 1. Division 01 Section "Allowances" for products selected under an allowance.
 - 2. Division 01 Section "Product Requirements" for requirements for submitting comparable product submittals for products by listed manufacturers.
 - 3. Divisions 02 through 32 Sections for specific requirements and limitations for substitutions.

1.3 DEFINITIONS

- A. Substitutions: Changes in products, materials, equipment, and methods of construction from those required by the Contract Documents and proposed by Contractor.
 - 1. Substitutions for Cause: Changes proposed by Contractor that are required due to changed Project conditions, such as unavailability of product, regulatory changes, or unavailability of required warranty terms.
 - 2. Substitutions for Convenience: Changes proposed by Contractor or Owner that are not required in order to meet other Project requirements but may offer advantage to Contractor or Owner.

1.4 SUBMITTALS

- A. Substitution Requests: Submit three copies of each request for consideration. Identify product or fabrication or installation method to be replaced. Include Specification Section number and title and Drawing numbers and titles.
 - 1. Substitution Request Form: Use facsimile of form provided in the Project Manual.
 - 2. Documentation: Show compliance with requirements for substitutions and the following, as applicable:
 - a. Statement indicating why specified product or fabrication or installation cannot be provided, if applicable.
 - b. Coordination information, including a list of changes or modifications needed to other parts of the Work and to construction performed by Owner and separate contractors that will be necessary to accommodate proposed substitution.
 - c. Detailed comparison of significant qualities of proposed substitution with those of the Work specified. Include annotated copy of applicable specification section. Significant qualities may include attributes such as performance, weight, size, durability, visual effect, sustainable design characteristics, warranties, and specific features and requirements indicated. Indicate deviations, if any, from the Work specified.
 - d. Product Data, including drawings and descriptions of products and fabrication and installation procedures.
 - e. Samples, where applicable or requested.

- f. Certificates and qualification data, where applicable or requested.
 - g. List of similar installations for completed projects with project names and addresses and names and addresses of architects and owners.
 - h. Material test reports from a qualified testing agency indicating and interpreting test results for compliance with requirements indicated.
 - i. Detailed comparison of Contractor's construction schedule using proposed substitution with products specified for the Work, including effect on the overall Contract Time. If specified product or method of construction cannot be provided within the Contract Time, include letter from manufacturer, on manufacturer's letterhead, stating date of receipt of purchase order, lack of availability, or delays in delivery.
 - j. Cost information, including a proposal of change, if any, in the Contract Sum.
 - k. Contractor's certification that proposed substitution complies with requirements in the Contract Documents except as indicated in substitution request, is compatible with related materials, and is appropriate for applications indicated.
 - l. Contractor's waiver of rights to additional payment or time that may subsequently become necessary because of failure of proposed substitution to produce indicated results.
- 3. Architect's Action: If necessary, Architect will request additional information or documentation for evaluation receipt of a request for substitution. Architect will notify Contractor of acceptance or rejection of proposed substitution within 15 days of receipt of request, or seven days of receipt of additional information or documentation, whichever is later.
 - a. Forms of Acceptance: Change Order, Construction Change Directive, or Architect's Supplemental Instructions for minor changes in the Work.
 - b. Use product specified if Architect does not issue a decision on use of a proposed substitution within time allocated.
- B. The burden of proof to provide product equivalence rests on the Contractor.
- C. The Contractor shall submit three (3) copies of the "Request for Substitution Form" for consideration including all required information.
- D. The Contractor shall use the form included in this section.
- E. All forms shall be type written,

1.5 QUALITY ASSURANCE

- A. Compatibility of Substitutions: Investigate and document compatibility of proposed substitution with related products and materials. Engage qualified testing agency to perform compatibility tests recommended by manufacturers.

1.6 PROCEDURES

- A. Coordination: Modify or adjust affected work as necessary to integrate work of the approved substitutions.

PART 2 - PRODUCTS

2.1 SUBSTITUTIONS

- A. Substitutions for Cause: Submit requests for substitution immediately upon discovery of need for change, but not later than thirty 30 days prior to time required for preparation and review of related submittals, or from the date if Notice to Proceed.
 - 1. Conditions: Architect will consider Contractor's request for substitution when the following conditions are satisfied. If the following conditions are not satisfied, Architect will return requests without action, except to record noncompliance with these requirements:

- a. Requested substitution is consistent with the Contract Documents and will produce indicated results.
 - b. Substitution request is fully documented and properly submitted.
 - c. Requested substitution will not adversely affect Contractor's construction schedule.
 - d. Requested substitution has received necessary approvals of authorities having jurisdiction.
 - e. Requested substitution is compatible with other portions of the Work.
 - f. Requested substitution has been coordinated with other portions of the Work.
 - g. Requested substitution provides specified warranty.
 - h. If requested substitution involves more than one contractor, requested substitution has been coordinated with other portions of the Work, is uniform and consistent, is compatible with other products, and is acceptable to all contractors involved.
 - i. If requested substitution is accepted the Contractor waives all claims of additional costs or contract time extensions.
- B. Substitutions for Convenience: Architect will consider requests for substitution if received within 60 days after the Notice to Proceed the Notice of Award. Requests received after that time may be considered or rejected at discretion of Architect.
- 1. Conditions: Architect will consider Contractor's request for substitution when the following conditions are satisfied. If the following conditions are not satisfied, Architect will return requests without action, except to record noncompliance with these requirements:
 - a. Requested substitution offers Owner a substantial advantage in cost, time, energy conservation, or other considerations, after deducting additional responsibilities Owner must assume. Owner's additional responsibilities may include compensation to Architect for redesign and evaluation services, increased cost of other construction by Owner, and similar considerations.
 - b. Requested substitution does not require extensive revisions to the Contract Documents.
 - c. Requested substitution is consistent with the Contract Documents and will produce indicated results.
 - d. Substitution request is fully documented and properly submitted.
 - e. Requested substitution will not adversely affect Contractor's construction schedule.
 - f. Requested substitution has received necessary approvals of authorities having jurisdiction.
 - g. Requested substitution is compatible with other portions of the Work.
 - h. Requested substitution has been coordinated with other portions of the Work.
 - i. Requested substitution provides specified warranty.
 - j. If requested substitution involves more than one contractor, requested substitution has been coordinated with other portions of the Work, is uniform and consistent, is compatible with other products, and is acceptable to all contractors involved.
 - k. If requested substitution is accepted the Contractor waives all claims of additional costs or contract time extensions.
 - l. The Contractor accepts that they may be required to reimburse the Owner and/or Architect for review or redesign services associated with re-approval by authorities.
 - m. The Contractor shall reimburse the Owner for all additional architectural services claimed by the Architect, or on behalf of his engineers, for extra services associated with the review of the Contractor's substitution item since it could have been originally included in the Architect's professional architectural services agreement. Reimbursement shall be based on the man-hours expended, not current billing rates.
- 2. Substitutions will not be considered when they are indicated or implied on Contractor shop drawings or product data submittals, without separate written request, or when acceptance will require revisions to the Contract Documents.

PART 3 - EXECUTION (Not Used)

END OF SECTION 012500



SUBSTITUTION REQUEST FORM

Project: _____ Substitution Request Number: _____

From: _____
To: _____ Date: _____

A/E Project Number: _____
Re: _____ Contract For: _____

Specification Title: _____ Description: _____
Section: _____ Page: _____ Article/Paragraph: _____

Proposed Substitution: _____

Manufacturer: _____ Address: _____ Phone: _____

Trade Name: _____ Model No.: _____

Installer: _____ Address: _____ Phone: _____

History: ☐ New product ☐ 2-5 years old ☐ 5-10 years old ☐ More than 10 years old

Differences between proposed substitution and specified product: _____

☐ Point-by-point comparative data attached - REQUIRED BY A/E

Reason for not providing specified item: _____

Similar Installation:

Project: _____ Architect: _____

Address: _____ Owner: _____

Date Installed: _____

Proposed substitution affects other parts of Work: ☐ No ☐ Yes; explain _____

Savings to Owner for accepting substitution: _____ (\$ _____).

Proposed substitution changes Contract Time: ☐ No ☐ Yes [Add] [Deduct] _____ days.

Supporting Data Attached: ☐ Drawings ☐ Product Data ☐ Samples ☐ Tests ☐ Reports ☐

(Continued)

The Undersigned certifies:

- Proposed substitution has been fully investigated and determined to be equal or superior in all respects to specified product.
- Same warranty will be furnished for proposed substitution as for specified product.
- Same maintenance service and source of replacement parts, as applicable, is available.
- Proposed substitution will have no adverse effect on other trades and will not affect or delay progress schedule.
- Cost data as stated above is complete. Claims for additional costs related to accepted substitution which may subsequently become apparent are to be waived.
- Proposed substitution does not affect dimensions and functional clearances.
- Payment will be made for changes to building design, including A/E design, detailing, and construction costs caused by the substitution.
- Coordination, installation, and changes in the Work as necessary for accepted substitution will be complete in all respects.

Submitted by: _____

Signed by: _____

Firm: _____

Address: _____

Telephone: _____

Attachments: _____

A/E's REVIEW AND ACTION

- ☐ Substitution approved - Make submittals in accordance with Specification Section 01330.
- ☐ Substitution approved as noted - Make submittals in accordance with Specification Section 01330.
- ☐ Substitution rejected - Use specified materials.
- ☐ Substitution Request received too late - Use specified materials.

Signed by:

Date:

Additional Comments: ☐ Contractor ☐ Subcontractor ☐ Supplier ☐ Manufacturer ☐ A/E ☐ _____

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SECTION 012600 - CONTRACT MODIFICATION PROCEDURES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Special Conditions and other Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. Section includes administrative and procedural requirements for handling and processing Contract modifications.
- B. Related Requirements:
 - 1. Section 012500 "Substitution Procedures" for administrative procedures for handling requests for substitutions made after the Contract award.

1.3 MINOR CHANGES IN THE WORK

- A. Architect will issue supplemental instructions authorizing minor changes in the Work, not involving adjustment to the Contract Sum or the Contract Time, on AIA Document G710, "Architect's Supplemental Instructions."

1.4 PROPOSAL REQUESTS

- A. Owner-Initiated Proposal Requests: Architect will issue a detailed description of proposed changes in the Work that may require adjustment to the Contract Sum or the Contract Time. If necessary, the description will include supplemental or revised Drawings and Specifications.
 - 1. Work Change Proposal Requests issued by Architect are not instructions either to stop work in progress or to execute the proposed change.
 - 2. Within time specified in Proposal Request after receipt of Proposal Request, submit a quotation estimating cost adjustments to the Contract Sum and the Contract Time necessary to execute the change.
 - a. Include a list of quantities of products required or eliminated and unit costs, with total amount of purchases and credits to be made. If requested, furnish survey data to substantiate quantities.
 - b. Indicate applicable taxes, delivery charges, equipment rental, and amounts of trade discounts.
 - c. Include costs of labor and supervision directly attributable to the change.
 - d. Include an updated Contractor's construction schedule that indicates the effect of the change, including, but not limited to, changes in activity duration, start and finish times, and activity relationship. Use available total float before requesting an extension of the Contract Time.
 - e. Quotation Form: Use forms acceptable to Architect.
- B. Contractor-Initiated Proposals: If latent or changed conditions require modifications to the Contract, Contractor may initiate a claim by submitting a request for a change to Architect.
 - 1. Include a statement outlining reasons for the change and the effect of the change on the Work. Provide a complete description of the proposed change. Indicate the effect of the proposed change on the Contract Sum and the Contract Time.

2. Include a list of quantities of products required or eliminated and unit costs, with total amount of purchases and credits to be made. If requested, furnish survey data to substantiate quantities.
3. Indicate applicable taxes, delivery charges, equipment rental, and amounts of trade discounts.
4. Include costs of labor and supervision directly attributable to the change.
5. Include an updated Contractor's construction schedule that indicates the effect of the change, including, but not limited to, changes in activity duration, start and finish times, and activity relationship. Use available total float before requesting an extension of the Contract Time.
6. Comply with requirements in Section 012500 "Substitution Procedures" if the proposed change requires substitution of one product or system for product or system specified.

- C. Proposal Request Form: Use AIA Document G709 for Proposal Requests or forms approved by the Architect and Construction Manager, clearly identifying the change in condition.

1.5 ADMINISTRATIVE CHANGE ORDERS

- A. Allowance Adjustment: See Section 012100 "Allowances" for administrative procedures for preparation of Change Order Proposal for adjusting the Contract Sum to reflect actual costs of allowances.

1.6 CHANGE ORDER PROCEDURES

- A. On Owner's approval of a Work Changes Proposal Request, Architect will issue a Change Order for signatures of Owner and Contractor on AIA Document G701.

1. All quotations shall be accompanied by a complete itemization of costs, including labor (type, quantity and unit cost per hour), materials (type, quantity and unit cost) and copies of written quotations from subcontractors and suppliers itemized in the same manner.
 - a. Overhead shall be deemed to include the cost of insurance, bonds, and similar contract requirements.
 - b. Indicate applicable delivery charges, equipment rental, and amounts of trade discounts.
2. The combined overhead and profit included in the total cost to the Owner shall be based on the following schedule:
 - a. Prime Contractor: Work performed by the Prime Contractor's own forces, markup shall not exceed a total of 15 percent broken down with 7.5 percent for the value of materials and labor (L/M) and 7.5 percent for the value of overhead and profit (O&P).
 - b. Prime Contractor's Subcontractor: Work performed by the Subcontractor's own forces, markup shall not exceed a total of 10 percent broken down with 5 percent for the value of materials and labor (L/M) and 5 percent for the value of overhead and profit (O&P). For the Prime Contractor, for Work performed by that Prime Contractor's Subcontractor, mark-up shall not exceed 5 percent for the value of overhead and profit.
 - c. Sub-subcontractor: Work performed by Sub-subcontractor's own forces, markup shall not exceed 5 percent for the value of materials, labor, overhead and profit. For the Subcontractor, for Work performed by Sub-subcontractor, markup shall not exceed 5 percent for the value of overhead and profit. For the Prime Contractor, for Work performed by Sub-subcontractor, markup shall not exceed 5 percent for the value of overhead and profit.

1.7 CONSTRUCTION CHANGE DIRECTIVE

- A. Construction Change Directive: Architect may issue a Construction Change Directive on AIA Document G714. Construction Change Directive instructs Contractor to proceed with a change in the Work, for subsequent inclusion in a Change Order.

1. Construction Change Directive contains a complete description of change in the Work. It also designates method to be followed to determine change in the Contract Sum or the Contract Time.

- B. Documentation: Maintain detailed records on a time and material basis of work required by the Construction Change Directive.

1. After completion of change, submit an itemized account and supporting data necessary to substantiate cost and time adjustments to the Contract.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION (Not Used)

END OF SECTION 012600

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SECTION 012900 - PAYMENT PROCEDURES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Special Conditions and other Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. This Section specifies administrative and procedural requirements necessary to prepare and process Applications for Payment.

1.3 DEFINITIONS

- A. Schedule of Values: A statement furnished by Contractor allocating portions of the Contract Sum to various portions of the Work and used as the basis for reviewing Contractor's Applications for Payment.

1.4 SCHEDULE OF VALUES

- A. The Contractor shall allocate portions of the Contract Sum to labor, material and major equipment costs to various portions of the Work as indicated on the form.
- B. Format and Content: Format and Content: Use the Project Manual table of contents as a guide to establish line items for the Schedule of Values. Provide at least one line item for each Section under Division 01, including, but not limited to, those indicated within Prime Contract scope under Division 01 Section 011000 "Summary."

1. Arrange the Schedule of Values with separate columns to indicate the following for each item listed:
 - a. Dollar value of the following, as a percentage of the Contract Sum to nearest one-hundredth percent, adjusted to total 100 percent.
 - 1) Labor.
 - 2) Materials.
 - 3) Major Equipment.
2. Provide a breakdown of Contract Sum in enough detail to facilitate continued evaluation of Applications for Payment and progress reports. Provide multiple line items for principal subcontract amounts in excess of five percent of Contract Sum.
3. Schedule a separate line item in the Schedule of Values for each part of the work related to General Requirements as follows:
 - a. Performance and Payment Bonds.
 - b. Project Insurance.
 - c. Mobilization & Demobilization.
 - d. Field supervision and layout.
 - e. Temporary facilities.
 - f. Submittals: Schedule 2% of total Contract amount for line item.
 - g. Meeting Attendance: Schedule 1% of total Contract amount for line item. This value will be divided by the monthly duration of the project as identified in the Milestone Schedule.
 - h. Project Closeout: Schedule 1% of total Contract amount for line item.
 - i. Record Drawings and Construction Progress Documentation: Schedule 1% of total Contract amount for line item.
 - j. Punch List: Schedule 1.5% of total Contract amount for line item.
 - k. Clean up: Schedule 1% of total Contract amount for line item.
 - l. Testing or Balancing (if applicable).
 - m. System Commissioning (if applicable).

- n. Allowances: Provide a separate line item for each Contract Allowance (if applicable). Add each Allowance Disbursement as a sub-line item as cumulatively issued/approved through duration of project.
 - o. Alternates: Provide a separate line item for each Alternate (if applicable).
 - p. Change Orders: On separate G703 sheet, add each Change Order for the Prime Contract, as cumulatively issued/approved through duration of project.
- 4. Round amounts to nearest whole dollar; total shall equal the Contract Sum.
 - a. Show total costs including overhead and profit.
 - b. Percentage of total Contract Sum adjusted to equal 100 percent.
 - 5. Allowances: If applicable, provide a separate line item in the schedule of values for each allowance.
 - 6. Each item in the Schedule of Values and Applications for Payment shall be complete. Include total cost and proportionate share of general overhead and profit for each item, except Lump Sum and Quantity of Work Allowances.
 - 7. After review by the Architect, revise and resubmit Schedule of Values if required by the Architect as many times as required until approval by the Architect is received.

1.5 MONTHLY APPLICATIONS FOR PAYMENTS

- A. Each Application for Payment shall be consistent with previous applications and payments as approved by the Owner and paid for by the Owner.
 - 1. Initial Application for Payment, the Owner shall not approve any billing request until the Schedule of Values and Construction Schedule is approved.
 - 2. Payment for allowance items and stored materials involve additional requirements.
 - 3. Application for Payment at time of Substantial Completion, and final Application for Payment involve additional requirements.
- B. Payment Application Times: Billing request may be submitted to the Owner once each month.
 - 1. Submit Contractor's Pencil Copy billing request seven days prior to due date for review by the Owner.
- C. Payment Forms: All forms and documents required for payment are included in the Project Manual.
 - 1. If applicable, the Contractor shall obtain from the Owner, an Allowance Notice to Proceed for Allowance items and an Agreement for Materials Stored Off-Site prior to billing.
 - 2. Submit Contractor's Pencil Copy billing request to the Architect for approval.
- D. Procedure: Upon the Architect's approval of the Contractor's Pencil Copy billing request, payment documents will be provided to the Contractor. The Contractor shall complete each document and submit two copies of all documents with original signature & notary where indicated on forms, the following:
 - 1. Application for Payment.
 - 2. Waiver of Mechanic's Liens.
 - 3. Contractor and Subcontractor Certifications Form
 - 4. Contractor's Certified Payroll Form.
 - 5. Allowance Allocation Form, if applicable
- E. Payroll Forms: The Contractor and all Sub-contractors to the Contractor shall submit original copies of the Contractor and Subcontractor Certifications Form and Contractor's Certified Payroll Form.
- F. Transmittal: Sign and notarize where indicated on each document, submit two original copies to Owner.
 - 1. Transmit each copy with a transmittal form listing attachments and recording appropriate information about payment.
- G. Liens: Upon receipt of a lien, the Owner shall deduct a sum of one and one-half (1.5) times the amount stated to be due in the notice of lien from the application for payment. Upon official receipt of discharge of lien, the Owner shall provide payment as stated above.

1.6 APPLICATION FOR PAYMENT AT SUBSTANTIAL COMPLETION

- A. Preliminary Procedure: After issuance of the executed Notice of Substantial Completion, submit a Contractor's Pencil Copy billing request showing 100 percent completion for portion of the Work claimed as complete at Substantial Completion.
 - 1. Submit Contractor's Pencil Copy billing request to the Owner for approval.
- B. Reduction of Retainage: The Contractor may request a reduction of retainage upon Substantial Completion of the Work or when a phase of Work is accepted by the Owner.
 - 1. The Contractor submits to the Owner a written request to have retainage reduced and provides a cost estimate and schedule to complete all remaining Work items indicated on the executed Notice of Substantial Completion.
 - 2. The Owner shall deduct from the sum two times the value of remaining items of Work to be completed or corrected.
 - 3. The Owner will provide the Contractor with General Release and Consent of Surety forms based on the amount of reduction. The Contractor shall complete each document and submit three copies of each document with original signature & notary where indicated on forms.
 - 4. The Owner shall hold payment until receipt of completed General Release and Consent of Surety forms.
- C. Procedures: Upon the Owner approval of Contractor's Pencil Copy billing request, payment documents will be provided to the Contractor. The Contractor shall complete each document and submit two copies of all documents with original signature & notary where indicated on forms, the following:
 - 1. Application for Payment.
 - 2. Compliance Report.
 - 3. Contractor and Subcontractor Certifications Form (NYS Department of Labor Form PW12).
 - 4. Contractor's Certified Payroll Form.
- D. Payroll Forms: The Contractor and all Sub-contractors to the Contractor shall submit original copies of the Contractor and Subcontractor Certifications Form and Contractor's Certified Payroll Form.
- E. Transmittal: Sign and notarize where indicated on each document, submit two original copies to Owner.
- F. Payment: Timely payment by the Owner to the Contractor is governed by Section 2880 of the Public Authorities Law.
- G. Liens: Upon receipt of a lien, the Owner shall deduct a sum of one and one-half (1 ½) times the amount stated to be due in the notice of lien from the application for payment. Upon official receipt of discharge of lien, the Owner shall provide payment as stated above.
- H. Final Payment Application: Submit final Application for Payment with executed releases and supporting documentation not previously submitted and accepted, including, but not limited, to the following:
 - 1. Evidence of completion of Project closeout requirements.
 - 2. Insurance certificates for products and completed operations where required and proof that taxes, fees, and similar obligations were paid.
 - 3. Updated final statement, accounting for final changes to the Contract Sum.
 - 4. AIA Document G706, "Contractor's Affidavit of Payment of Debts and Claims."
 - 5. AIA Document G706A, "Contractor's Affidavit of Release of Liens."
 - 6. AIA Document G707, "Consent of Surety to Final Payment."
 - 7. Evidence that claims have been settled.
- I. Full and Final Payment will not be made until the following have been supplied, approved and accepted by the Owner and Architect.
 - 1. The required number of copies of all written guarantees, warranties, bonds, operating and maintenance manuals, and test results.

2. Documentation that all verbal and written instructions and training sessions required by the Contract has been completed.
3. The required number of copies of all Project Record Documents ("as-built" drawings) has been received.
4. All materials and equipment required as stock is delivered.
5. Any other requirement of the Contract Documents which remains outstanding.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION (Not Used)

END OF SECTION 012900

SECTION 013100 - PROJECT MANAGEMENT AND COORDINATION

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Special Conditions and other Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. Section includes administrative provisions for coordinating construction operations on Project including, but not limited to, the following:
 - 1. General coordination procedures.
 - 2. Coordination drawings.
 - 3. Requests for Information (RFIs).
 - 4. Project meetings.
- B. Each contractor shall participate in coordination requirements. Certain areas of responsibility are assigned to a specific contractor.
- C. Related Requirements:
 - 1. Section 011200 "Multiple Contract Summary" for a description of the division of work among separate contracts and responsibility for coordination activities not in this Section.
 - 2. Section 013200 "Construction Progress Documentation" for preparing and submitting Contractor's construction schedule.
 - 3. Section 017300 "Execution" for procedures for coordinating general installation and field-engineering services, including establishment of benchmarks and control points.
 - 4. Section 017700 "Closeout Procedures" for coordinating closeout of the Contract.

1.3 DEFINITIONS

- A. RFI: Request from Owner, Architect, or Contractor seeking information required by or clarifications of the Contract Documents.

1.4 INFORMATIONAL SUBMITTALS

- A. Subcontract List: Prepare a written summary identifying individuals or firms proposed for each portion of the Work, including those who are to furnish products or equipment fabricated to a special design. Include the following information in tabular form:
 - 1. Name, address, and telephone number of entity performing subcontract or supplying products.
 - 2. Number and title of related Specification Section(s) covered by subcontract.
 - 3. Drawing number and detail references, as appropriate, covered by subcontract.
- B. Key Personnel Names: Within 15 days of starting construction operations, submit a list of key personnel assignments, including superintendent and other personnel in attendance at Project site. Identify individuals and their duties and responsibilities; list addresses and telephone numbers, including home, office, and cellular telephone numbers and e-mail addresses. Provide names, addresses, and telephone numbers of individuals assigned as alternates in the absence of individuals assigned to Project.

1.5 GENERAL COORDINATION PROCEDURES

- A. Coordination: Each contractor shall coordinate its construction operations with those of other contractors and entities to ensure efficient and orderly installation of each part of the Work. Each contractor shall coordinate its operations with operations, included in different Sections, that depend on each other for proper installation, connection, and operation.
 - 1. Schedule construction operations in sequence required 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 with other contractors to ensure maximum performance and accessibility for required maintenance, service, and repair.
 - 3. Make adequate provisions to accommodate items scheduled for later installation.
- B. Prepare memoranda for distribution to each party involved, outlining special procedures required for coordination. Include such items as required notices, reports, and list of attendees at meetings.
 - 1. Prepare similar memoranda for Owner and separate contractors if coordination of their Work is required.
- C. Administrative Procedures: Coordinate scheduling and timing of required administrative procedures with other construction activities and activities of other contractors to avoid conflicts and to ensure orderly progress of the Work. Such administrative activities include, but are not limited to, the following:
 - 1. Preparation of Contractor's construction schedule.
 - 2. Preparation of the schedule of values.
 - 3. Installation and removal of temporary facilities and controls.
 - 4. Delivery and processing of submittals.
 - 5. Progress meetings.
 - 6. Preinstallation conferences.
 - 7. Project closeout activities.
 - 8. Startup and adjustment of systems.
- D. Conservation: Coordinate construction activities to ensure that operations are carried out with consideration given to conservation of energy, water, and materials. Coordinate use of temporary utilities to minimize waste.
 - 1. Salvage materials and equipment involved in performance of, but not actually incorporated into, the Work. See other Sections for disposition of salvaged materials that are designated as Owner's property.

1.6 COORDINATION DRAWINGS

- A. Coordination Drawings, General: Prepare coordination drawings according to requirements in individual Sections, and additionally where installation is not completely shown on Shop Drawings, where limited space availability necessitates coordination, or if coordination is required to facilitate integration of products and materials fabricated or installed by more than one entity.
 - 1. Content: Project-specific information, drawn accurately to a scale large enough to indicate and resolve conflicts. Do not base coordination drawings on standard printed data. Include the following information, as applicable:
 - a. Use applicable Drawings as a basis for preparation of coordination drawings. Prepare sections, elevations, and details as needed to describe relationship of various systems and components.
 - b. Coordinate the addition of trade-specific information to the coordination drawings by multiple contractors in a sequence that best provides for coordination of the information and resolution of conflicts between installed components before submitting for review.

- c. Indicate functional and spatial relationships of components of architectural, structural, civil, mechanical, and electrical systems.
- d. Indicate space requirements for routine maintenance and for anticipated replacement of components during the life of the installation.
- e. Show location and size of access doors required for access to concealed dampers, valves, and other controls.
- f. Indicate required installation sequences.
- g. Indicate dimensions shown on the Drawings. Specifically note dimensions that appear to be in conflict with submitted equipment and minimum clearance requirements. Provide alternate sketches to Architect indicating proposed resolution of such conflicts. Minor dimension changes and difficult installations will not be considered changes to the Contract.

B. Coordination Drawing Organization: Organize coordination drawings as follows:

1. Floor Plans and Reflected Ceiling Plans: Show architectural and structural elements, and mechanical, plumbing, fire-protection, fire-alarm, and electrical Work. Show locations of visible ceiling-mounted devices relative to acoustical ceiling grid. Supplement plan drawings with section drawings where required to adequately represent the Work.
2. Plenum Space: Indicate subframing for support of ceiling and wall systems, mechanical and electrical equipment, and related Work. Locate components within ceiling plenum to accommodate layout of light fixtures indicated on Drawings. Indicate areas of conflict between light fixtures and other components.
3. Mechanical Rooms: Provide coordination drawings for mechanical rooms showing plans and elevations of mechanical, plumbing, fire-protection, fire-alarm, and electrical equipment.
4. Structural Penetrations: Indicate penetrations and openings required for all disciplines.
5. Slab Edge and Embedded Items: Indicate slab edge locations and sizes and locations of embedded items for metal fabrications, sleeves, anchor bolts, bearing plates, angles, door floor closers, slab depressions for floor finishes, curbs and housekeeping pads, and similar items.
6. Mechanical and Plumbing Work: Show the following:
 - a. Sizes and bottom elevations of ductwork, piping, and conduit runs, including insulation, bracing, flanges, and support systems.
 - b. Dimensions of major components, such as dampers, valves, diffusers, access doors, cleanouts and electrical distribution equipment.
 - c. Fire-rated enclosures around ductwork.
7. Electrical Work: Show the following:
 - a. Runs of vertical and horizontal conduit 1-1/4 inches (32 mm) in diameter and larger.
 - b. Light fixture, exit light, emergency battery pack, smoke detector, and other fire-alarm locations.
 - c. Panel board, switch board, switchgear, transformer, busway, generator, and motor control center locations.
 - d. Location of pull boxes and junction boxes, dimensioned from column center lines.
8. Review: Architect will review coordination drawings to confirm that the Work is being coordinated, but not for the details of the coordination, which are Contractor's responsibility. If Architect determines that coordination drawings are not being prepared in sufficient scope or detail, or are otherwise deficient, Architect will so inform Contractor, who shall make changes as directed and resubmit.

C. Coordination Digital Data Files: Prepare coordination digital data files according to the following requirements:

1. File Preparation Format: Same digital data software program, version, and operating system as original Drawings.
2. File Submittal Format: Submit or post coordination drawing files using Portable Data File (PDF) format.
3. Architect will furnish Contractor one set of digital data files of Drawings for use in preparing coordination digital data files.
 - a. Architect makes no representations as to the accuracy or completeness of digital data files as they relate to Drawings.
 - b. Digital Data Software Program: Drawings are available in AutoCad .dwg format.

- c. Contractor shall execute a data licensing agreement in the form of Agreement form acceptable to Architect. Agreement may include fees for preparation of files.

1.7 REQUESTS FOR INFORMATION (RFIs)

- A. General: Immediately on discovery of the need for additional information or interpretation of the Contract Documents, Contractor shall prepare and submit an RFI in the form specified.
 1. Architect will return RFIs submitted to Architect by other entities controlled by Contractor with no response.
 2. Coordinate and submit RFIs in a prompt manner so as to avoid delays in Contractor's work or work of subcontractors.
- B. Content of the RFI: Include a detailed, legible description of item needing information or interpretation and the following:
 1. Date.
 2. Name of Contractor.
 3. Name of Architect.
 4. RFI number, numbered sequentially.
 5. RFI subject.
 6. Specification Section number and title and related paragraphs, as appropriate.
 7. Drawing number and detail references, as appropriate.
 8. Field dimensions and conditions, as appropriate.
 9. Contractor's suggested resolution. If Contractor's suggested resolution impacts the Contract Time or the Contract Sum, Contractor shall state impact in the RFI.
 10. Contractor's signature.
 11. Attachments: Include sketches, descriptions, measurements, photos, Product Data, Shop Drawings, coordination drawings, and other information necessary to fully describe items needing interpretation.
 - a. Include dimensions, thicknesses, structural grid references, and details of affected materials, assemblies, and attachments on attached sketches.
- C. RFI Forms: Form bound in Project Manual.
 1. Attachments shall be electronic files in Adobe Acrobat PDF format.
- D. Architect's Action: Architect will review each RFI, determine action required, and respond. Allow seven working days for Architect's response for each RFI. RFIs received by Architect after 1:00 p.m. will be considered as received the following working day.
 1. The following Contractor-generated RFIs will be returned without action:
 - a. Requests for approval of submittals.
 - b. Requests for approval of substitutions.
 - c. Requests for approval of Contractor's means and methods.
 - d. Requests for coordination information already indicated in the Contract Documents.
 - e. Requests for adjustments in the Contract Time or the Contract Sum.
 - f. Requests for interpretation of Architect's actions on submittals.
 - g. Incomplete RFIs or inaccurately prepared RFIs.
 2. Architect's action may include a request for additional information, in which case Architect's time for response will date from time of receipt of additional information.
 3. Architect's action on RFIs that may result in a change to the Contract Time or the Contract Sum may be eligible for Contractor to submit Change Proposal according to Section 012600 "Contract Modification Procedures."
 - a. If Contractor believes the RFI response warrants change in the Contract Time or the Contract Sum, notify Architect in writing within 10 days of receipt of the RFI response.

1.8 PROJECT MEETINGS

- A. General: Architect will schedule and conduct meetings and conferences at Project site unless otherwise indicated.
 - 1. Attendees: Inform participants and others involved, and individuals whose presence is required, of date and time of each meeting.
 - 2. Agenda: Prepare the meeting agenda. Distribute the agenda to all invited attendees.
 - 3. Minutes: Entity responsible for conducting meeting will record significant discussions and agreements achieved. Distribute the meeting minutes to everyone concerned, including Owner, within five days of the meeting.
- B. Preconstruction Conference: Architect will schedule and conduct a preconstruction conference before starting construction, at a time convenient to Owner and Architect, but no later than 15 days after execution of the Agreement.
 - 1. Conduct the conference to review responsibilities and personnel assignments.
 - 2. Attendees: Authorized representatives of Owner, Architect, and their consultants; Contractor and its superintendent; major subcontractors; suppliers; and other concerned parties shall attend the conference. Participants at the conference shall be familiar with Project and authorized to conclude matters relating to the Work.
 - 3. Agenda: Discuss items of significance that could affect progress, including the following:
 - a. Tentative construction schedule.
 - b. Phasing.
 - c. Critical work sequencing and long-lead items.
 - d. Designation of key personnel and their duties.
 - e. Lines of communications.
 - f. Procedures for processing field decisions and Change Orders.
 - g. Procedures for RFIs.
 - h. Procedures for testing and inspecting.
 - i. Procedures for processing Applications for Payment.
 - j. Submittal procedures.
 - k. Preparation of record documents.
 - l. Use of the premises and existing building.
 - m. Work restrictions.
 - n. Working hours.
 - o. Owner's occupancy requirements.
 - p. Responsibility for temporary facilities and controls.
 - q. Procedures for disruptions and shutdowns.
 - r. Parking availability.
 - s. Office, work, and storage areas.
 - t. Equipment deliveries and priorities.
 - u. Security.
 - v. Progress cleaning.
 - 4. Minutes: Entity responsible for conducting meeting will record and distribute meeting minutes.
- C. Progress/Coordination Meetings: Architect will conduct progress meetings at biweekly intervals.
 - 1. Coordinate dates of meetings with preparation of payment requests.
 - 2. Attendees: In addition to representatives of Owner, and Architect, each contractor, subcontractor, supplier, and other entity concerned with current progress or involved in planning, coordination, or performance of future activities shall be represented at these meetings. All participants at the meeting shall be familiar with Project and authorized to conclude matters relating to the Work.
 - 3. Agenda: Review and correct or approve minutes of previous progress meeting. Review other items of significance that could affect progress. Include topics for discussion as appropriate to status of Project.
 - a. Contractor's Construction Schedule: Review progress since the last meeting. Determine whether each activity is on time, ahead of schedule, or behind schedule, in relation to

Contractor's construction schedule. Determine how construction behind schedule will be expedited; secure commitments from parties involved to do so. Discuss whether schedule revisions are required to ensure that current and subsequent activities will be completed within the Contract Time.

- b. Schedule Updating: Revise Contractor's construction schedule after each progress meeting where revisions to the schedule have been made or recognized. Issue revised schedule concurrently with the report of each meeting.
 - c. Review present and future needs of each entity present, including the following:
 - 1) Status of submittals.
 - 2) Progress cleaning.
 - 3) Quality and work standards.
 - 4) Status of correction of deficient items.
 - 5) Field observations.
 - 6) Status of RFIs.
 - 7) Status of proposal requests.
 - 8) Pending changes.
 - 9) Status of Change Orders.
 - 10) Pending claims and disputes.
 - 11) Documentation of information for payment requests.
4. Minutes: Entity responsible for conducting the meeting will record and distribute the meeting minutes to each party present and to parties requiring information.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION (Not Used)

END OF SECTION 013100

013200 – CONSTRUCTION PROGRESS DOCUMENTATION

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Special Conditions and other Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. Section includes administrative and procedural requirements for documenting the progress of construction during performance of the Work, including the following:
 - 1. Contractor's construction schedule.
 - 2. Daily construction reports.
 - 3. Site condition reports.
 - 4. Special reports.
- B. Related Requirements:
 - 1. Section 013300 "Submittal Procedures" for submitting schedules and reports.

1.3 DEFINITIONS

- A. 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.
 - 1. Critical Activity: An activity on the critical path that must start and finish on the planned early start and finish times.
 - 2. Predecessor Activity: An activity that precedes another activity in the network.
 - 3. Successor Activity: An activity that follows another activity in the network.

1.4 INFORMATIONAL SUBMITTALS

- A. Format for Submittals: Submit required submittals in the following format:
 - 1. Working electronic copy of schedule file, where indicated.
 - 2. PDF electronic file.
- B. Contractor's Construction Schedule: Initial schedule, of size required to display entire schedule for entire construction period.
 - 1. Submit a working electronic copy of schedule, using software indicated, and labeled to comply with requirements for submittals. Include type of schedule (initial or updated) and date on label.
- C. Construction Schedule Updating Reports: Submit with Applications for Payment.
- D. Daily Construction Reports: Submit at weekly intervals.
- E. Site Condition Reports: Submit at time of discovery of differing conditions.

1.5 COORDINATION

- A. Coordinate Contractor's construction schedule with the schedule of values, submittal schedule, progress reports, payment requests, and other required schedules and reports.
 - 1. Secure time commitments for performing critical elements of the Work from entities involved.
 - 2. Coordinate each construction activity in the network with other activities and schedule them in proper sequence.

PART 2 - PRODUCTS

2.1 CONTRACTOR'S CONSTRUCTION SCHEDULE, GENERAL

- A. Time Frame: Extend schedule from date established for commencement of the Work to date of Substantial Completion.
 - 1. Contract completion date shall not be changed by submission of a schedule that shows an early completion date, unless specifically authorized by Change Order.
- B. Activities: Treat each story or separate area as a separate numbered activity for each main element of the Work. Comply with the following:
 - 1. Activity Duration: Define activities so no activity is longer than 20 days, unless specifically allowed by Architect.
 - 2. Submittal Review Time: Include review and resubmittal times indicated in Section 013300 "Submittal Procedures" in schedule. Coordinate submittal review times in Contractor's construction schedule with submittal schedule.
 - 3. Startup and Testing Time: Include no fewer than 15 days for startup and testing.
 - 4. Substantial Completion: Indicate completion in advance of date established for Substantial Completion, and allow time for Architect's administrative procedures necessary for certification of Substantial Completion.
 - 5. Punch List and Final Completion: Include not more than 30 days for completion of punch list items and final completion.
- C. Milestones: Include milestones indicated in the Contract Documents in schedule, including, but not limited to, the Notice to Proceed, Substantial Completion, and final completion, and the following interim milestones:
 - 1. Temporary enclosure and space conditioning.
- D. Upcoming Work Summary: Prepare summary report indicating activities scheduled to occur or commence prior to submittal of next schedule update. Summarize the following issues:
 - 1. Unresolved issues.
 - 2. Unanswered Requests for Information.
 - 3. Rejected or unreturned submittals.
 - 4. Notations on returned submittals.
 - 5. Pending modifications affecting the Work and Contract Time.
- E. Recovery Schedule: When periodic update indicates the Work is 14 or more calendar days behind the current approved schedule, submit a separate recovery schedule indicating means by which Contractor intends to regain compliance with the schedule. Indicate changes to working hours, working days, crew sizes, and equipment required to achieve compliance, and date by which recovery will be accomplished.
- F. Computer Scheduling Software: Prepare schedules using current version of a program that has been developed specifically to manage construction schedules.

2.2 CONTRACTOR'S CONSTRUCTION SCHEDULE (GANTT CHART)

- A. Gantt-Chart Schedule: Submit a comprehensive, fully developed, horizontal, Gantt-chart-type, Contractor's construction schedule within 30 days of date established for commencement of the Work.
- B. Preparation: Indicate each significant construction activity separately. Identify first workday of each week with a continuous vertical line.
 - 1. For construction activities that require three months or longer to complete, indicate an estimated completion percentage in 10 percent increments within time bar.

2.3 REPORTS

- A. Daily Construction Reports: Prepare a daily construction report recording the following information concerning events at Project site:
 - 1. List of subcontractors at Project site.
 - 2. List of separate contractors at Project site.
 - 3. Approximate count of personnel at Project site.
 - 4. Equipment at Project site.
 - 5. Material deliveries.
 - 6. High and low temperatures and general weather conditions, including presence of rain or snow.
 - 7. Accidents.
 - 8. Meetings and significant decisions.
 - 9. Unusual events (see special reports).
 - 10. Stoppages, delays, shortages, and losses.
 - 11. Orders and requests of authorities having jurisdiction.
 - 12. Change Orders received and implemented.
 - 13. Construction Change Directives received and implemented.
 - 14. Services connected and disconnected.
 - 15. Equipment or system tests and startups.
 - 16. Substantial Completions authorized.
- B. Site Condition Reports: Immediately on discovery of a difference between site conditions and the Contract Documents, prepare and submit a detailed report. Submit with a Request for Information. Include a detailed description of the differing conditions, together with recommendations for changing the Contract Documents.

PART 3 - EXECUTION

3.1 CONTRACTOR'S CONSTRUCTION SCHEDULE

- A. Contractor's Construction Schedule Updating: At monthly intervals, update schedule to reflect actual construction progress and activities. Issue schedule one week before each regularly scheduled progress meeting.
 - 1. Revise schedule immediately after each meeting or other activity where revisions have been recognized or made. Issue updated schedule concurrently with the report of each such meeting.
 - 2. Include a report with updated schedule that indicates every change, including, but not limited to, changes in logic, durations, actual starts and finishes, and activity durations.
 - 3. As the Work progresses, indicate final completion percentage for each activity.
- B. Distribution: Distribute copies of approved schedule to Architect, Owner, separate contractors, testing and inspecting agencies, and other parties identified by Contractor with a need-to-know schedule responsibility.

1. Post copies in Project meeting rooms and temporary field offices.
2. When revisions are made, distribute updated schedules to the same parties and post in the same locations. Delete parties from distribution when they have completed their assigned portion of the Work and are no longer involved in performance of construction activities.

END OF SECTION 013200

SECTION 013300 - SUBMITTAL PROCEDURES

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Special Conditions and other Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. Section includes requirements for the submittal schedule and administrative and procedural requirements for submitting Shop Drawings, Product Data, Samples, and other submittals.
- B. Related Requirements:
 - 1. Section 012900 "Payment Procedures" for submitting Applications for Payment and the schedule of values.
 - 2. Section 013200 "Construction Progress Documentation" for submitting schedules and reports, including Contractor's construction schedule.
 - 3. Section 017823 "Operation and Maintenance Data" for submitting operation and maintenance manuals.
 - 4. Section 017839 "Project Record Documents" for submitting record Drawings, record Specifications, and record Product Data.
 - 5. Section 017900 "Demonstration and Training" for submitting video recordings of demonstration of equipment and training of Owner's personnel.

1.3 DEFINITIONS

- A. Action Submittals: Written and graphic information and physical samples that require Architect's responsive action. Action submittals are those submittals indicated in individual Specification Sections as "action submittals."
- B. Informational Submittals: Written and graphic information and physical samples that do not require Architect's responsive action. Submittals may be rejected for not complying with requirements. Informational submittals are those submittals indicated in individual Specification Sections as "informational submittals."
- C. Portable Document Format (PDF): An open standard file format licensed by Adobe Systems used for representing documents in a device-independent and display resolution-independent fixed-layout document format.

1.4 ACTION SUBMITTALS

- A. Submittal Schedule: Submit a schedule of submittals, arranged in chronological order by dates required by construction schedule. Include time required for review, ordering, manufacturing, fabrication, and delivery when establishing dates. Include additional time required for making corrections or revisions to submittals noted by Architect and additional time for handling and reviewing submittals required by those corrections.
 - 1. Coordinate submittal schedule with list of subcontracts, the schedule of values, and Contractor's construction schedule.
 - 2. Initial Submittal: Submit within 14 days of date established for commencement of the Work. Include submittals required during the first 60 days of construction. List those submittals required to maintain orderly progress of the Work and those required early because of long lead time for manufacture or fabrication.
 - 3. Final Submittal: Submit before first Application for Payment is received. Application for Payment approval will not occur until Architect has received Final Submittal Schedule.

- a. Submit revised submittal schedule to reflect changes in current status and timing for submittals.
4. Format: Arrange the following information in a tabular format:
 - a. Scheduled date for first submittal.
 - b. Specification Section number and title.
 - c. Submittal category: Action; informational.
 - d. Name of subcontractor.
 - e. Description of the Work covered.
 - f. Scheduled date for Architect's final release or approval.
 - g. Scheduled date of fabrication.

1.5 SUBMITTAL ADMINISTRATIVE REQUIREMENTS

- A. Coordination: Coordinate preparation and processing of submittals with performance of construction activities.
 1. Coordinate each submittal with fabrication, purchasing, testing, delivery, other submittals, and related activities that require sequential activity.
 2. Submit all submittal items required for each Specification Section concurrently unless partial submittals for portions of the Work are indicated on approved submittal schedule.
 3. Submit action submittals and informational submittals required by the same Specification Section as separate packages under separate transmittals.
 4. 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.
 - a. Architect reserves the right to withhold action on a submittal requiring coordination with other submittals until related submittals are received.
- B. Processing Time: Allow time for submittal review, including time for resubmittals, as follows. Time for review shall commence on Architect's receipt of submittal. No extension of the Contract Time will be authorized because of failure to transmit submittals enough in advance of the Work to permit processing, including resubmittals.
 1. Initial Review: Allow 15 days for initial review of each submittal. Allow additional time if coordination with subsequent submittals is required. Architect will advise Contractor when a submittal being processed must be delayed for coordination.
 2. Intermediate Review: If intermediate submittal is necessary, process it in same manner as initial submittal.
 3. Resubmittal Review: Allow 15 days for review of each resubmittal.
 4. Sequential Review: Where sequential review of submittals by Architect's consultants, Owner, or other parties is indicated, allow 21 days for initial review of each submittal.
 5. Concurrent Consultant Review: Where the Contract Documents indicate that submittals may be transmitted simultaneously to Architect and to Architect's consultants, allow 15 days for review of each submittal. Submittal will be returned to Architect before being returned to Contractor.
- C. Electronic Submittals: Identify and incorporate information in each electronic submittal file as follows:
 1. Assemble complete submittal package into a single indexed file incorporating submittal requirements of a single Specification Section and transmittal form with links enabling navigation to each item.
 2. Name file with submittal number or other unique identifier, including revision identifier.
 - a. File name shall use project identifier and Specification Section number followed by a decimal point and then a sequential number (e.g., MKVH-061000-01). Resubmittals shall include an alphabetic suffix after another decimal point (e.g., MKVH-061000-01.1).
 - b. Coordinate file naming with requirements of Architect.
 3. Transmittal Form for Electronic Submittals: Use electronic Submittal Transmittal form included in Project Manual, containing the following information:
 - a. Date.
 - b. Name of Contractor.
 - c. Name of firm or entity that prepared submittal.

- d. Names of subcontractor, manufacturer, and supplier.
 - e. Category and type of submittal.
 - f. Submittal purpose and description.
 - g. Specification Section number and title.
 - h. Specification paragraph number or drawing designation and generic name for each of multiple items.
 - i. Drawing number and detail references, as appropriate.
 - j. Location(s) where product is to be installed, as appropriate.
 - k. Related physical samples submitted directly.
 - l. Indication of full or partial submittal.
 - m. Transmittal number.
 - n. Other necessary identification.
 - o. Remarks.
- D. Options: Identify options requiring selection by Architect.
- E. Deviations and Additional Information: On an attached separate sheet, prepared on Contractor's letterhead, record relevant information, requests for data, revisions other than those requested by Architect on previous submittals, and deviations from requirements in the Contract Documents, including minor variations and limitations. Include same identification information as related submittal.
- F. Resubmittals: Make resubmittals in same form and number of copies as initial submittal.
- 1. Note date and content of previous submittal.
 - 2. Note date and content of revision in label or title block and clearly indicate extent of revision.
 - 3. Resubmit submittals until they are marked with approval notation from Architect's action stamp.
- G. Distribution: Furnish copies of final submittals to manufacturers, subcontractors, suppliers, fabricators, installers, authorities having jurisdiction, and others as necessary for performance of construction activities. Show distribution on transmittal forms.
- H. Use for Construction: Retain complete copies of submittals on Project site. Use only final action submittals that are marked with approval notation from Architect's action stamp.

PART 2 - PRODUCTS

2.1 SUBMITTAL PROCEDURES

- A. General Submittal Procedure Requirements: Prepare and submit submittals required by individual Specification Sections. Types of submittals are indicated in individual Specification Sections.
- 1. Submit electronic submittals via email as PDF electronic files.
 - a. Architect will return annotated file. Annotate and retain one copy of file as an electronic Project record document file.
 - 2. Certificates and Certifications Submittals: Provide a statement that includes signature of entity responsible for preparing certification. Certificates and certifications shall be signed by an officer or other individual authorized to sign documents on behalf of that entity.
- B. Product Data: Collect information into a single submittal for each element of construction and type of product or equipment.
- 1. If information must be specially prepared for submittal because standard published data are not suitable for use, submit as Shop Drawings, not as Product Data.
 - 2. Mark each copy of each submittal to show which products and options are applicable.
 - 3. Include the following information, as applicable:
 - a. Manufacturer's catalog cuts.
 - b. Manufacturer's product specifications.

- c. Standard color charts.
 - d. Statement of compliance with specified referenced standards.
 - e. Testing by recognized testing agency.
 - f. Application of testing agency labels and seals.
 - g. Notation of coordination requirements.
 - h. Availability and delivery time information.
 4. For equipment, include the following in addition to the above, as applicable:
 - a. Wiring diagrams showing factory-installed wiring.
 - b. Printed performance curves.
 - c. Operational range diagrams.
 - d. Clearances required to other construction, if not indicated on accompanying Shop Drawings.
 5. Submit Product Data before or concurrent with Samples.
- C. Shop Drawings: Prepare Project-specific information, drawn accurately to scale. Do not base Shop Drawings on reproductions of the Contract Documents or standard printed data, unless submittal based on Architect's digital data drawing files is otherwise permitted.
 1. Preparation: Fully illustrate requirements in the Contract Documents. Include the following information, as applicable:
 - a. Identification of products.
 - b. Schedules.
 - c. Compliance with specified standards.
 - d. Notation of coordination requirements.
 - e. Notation of dimensions established by field measurement.
 - f. Relationship and attachment to adjoining construction clearly indicated.
 - g. Seal and signature of professional engineer if specified.
 2. Sheet Size: Except for templates, patterns, and similar full-size drawings, submit Shop Drawings on sheets at least 8-1/2 by 11 inches (215 by 280 mm), but no larger than 24 by 36 inches (610 by 914 mm).
- D. Samples: Submit Samples for review of kind, color, pattern, and texture for a check of these characteristics with other elements and for a comparison of these characteristics between submittal and actual component as delivered and installed.
 1. Transmit Samples that contain multiple, related components such as accessories together in one submittal package.
 2. Identification: Attach label on unexposed side of Samples that includes the following:
 - a. Generic description of Sample.
 - b. Product name and name of manufacturer.
 - c. Sample source.
 - d. Number and title of applicable Specification Section.
 - e. Specification paragraph number and generic name of each item.
 3. For projects where electronic submittals are required, provide corresponding electronic submittal of Sample transmittal, digital image file illustrating Sample characteristics, and identification information for record.
 4. Disposition: Maintain sets of approved Samples at Project site, available for quality-control comparisons throughout the course of construction activity. Sample sets may be used to determine final acceptance of construction associated with each set.
 5. Samples for Initial Selection: Submit manufacturer's color charts consisting of units or sections of units showing the full range of colors, textures, and patterns available.
 - a. Number of Samples: Submit one full set of available choices where color, pattern, texture, or similar characteristics are required to be selected from manufacturer's product line. Architect will return submittal with options selected.
 6. Samples for Verification: If request, submit full-size units or Samples of size indicated, prepared from same material to be used for the Work, cured and finished in manner specified, and physically identical with material or product proposed for use, and that show full range of color and texture

variations expected. Samples include, but are not limited to, the following: partial sections of manufactured or fabricated components; small cuts or containers of materials; complete units of repetitively used materials; swatches showing color, texture, and pattern; color range sets; and components used for independent testing and inspection.

- a. Number of Samples: Submit three sets of Samples. Architect will retain two Sample sets; remainder will be returned.
 - 1) Submit a single Sample where assembly details, workmanship, fabrication techniques, connections, operation, and other similar characteristics are to be demonstrated.
 - 2) If variation in color, pattern, texture, or other characteristic is inherent in material or product represented by a Sample, submit at least three sets of paired units that show approximate limits of variations.
- E. Coordination Drawing Submittals: Comply with requirements specified in Section 013100 "Project Management and Coordination."
- F. Contractor's Construction Schedule: Comply with requirements specified in Section 013200 "Construction Progress Documentation."
- G. Application for Payment and Schedule of Values: Comply with requirements specified in Section 012900 "Payment Procedures."
- H. Test and Inspection Reports and Schedule of Tests and Inspections Submittals: Comply with requirements specified in Section 014000 "Quality Requirements."
- I. Closeout Submittals and Maintenance Material Submittals: Comply with requirements specified in Section 017700 "Closeout Procedures."
- J. Maintenance Data: Comply with requirements specified in Section 017823 "Operation and Maintenance Data."
- K. Qualification Data: Prepare written information that demonstrates capabilities and experience of firm or person. Include lists of completed projects with project names and addresses, contact information of architects and owners, and other information specified.
- L. Welding Certificates: Prepare written certification that welding procedures and personnel comply with requirements in the Contract Documents. Submit record of Welding Procedure Specification and Procedure Qualification Record on AWS forms. Include names of firms and personnel certified.
- M. Installer Certificates: Submit written statements on manufacturer's letterhead certifying that Installer complies with requirements in the Contract Documents and, where required, is authorized by manufacturer for this specific Project.
- N. Manufacturer Certificates: Submit written statements on manufacturer's letterhead certifying that manufacturer complies with requirements in the Contract Documents. Include evidence of manufacturing experience where required.
- O. Product Certificates: Submit written statements on manufacturer's letterhead certifying that product complies with requirements in the Contract Documents.
- P. Material Certificates: Submit written statements on manufacturer's letterhead certifying that material complies with requirements in the Contract Documents.
- Q. Material Test Reports: Submit reports written by a qualified testing agency, on testing agency's standard form, indicating and interpreting test results of material for compliance with requirements in the Contract Documents.
- R. Product Test Reports: Submit written reports indicating that current product produced by manufacturer complies with requirements in the Contract Documents. Base reports on evaluation of tests performed by manufacturer and witnessed by a qualified testing agency, or on comprehensive tests performed by a qualified testing agency.

- S. Research Reports: Submit written evidence, from a model code organization acceptable to authorities having jurisdiction, that product complies with building code in effect for Project. Include the following information:
 - 1. Name of evaluation organization.
 - 2. Date of evaluation.
 - 3. Time period when report is in effect.
 - 4. Product and manufacturers' names.
 - 5. Description of product.
 - 6. Test procedures and results.
 - 7. Limitations of use.
- T. Preconstruction Test Reports: Submit reports written by a qualified testing agency, on testing agency's standard form, indicating and interpreting results of tests performed before installation of product, for compliance with performance requirements in the Contract Documents.
- U. Compatibility Test Reports: Submit reports written by a qualified testing agency, on testing agency's standard form, indicating and interpreting results of compatibility tests performed before installation of product. Include written recommendations for primers and substrate preparation needed for adhesion.
- V. Field Test Reports: Submit written reports indicating and interpreting results of field tests performed either during installation of product or after product is installed in its final location, for compliance with requirements in the Contract Documents.
- W. Design Data: Prepare and submit written and graphic information, including, but not limited to, performance and design criteria, list of applicable codes and regulations, and calculations. Include list of assumptions and other performance and design criteria and a summary of loads. Include load diagrams if applicable. Provide name and version of software, if any, used for calculations. Include page numbers.

2.2 DELEGATED-DESIGN SERVICES

- A. Performance and Design Criteria: Where professional design services or certifications by a design professional are specifically required of Contractor by the Contract Documents, provide products and systems complying with specific performance and design criteria indicated.
 - 1. If criteria indicated are not sufficient to perform services or certification required, submit a written request for additional information to Architect.
- B. Delegated-Design Services Certification: In addition to Shop Drawings, Product Data, and other required submittals, submit digitally signed PDF electronic file paper copies of certificate, signed and sealed by the responsible design professional licensed in the State of New York, for each product and system specifically assigned to Contractor to be designed or certified by a design professional.
 - 1. Indicate that products and systems comply with performance and design criteria in the Contract Documents. Include list of codes, loads, and other factors used in performing these services.

PART 3 - EXECUTION

3.1 CONTRACTOR'S REVIEW

- A. Action and Informational Submittals: Review each submittal and check for coordination with other Work of the Contract and for compliance with the Contract Documents. Note corrections and field dimensions. Mark with approval stamp before submitting to Architect.
- B. Project Closeout and Maintenance Material Submittals: See requirements in Section 017700 "Closeout Procedures."

- C. Approval Stamp: Stamp each submittal with a uniform, approval stamp. Include Project name and location, submittal number, Specification Section title and number, name of reviewer, date of Contractor's approval, and statement certifying that submittal has been reviewed, checked, and approved for compliance with the Contract Documents.

3.2 ARCHITECT'S ACTION

- A. Action Submittals: Architect will review each submittal, make marks to indicate corrections or revisions required, and return it. Architect will mark each submittal with an action stamp and will mark stamp appropriately to indicate action, as follows:
 - 1. No Exception Taken – Submittal is approved and released for fabrication and can be incorporated into the work.
 - 2. Make Corrections Noted - Submittal is approved and released for fabrication and can be incorporated into the work with the modifications as noted.
 - 3. Revise & Resubmit – Submittal is not approved and resubmission is required per the Architect's comments. Such products cannot be purchased nor incorporated into the work.
 - 4. Rejected – Submittal is not approved and submission does not meet requirements of the Project. Resubmit products that conform to the Contract Documents.
- B. Informational Submittals: Architect will review each submittal and will not return it, or will return it if it does not comply with requirements. Architect will forward each submittal to appropriate party.
- C. Partial submittals prepared for a portion of the Work will be reviewed when use of partial submittals has received prior approval from Architect.
- D. Incomplete submittals are unacceptable, will be considered nonresponsive, and will be returned for resubmittal without review.
- E. Submittals not required by the Contract Documents may be returned by the Architect without action.

END OF SECTION 013300

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SECTION 013573 - DELEGATED DESIGN PROCEDURES

PART 1 - GENERAL

1.1 SUMMARY

- A. Drawings and general provisions of the Contract, including General and Special Conditions and other Division 01 Specification Sections, apply to this Section.

1.2 REFERENCE STANDARDS

- A. Refer to Part 1 in each Section including Work requiring Delegated Design.

1.3 DEFINITIONS

- A. Delegated Design: Professional design service or certification specifically required of the Contractor in Sections of the Project Manual.
- B. Delegated Design Components: Complete systems provided for intended use.
- C. AHJ: Authorities Having Jurisdiction.
- D. Seal: Certification that drawings, computations and specifications were designed and prepared under direct supervision of Architect or Professional Engineer whose name appears thereon.
- E. Delegated Design Component Review Stamp: Confirmation that Delegated Design drawings have been reviewed for compatibility with design intent of the Contract Documents.

1.4 RESPONSIBILITIES

- A. Contractor's Responsibilities: Provide services or certifications by Contractor's Design Engineer, whose signature and seal appear on drawings, calculations, specifications, certifications, shop drawings and other submittals prepared by that design professional. Ensure shop drawings and other submittals related to the Work designed or certified by that professional, if prepared by others, bears that design professional's written approval when submitted to the Architect. The Architect and Owner shall rely on the completeness of the services, certifications and approvals performed or provided by the design professional.
 - 1. Coordinate and assume or assign to subcontractors complete responsibility for design, documentation, calculations, submittals, permits, fabrication, transportation and installation of components requiring Delegated Design.
 - 2. Coordinate components requiring Delegated Design with adjacent or related systems whether designed by Architect or are other Delegated Design components. Ensure complete, operational systems that perform their intended use are provided.
 - 3. Engineer components of the Work requiring Delegated Design for wind, gravity, lateral, and seismic loads and include design for life safety, sizing of supports, anchors, framing, connections, spans, and other characteristics required to meet or exceed requirements of applicable codes, standards, regulations, AHJ, and design requirements of the Contract Documents.
 - a. Refer to Structural Drawings for load criteria. If load criteria are not indicated on Structural Drawings, request criteria from Architect.
 - 4. Ensure Delegated Design executes design intent indicated in the Contract Documents.

5. Coordinate and assume or assign to subcontractors and/or suppliers complete responsibility for design, calculations, submittals, permits if required, fabrication, delivery and installation of Delegated Design components.
 6. Without exception, submit Delegated Design component documents to AHJ for review, as required, in a manner that will not adversely affect Project's construction schedule.
- B. Contractor's Design Engineer: Professional engineer registered in the State in which the Project is located and engaged by Contractor, subcontractor or supplier to provide drawings, computations and specifications required for Delegated Design systems, in accordance with criteria specified in Contract Documents; include documentation required by AHJ. Responsibilities of Contractor's Design Engineer include, but are not limited to, the following:
1. Preparation of Delegated Design submittals.
 2. Periodic field review of Delegated Design work, including review of associated mock-ups where applicable, at locations where the Work is in progress, fabrication and installation of Delegated Design work, and submission of field review report after each visit to Architect, AHJ as required, and in accordance with applicable building codes.
 - a. Provide field reviews at intervals as necessary and appropriate to progress of the Work to allow Contractor's Design Engineer to be familiar with progress and quality of Work related to Delegated Design components and to determine if Work related to Delegated Design components is proceeding in general conformity with Contract Documents, including reviewed shop drawings and design calculations.
 - b. Include costs for field reviews and field review reports and letters of general conformity in Contract Sum.
 3. Upon completion of Delegated Design components of the Work, prepare and submit to Architect and AHJ as required a letter of general conformity for Delegated Design components of the Work, certifying that they have been supplied and installed in accordance with the requirements of the Contract Documents and AHJ.

1.5 SCHEDULING

- A. Schedule design process and submittals required for Delegated Design portions to comply with Project Construction Schedule.
1. Allow sufficient time for Architect's review of Delegated Design submittals. Provide time estimate and coordination of schedule for review of Delegated Design submittals to Contractor.
 2. If Architect's approval of Shop Drawings relating to Delegated Design components is required prior to application for permit, schedule and sequence Delegated Design shop drawing review prior to permit submittal. Comply with requirements specified in Division 1 Section "Submittal Procedures."
- B. Owner is not responsible to pay for any delays, additional products, additional hours of Work, or overtime, restocking or rework required due to failure by Contractor or subcontractor to coordinate their Work with Work of other trades on Project or to provide Delegated Design portion or component in a timely manner to meet project schedule.

1.6 SUBMITTAL PROCEDURES FOR DELEGATED DESIGN COMPONENTS

- A. Comply with requirements specified for submittals in Division 01 sections and Division 01 Section "Submittal Procedures, including, but not limited to, form and procedures for delivering submittals.
1. Before the Work proceeds, complete the following:
 - a. Submit complete legible documents for Delegated Design components.
 - b. Architect and AHJ as appropriate accept Delegated Design documents.
 2. Submit Delegated Design documents for approval prior to fabrication of components included in Delegated Design work.

3. Architect's review of Delegated Design submittals is for the limited purpose of checking for general conformance with information given and the design concept expressed in the Contract Documents. Architect will review, approve or take other appropriate action on submittals consistent with this limited purpose.
 - a. Architect's review does not lessen nor shift burden of responsibility from Contractor or assigned subcontractor/ supplier to Owner or Architect.
 - B. In addition to other submittal requirements specified in other Sections of the Project Manual, include in submittals for Delegated Design components submittals the following:
 1. Complete criteria.
 2. Design assumptions.
 3. Details.
 4. Calculations.
 5. Reactions to structure.
 6. Structural elements stamped by Contractor's Design Engineer responsible for preparation of submittals.
 7. Instructions for fabrication, assembly, installation and interface with other trades.
 - C. Subcontractor and Contractor's Design Engineer List: Submit list of Delegated Design subcontractors and Contractor's Design Engineers in accordance with requirements specified in General Conditions, Supplementary General Conditions, and Division 01 Section Submittal Procedures for Subcontract List.
 1. Submit Subcontractor and Contractor's Design Engineer list to AHJ, if required.
 - D. Preliminary Design: Submit to Architect drawings and product data describing Contractor's Design Engineer's design prior to performing engineering calculations and shop drawings.
 1. Purpose of Preliminary Design submittal is to avoid engineering and detailing an unacceptable design.
 - E. Final Review: Submit final Delegated Design documents to Architect and AHJ as required for review and approval, allowing not less than 10 days for review by Architect's, Architect's consultants, and AHJ.
 1. Include design criteria, design assumptions, structural calculations, fabrication and construction details, required clearances, and interface requirements in Final Review Delegated Design documents.
 - a. Delegated Design drawings are in addition to shop drawings.
 2. Comply with AHJ requirements.
 3. Affix Contractor's Design Engineer's professional seal on submittals.
 4. Make corrections as noted by Architect and Architect's consultants and comply with AHJ requirements.
 5. Execute corrections to Delegated Design Work at no additional cost to Owner and prior to Substantial Completion.
 - a. Notify Architect completion of required changes as soon as the changes are completed.
 - F. Submit Delegated Design engineer's qualifications and proof of insurance, identifying insurer, policy number, policy term and limit of liability, on duly signed letterhead or certificate of insurance.
- 1.7 QUALITY ASSURANCE
- A. In addition to requirements specified in this Article, comply with quality assurance requirements specified in other Sections with Delegated Design components.
 - B. Quality assurance specified in this Section and other Sections constitute minimum acceptable standards for this Project. Should quality assurance not be defined within a Section, printed industry standards for "normal" quality practices govern.

- C. Documentation: Comply with the following:
 - 1. Uniform Drawing System, NCS/UDS published by National Institute of Building Sciences.
 - 2. Minimum Text Size: 1/8 inch.
- D. Pre-Submittal Meeting: Meet with Architect, subcontractors, and Contractor's Design Engineer to discuss requirements of work, submittals, scheduling, and sequencing of Delegated Design components.
- E. Contractor's Design Engineer's Qualifications: In addition to qualification requirements specified in Sections containing Delegated Design components, ensure submittals for items required to be sealed by professional engineer are prepared, sealed, and signed under direct control and supervision of Contractor's Design Engineer who has professional liability insurance with minimum limit of liability of \$2,000,000 per claim in force.

PART 2 - PRODUCTS

2.1 SYSTEM DESCRIPTION

- A. Delegated Design Components: Refer to individual Project Manual Sections for work requiring Delegated Design.
- B. Delegated Design components shown in Contract Documents are shown for design intent with Contractor responsible for designing, providing, coordinating, and installing Delegated Design components including specified products.
 - 1. Design components requiring Delegated Design that are attached to structural frame or supplemental to structural frame for anticipated loads specified on structural drawings, inherent gravity loads supported by system and coordinated with Contractor, or loads included in applicable building codes where Project is located.
 - 2. Coordinate Delegated Design components with appropriate subcontractors.
 - 3. Clearly define load reactions at interface between Delegated Design components and structural frame to allow for review by Engineer of Record.

PART 3 - EXECUTION (Not Used)

END OF SECTION 013573

SECTION 014000 - QUALITY REQUIREMENTS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Special Conditions and other Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. Section includes administrative and procedural requirements for quality assurance and quality control.
- B. 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.
 - 1. Specific quality-assurance and -control requirements for individual construction activities are specified in the Sections that specify those activities. Requirements in those Sections may also cover production of standard products.
 - 2. 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.
 - 3. Requirements for Contractor to provide quality-assurance and -control services required by Architect, Owner, or authorities having jurisdiction are not limited by provisions of this Section.
- C. Related Requirements:
 - 1. Division 01 Section "Construction Progress Documentation" for developing a schedule of required tests and inspections.
 - 2. Division 01 Section "Cutting and Patching" for repair and restoration of construction disturbed by testing and inspection activities.
 - 3. Divisions 02 through 33 Sections for specific test and inspection requirements.

1.3 DEFINITIONS

- A. Quality-Assurance Services: Activities, actions, and procedures performed before and during execution of the Work to guard against defects and deficiencies and substantiate that proposed construction will comply with requirements.
- B. Quality-Control Services: Tests, inspections, procedures, and related actions during and after execution of the Work to evaluate that actual products incorporated into the Work and completed construction comply with requirements. Services do not include contract enforcement activities performed by Architect or Construction Site Representative.
- C. Mockups: Full-size physical assemblies that are constructed on-site. Mockups are constructed to verify selections made under Sample submittals; to demonstrate aesthetic effects and, where indicated, qualities of materials and execution; to review coordination, testing, or operation; to show interface between dissimilar materials; and to demonstrate compliance with specified installation tolerances. Mockups are not Samples. Unless otherwise indicated, approved mockups establish the standard by which the Work will be judged.
- D. Preconstruction Testing: Tests and inspections performed specifically for Project before products and materials are incorporated into the Work, to verify performance or compliance with specified criteria.

- E. Product Testing: Tests and inspections that are performed by an NRTL, an NVLAP, or a testing agency qualified to conduct product testing and acceptable to authorities having jurisdiction, to establish product performance and compliance with specified requirements.
- F. Source Quality-Control Testing: Tests and inspections that are performed at the source, e.g., plant, mill, factory, or shop.
- G. Field Quality-Control Testing: Tests and inspections that are performed on-site for installation of the Work and for completed Work.
- H. Testing Agency: An entity engaged to perform specific tests, inspections, or both. Testing laboratory shall mean the same as testing agency.
- I. Installer/Applicator/Erector: Contractor or another entity engaged by Contractor as an employee, Subcontractor, or Sub-subcontractor, to perform a particular construction operation, including installation, erection, application, and similar operations.
 - 1. Use of trade-specific terminology in referring to a trade or entity does not require that certain construction activities be performed by accredited or unionized individuals, or that requirements specified apply exclusively to specific trade(s).
- J. Experienced: When used with an entity or individual, "experienced" means having successfully completed a minimum of five (5) previous projects similar in nature, size, and extent to this Project; being familiar with special requirements indicated; and having complied with requirements of authorities having jurisdiction.

1.4 CONSTRUCTION TESTING

- A. Prime Contractor Responsibilities: Unless otherwise indicated as the responsibility of another identified entity, each Prime Contractor shall provide inspections, tests, and other quality-control services specified elsewhere in the Contract Documents and required by authorities having jurisdiction. Costs for these services are to be included in the Contract Sum.
 - 1. Where individual Sections specifically indicate that certain inspections, tests, and other quality-control services are Prime Contractor's responsibility, Prime Contractor shall employ and pay a qualified independent testing agency to perform quality-control services.
 - 2. Where individual Sections specifically indicate that certain inspections, tests, and other quality-control services are the Owner's responsibility, the Owner will employ and pay a qualified independent testing agency to perform those services.
 - a. Where the Owner has engaged a testing agency and Prime Contractor is also required to engage an entity for the same or related element, the Prime Contractor shall not employ the entity engaged by the Owner, unless agreed to in writing by the Owner.
- B. Retesting: Prime Contractor is responsible for retesting where results of inspections, tests, or other quality-control services prove unsatisfactory and indicate noncompliance with Contract Document requirements, regardless of whether the original test was Prime Contractor's responsibility.
 - 1. Cost of retesting construction, revised or replaced by Prime Contractor, is Prime Contractor's responsibility where required tests performed on original construction indicated noncompliance with Contract Document requirements.
- C. Associated Services: Cooperate with agencies performing required inspections, tests, and similar services, and provide reasonable auxiliary services as requested. Notify the agency sufficiently in advance of operations to permit assignment of personnel. Auxiliary services required include, but are not limited to, the following:
 - 1. Provide access to the Work.
 - 2. Furnish incidental labor and facilities necessary to facilitate inspections and tests.
 - 3. Ladders.
 - 4. Provide facilities for storage and curing of test samples.
 - 5. Delivery of samples to testing laboratories.
 - 6. Provide design mix documentation.
 - 7. Provide security and protection of samples and test equipment at the Project Site.

- D. Duties of the Testing Agency: The independent agency engaged to perform inspections, sampling, and testing of materials and construction specified in individual Sections shall cooperate with the Construction Manager and Prime Contractor in performance of the agency's duties. The testing agency shall provide qualified personnel to perform required inspections and tests.
 - 1. The agency shall notify the Architect, Construction Site Representative and Prime Contractor promptly of irregularities or deficiencies observed in the Work during performance of its services.
 - 2. The agency is not authorized to release, revoke, alter, or enlarge requirements of the Contract Documents or approve or accept any portion of the Work.
 - 3. The agency shall not perform any duties of Prime Contractor.
- E. Coordination: Coordinate the sequence of activities to accommodate required services with a minimum of delay. Coordinate activities to avoid the necessity of removing and replacing construction to accommodate inspections and tests.
 - 1. Each Prime Contractor is responsible for scheduling times for inspections, tests, taking samples, and similar activities through the Construction Site Representative.

1.5 CONFLICTING REQUIREMENTS

- A. Referenced Standards: If compliance with two or more standards is specified and the standards establish different or conflicting requirements for minimum quantities or quality levels, comply with the most stringent requirement. Refer conflicting requirements that are different, but apparently equal, to Architect 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. Refer uncertainties to Architect for a decision before proceeding.

1.6 INFORMATIONAL SUBMITTALS

- A. Testing Agency Qualifications: For testing agencies specified in "Quality Assurance" Article to demonstrate their capabilities and experience. Include proof of qualifications in the form of a recent report on the inspection of the testing agency by a recognized authority.

1.7 REPORTS AND DOCUMENTS

- A. Test and Inspection Reports: Prepare and submit certified written reports specified in other Sections. Include the following:
 - 1. Date of issue.
 - 2. Project title and number.
 - 3. Name, address, and telephone number of testing agency or inspecting agency.
 - 4. Dates and locations of samples and tests or inspections.
 - 5. Names of individuals making tests and inspections.
 - 6. Description of the Work and test and inspection methods, citing ASTM reference standard used.
 - 7. Identification of product and Specification Section.
 - 8. Complete test or inspection data.
 - 9. Test and inspection results and an interpretation of test results.
 - 10. Record of temperature and weather conditions at time of sample taking and testing and inspecting.
 - 11. Comments or professional opinion on whether tested or inspected Work complies with the Contract Document requirements.
 - 12. Name and signature of laboratory inspector.
 - 13. Recommendations on retesting and reinspecting.

- B. Manufacturer's Technical Representative's Field Reports: Prepare written information documenting manufacturer's technical representative's tests and inspections specified in other Sections. Include the following:
 - 1. Name, address, and telephone number of technical representative making report.
 - 2. Statement on condition of substrates and their acceptability for installation of product.
 - 3. Statement that products at Project site comply with requirements.
 - 4. Summary of installation procedures being followed, whether they comply with requirements and, if not, what corrective action was taken.
 - 5. Results of operational and other tests and a statement of whether observed performance complies with requirements.
 - 6. Statement whether conditions, products, and installation will affect warranty.
 - 7. Other required items indicated in individual Specification Sections.
- C. Factory-Authorized Service Representative's Reports: Prepare written information documenting manufacturer's factory-authorized service representative's tests and inspections specified in other Sections. Include the following:
 - 1. Name, address, and telephone number of factory-authorized service representative making report.
 - 2. Statement that equipment complies with requirements.
 - 3. Results of operational and other tests and a statement of whether observed performance complies with requirements.
 - 4. Statement whether conditions, products, and installation will affect warranty.
 - 5. Other required items indicated in individual Specification Sections.
- D. Permits, Licenses, and Certificates: For Owner's records, submit copies of permits, licenses, certifications, inspection reports, releases, jurisdictional settlements, notices, receipts for fee payments, judgments, correspondence, records, and similar documents, established for compliance with standards and regulations bearing on performance of the Work.

1.8 QUALITY ASSURANCE

- A. General: Qualifications paragraphs in this article establish the minimum qualification levels required; individual Specification Sections specify additional requirements.
- B. Manufacturer Qualifications: A firm experienced in manufacturing products or systems similar to those indicated for this Project and with a record of successful in-service performance, as well as sufficient production capacity to produce required units.
- C. Fabricator Qualifications: A firm experienced in producing products similar to those indicated for this Project and with a record of successful in-service performance, as well as sufficient production capacity to produce required units.
- D. Installer Qualifications: A firm or individual experienced in installing, erecting, or assembling work similar in material, design, and extent to that indicated for this Project, whose work has resulted in construction with a record of successful in-service performance.
- E. Professional Engineer Qualifications: A professional engineer who is legally qualified to practice in jurisdiction where Project is located 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 in material, design, and extent to those indicated for this Project.
- F. Testing Agency Qualifications: An NRTL, an NVLAP, or an independent agency with the experience and capability to conduct testing and inspecting indicated, as documented according to ASTM E 329 ; and with additional qualifications specified in individual Sections; and, where required by authorities having jurisdiction, that is acceptable to authorities.
 - 1. Each independent inspection and testing agency engaged shall be authorized by jurisdiction to operate in the state where Project is located.

2. NRTL: A nationally recognized testing laboratory according to 29 CFR 1910.7.
 3. NVLAP: A testing agency accredited according to NIST's National Voluntary Laboratory Accreditation Program.
 4. Testing agency qualifications must be approved by the Architect prior to proceeding with work.
- G. Manufacturer's Technical Representative Qualifications: An authorized representative of manufacturer who is trained and approved by manufacturer to observe and inspect installation of manufacturer's products that are similar in material, design, and extent to those indicated for this Project.
- H. 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.
- I. Testing Agency Responsibilities: Submit a certified written report of each test, inspection, and similar quality-assurance service to Architect, through Construction Manager, with copy to Contractor. Interpret tests and inspections and state in each report whether tested and inspected work complies with or deviates from the Contract Documents.
- J. 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 Architect.
 - a. Construct mockups complete, including work of all trades required in finished Project.
 2. Notify Architect and Construction Site Representative seven (7) calendar days in advance of dates and times when mockups will be constructed.
 3. Employ supervisory personnel who will oversee mockup construction. Employ workers that will be employed during the construction at Project.
 4. Demonstrate the proposed range of aesthetic effects and workmanship.
 5. Obtain Architect's approval of mockups before starting work, fabrication, or construction.
 - a. Allow seven (7) calendar days for initial review and each re-review of each mockup.
 6. Maintain mockups during construction in an undisturbed condition as a standard for judging the completed Work.
 7. Demolish and remove mockups when directed unless otherwise indicated.

1.9 QUALITY CONTROL

- A. Owner Responsibilities: Where quality-control services are indicated as Owner's responsibility, Owner will engage a qualified testing agency to perform these services.
1. Owner will furnish Contractor with names, addresses, and telephone numbers of testing agencies engaged and a description of types of testing and inspecting they are engaged to perform.
 2. Costs for retesting and reinspecting construction that replaces or is necessitated by work that failed to comply with the Contract Documents will be charged to Contractor, and the Contract Sum will be adjusted by Change Order.
 3. Testing Agency: Owner will engage a qualified independent testing and inspecting agency to perform tests and inspections and to prepare test reports.
- B. Contractor Responsibilities: Tests and inspections not explicitly assigned to Owner are Contractor's responsibility. Perform additional quality-control activities required to verify that the Work complies with requirements, whether specified or not.
1. Unless otherwise indicated, provide quality-control services specified.
 2. Where services are indicated as Contractor's responsibility, engage a qualified testing agency to perform these quality-control services.
 - a. Contractor shall not employ same entity engaged by Owner, unless agreed to in writing by Owner.

3. Notify testing agencies at least twenty-four (24) hours in advance of time when Work that requires testing or inspecting will be performed.
 4. Where quality-control services are indicated as Contractor's responsibility, submit a certified written report, in triplicate, of each quality-control service.
 5. Contractor shall furnish to the Laboratory such samples of materials as may be necessary for testing purposes.
 6. Testing and inspecting requested by Contractor and not required by the Contract Documents are Contractor's responsibility.
 7. Submit additional copies of each written report directly to authorities having jurisdiction, when they so direct.
- C. Manufacturer's Field Services: Where indicated, engage a factory-authorized service representative to inspect field-assembled components and equipment installation, including service connections. Report results in writing as specified in Division 01 Section "Submittal Procedures."
- D. Manufacturer's Technical Services: Where indicated, engage a manufacturer's technical representative to observe and inspect the Work. Manufacturer's technical representative's services include participation in pre-installation conferences, examination of substrates and conditions, verification of materials, observation of Installer activities, inspection of completed portions of the Work, and submittal of written reports.
- E. Retesting/Reinspecting: Regardless of whether original tests or inspections were Contractor's responsibility, provide quality-control services, including retesting and reinspecting, for construction that replaced Work that failed to comply with the Contract Documents.
- F. Associated Services: Cooperate with agencies performing required tests, inspections, and similar quality-control services, and provide reasonable auxiliary services as requested. Notify agency sufficiently in advance of operations to permit assignment of personnel. Provide the following:
1. Provide safe access to items to be tested. This includes sheeting and ladders for deep excavation; scaffolding and ladders for inspection and testing of superstructure items. Incidental labor and facilities necessary to facilitate tests and inspections.
 2. Adequate quantities of representative samples of materials that require testing and inspecting. Assist agency in obtaining samples.
 3. Facilities for storage and field curing of test samples.
 4. Preliminary design mix proposed for use for material mixes that require control by testing agency.
 5. Security and protection for samples and for testing and inspecting equipment at Project site.
- G. 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.
- 1.10 PRODUCTS (Not Used)

PART 2 - EXECUTION

2.1 REPAIR AND PROTECTION

- A. General: On completion of testing, inspecting, sample taking, and similar services, repair damaged construction and restore substrates and finishes.
1. Provide materials and comply with installation requirements specified in other Specification Sections or matching existing substrates and finishes. Restore patched areas and extend restoration into adjoining areas with durable seams that are as invisible as possible. Comply with the Contract Document requirements for cutting and patching in Division 01 Section "Execution."

- B. Protect construction exposed by or for quality-control service activities.
- C. Repair and protection are Contractor's responsibility, regardless of the assignment of responsibility for quality-control services.

END OF SECTION 014000

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SECTION 014200 - REFERENCES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Special Conditions and other Division 01 Specification Sections, apply to this Section.

1.2 DEFINITIONS

- A. General: Basic Contract definitions are included in the Conditions of the Contract.
- B. "Approved": When used to convey Architect's action on Contractor's submittals, applications, and requests, "approved" is limited to Architect's duties and responsibilities as stated in the Conditions of the Contract.
- C. "Directed": A command or instruction by Architect. Other terms including "requested," "authorized," "selected," "required," and "permitted" have the same meaning as "directed."
- D. "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."
- E. "Regulations": Laws, ordinances, statutes, and lawful orders issued by authorities having jurisdiction, and rules, conventions, and agreements within the construction industry that control performance of the Work.
- F. "Furnish": Supply and deliver to Project site, ready for unloading, unpacking, assembly, installation, and similar operations.
- G. "Install": Unload, temporarily store, unpack, assemble, erect, place, anchor, apply, work to dimension, finish, cure, protect, clean, and similar operations at Project site.
- 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 and may or may not be identical with the description of the land on which Project is to be built.
"Installer": An installer is Contractor or another entity engaged by Contractor, as an employee, subcontractor, or contractor of lower tier, to perform a particular construction operation, including installation, erection, application, and similar operations.
- J. The term "experienced," when used with the term "installer," means having successfully completed a minimum of five previous projects similar in size and scope to this Project; being familiar with the special requirements indicated; and having complied with requirements of authorities having jurisdiction.
 - 1. Using a term such as "carpentry" does not imply that certain construction activities must be performed by accredited or unionized individuals of a corresponding generic name, such as "carpenter." It also does not imply that requirements specified apply exclusively to tradespeople of the corresponding generic name.
- K. The term 'replace' means remove designated, damaged, rejected, defective, unacceptable, or nonconforming work from the Project and provide new work meeting the requirements of the Contract Documents in place thereof.
- L. "Include": The words "include," in any form other than inclusive, is non-limiting and is not intended to mean all-inclusive."

- M. The terms 'Specifications' and 'Project Manual' are interchangeable.
- N. "Custom Color" is a special color that is not available from the manufactures standard colors and will require a once in a lifetime color match as selected by the Architect.
- O. "Standard color" is a minimum of 8 standard colors that the manufacture commonly offers for their product.
- P. "Match existing" is to match the existing material system including but not limited to: color, texture, size, and edge treatment (including the systems grout/mortar color, texture, size, shape and reveal)
- Q. "Concealed" where used in connection with insulation, painting of piping, piping, conduit, ducts, and accessories shall mean that they are hidden from sight as in trenches, chases, shafts, furred spaces, walls, slabs, or hung ceilings; also where they are not hidden from sight in the following locations: in partly excavated spaces or crawl spaces, or in service tunnels and used solely for repairs or maintenance.
- R. "Exposed" where used in connection with insulation, painting of piping, piping, conduit, ducts, accessories shall mean that they are not "concealed" as defined herein above.
- S. "Piping" includes in addition to pipe, also fittings, valves, hangers, and other accessories that comprise system.
- T. "Below Grade" includes all areas below the finished grade line and below the finished floor, where the finished floor system is supported on earth and gravel systems.
- U. Remove: Detach items from existing construction and legally dispose of them off-site, unless indicated to be removed and salvaged or removed and reinstalled.
- V. Salvage: Detach items from existing construction and deliver them to Owner ready for reuse or safely store in a controlled environment and reinstall where indicated.
- W. Reinstall: Prepare for reuse, clean, replace missing or damaged accessories, and reinstall them where indicated.
- X. Existing: Existing items of construction that are not to be removed and that are not otherwise indicated to be removed, salvaged, or removed and reinstalled.

1.3 INDUSTRY STANDARDS

- A. Applicability of Standards: Unless the Contract Documents include more stringent requirements, applicable construction industry standards have the same force and effect as if bound or copied directly into the Contract Documents to the extent referenced. Such standards are made a part of the Contract Documents by reference.
- B. Publication Dates: Comply with standards in effect as of date of the Contract Documents unless otherwise indicated.
- C. Copies of Standards: Each entity engaged in construction on Project should be familiar with industry standards applicable to its construction activity. Copies of applicable standards are not bound with the Contract Documents.
 - 1. Where copies of standards are needed to perform a required construction activity, obtain copies directly from publication source.
- D. Abbreviations and Acronyms for Standards and Regulations: Where abbreviations and acronyms are used in Specifications or other Contract Documents, they shall mean the recognized name of the organizations responsible for the standards and regulations.

1.4 ABBREVIATIONS AND ACRONYMS

- A. Industry Organizations: Where abbreviations and acronyms are used in Specifications or other Contract Documents, they shall mean the recognized name of the entities indicated in Thomson Gale's "Encyclopedia of Associations" or in Columbia Books' "National Trade & Professional Associations of

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION (Not Used)

END OF SECTION 014200

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SECTION 014533 - SPECIAL INSPECTIONS AND STRUCTURAL TESTING

PART 1 - GENERAL

1.1 GENERAL REQUIREMENTS

- A. Special Inspections and Structural Testing shall be in accordance with Chapter 17 of the *Building Code of New York State* (BCNYS).

1.2 DEFINITIONS

- A. Registered Design Professional: Licensed Professional Engineer or Registered Architect whose seal appears in the Construction Drawings. Unless noted otherwise, references to the Registered Design Professional in this section refer to the Structural Engineer for building design.
- B. RDP for Geotechnical Engineering: Licensed Professional Engineer whose seal appears on the Geotechnical Investigation. The RDP for Geotechnical Engineering shall perform or oversee Agent 2 services as indicated in the Schedule of Special Inspections. If a Geotechnical Investigation was not performed or if the RDP for Geotechnical Engineering is not retained to perform Agent 2 services, a licensed Geotechnical Engineer shall be retained to perform these duties.
- C. Code Enforcement Official: Officer or other designated authority charged with administration and enforcement of the BCNYS. For projects under jurisdiction of New York State agencies such as the Department of Education (SED), State University Construction Fund (SUCF), Office of General Services (OGS), and Dormitory Authority (DASNY), the Code Enforcement Official is an official from agency having jurisdiction.
- D. Special Inspector (SI): Professional Engineer licensed in the State of New York, acting on behalf of the Owner, that implements the Special Inspection Program for the project.
- E. Testing/Inspecting Agency: Agent retained by Special Inspector or Owner and coordinated by Special Inspector to perform some inspection services on behalf of Special Inspector.
- F. Testing/Inspecting Agency (Agent 1): Professional Engineer licensed in the State of New York that is qualified to perform structural inspections. The Special Inspector shall have a minimum of three years of experience performing inspections for similar projects.
- G. Testing/Inspecting Agency (Agent 2): Professional Geotechnical Engineer licensed in the state of New York, that is qualified to perform inspections for preparation of building subgrades and foundations.
- H. Testing/Inspecting Agency (Agents 3 or 4): Agency or firm qualified to inspect certain structural elements and perform field and laboratory tests to determine the characteristics and quality of building materials and workmanship.
- I. Statement of Special Inspections: Documents prepared by the Registered Design Professional and filed with and approved by the Code Enforcement Official, listing materials and work requiring Special Inspections. The Statement of Special Inspections is represented by this specification and includes the Schedule of Special Inspections.
- J. Schedule of Special Inspections: An itemized list of inspections, verifications, and tests (including frequency) required for the project and individuals, agencies, or firms who will be retained to perform these services. The Schedule of Special Inspections is located in at the end of this specification.
- K. Inspect and Inspection: Visual observation of materials, equipment, or construction work as defined in the Statement of Special Inspections, to determine that the work is in substantial conformance with the requirements of the Contract Documents.
- L. Continuous Special Inspection: Full-time observation of work by the Special Inspector or Testing Agency while the work is being performed.

- M. Periodic Special Inspections: Part-time or intermittent observation of work by the Special Inspector or Testing Agency for work that has been or is being performed and at completion of work.

1.3 QUALIFICATIONS

- A. Special Inspector and Testing/Inspecting Agency shall be accepted by the Registered Design Professional (RDP) and the Code Enforcement Official.
- B. Special Inspections shall be performed by agents who have relevant experience for each category of inspections indicated herein.
- C. Minimum qualifications of inspection agents are indicated in this specification.

1.4 SUBMITTALS

- A. Special Inspector and Testing/Inspecting Agency shall submit to the Registered Design Professional and Code Enforcement Official for review, a copy of their qualifications including names and qualifications of each inspector and technician who will be performing inspections or tests.
- B. Special Inspector and Testing/Inspecting Agency shall disclose past or current business relationship or potential conflict of interest with Contractor or Subcontractors whose work will be inspected or tested.

1.5 PAYMENT

- A. Owner will engage and pay for services of Special Inspector and Testing/Inspecting Agency.
- B. If materials requiring Special Inspections are fabricated in a plant not within 200 miles of project site, Contractor shall be responsible for travel expenses of Special Inspector or Testing/Inspecting Agency.
- C. Contractor shall be responsible for cost of retesting or reinspection of work failing to comply with requirements of Contract Documents.

1.6 OWNER RESPONSIBILITIES

- A. Owner will provide Special Inspector with complete set of Contract Documents sealed by the Registered Design Professional and approved by the Code Enforcement Official.

1.7 CONTRACTOR RESPONSIBILITIES

- A. Contractor shall cooperate with Special Inspector and his agents so Special Inspections and testing may be performed without hindrance.
- B. As indicated in the Schedule of Special Inspections, Contractor shall notify Special Inspector or Testing/Inspecting Agency at least 48 hours in advance of a required inspection or test.
- C. Contractor shall provide incidental labor and facilities to provide access to work to be inspected or tested, to obtain and handle samples at site or at source of products to be tested, to facilitate tests and inspections, and for storing and curing of test samples.
- D. If Special Inspections or testing require the use of Contractor's scaffolding to access work areas, Contractor shall provide competent person to perform daily evaluation of scaffolding to verify it is safe to use. Contractor shall notify Special Inspector and Testing Agent of this review before each use. Contractor is responsible for safe assembly and stability of scaffolding.
- E. Contractor shall keep latest set of Construction Drawings, field sketches, accepted shop drawings, and specifications at project site for field use by Inspectors and Testing Technicians.

- F. Contractor shall perform remedial work if required and sign nonconformance reports stating remedial work has been completed. Contractor shall submit signed reports to Special Inspector as work proceeds.
- G. The Special Inspection program shall not relieve Contractor of obligation to perform work in accordance with requirements of Contract Documents or from implementing an effective Quality Control program.
- H. Contractor shall be solely responsible for construction site safety.

1.8 SPECIAL INSPECTOR RESPONSIBILITIES

- A. Special Inspector shall hold a Special Inspections preconstruction meeting at least 7 days prior to initial planned date for start of construction. Attendees shall include Contractors, Owner's Representative, Testing Agency, Special Inspector, and Registered Design Professionals for Structural Engineering and for Architecture. Discussions shall include the following:
 - 1. Review of specifications and Schedule of Special Inspections for work requiring Special Inspections.
 - 2. Responsibilities of Contractors, Owner, Testing Agency, Special Inspector, and Registered Design Professional.
 - 3. Notification and reporting procedures.
- B. Special Inspector shall record and distribute minutes from the Special Inspection Preconstruction meeting.
- C. Special Inspector shall review inspection and material testing reports and coordinate the services of the Testing/Inspecting Agencies as follows:
 - 1. Verify inspections have been performed in accordance with the Schedule of Special Inspections.
 - 2. Verify reports are being distributed to the Contractor, Owner, Architect, Code Enforcement Official, and Registered Design Professional (RDP) for Structural Engineering.
 - 3. Verify discrepancies have been recorded and are being tracked.
- D. Special Inspector shall make site visits to inspect work as designated in the Statement of Special Inspections. Discrepancies will be brought to the attention of the Contractor and RDP.
- E. Special Inspector shall keep records of inspections and tests.
- F. Special Inspector shall review Certificates of Compliance for conformance with the standards specified in the Contract Documents. Discrepancies will be brought to the attention of the Contractor and RDP.
- G. Special Inspector shall submit a final report of Special Inspections in accordance with Section 3.4 of this specification.

1.9 LIMITS ON AUTHORITY

- A. Special Inspector or Testing/Inspecting Agency shall not release, revoke, alter, or enlarge on requirements of Contract Documents.
- B. Special Inspector or Testing/Inspecting Agency shall not have control over Contractor's means and methods of construction.
- C. Special Inspector or Testing/Inspecting Agency shall not be responsible for construction site safety.
- D. Special Inspector or Testing/Inspecting Agency shall not have authority to stop work.

PART 2 - INSPECTIONS AND TESTING

2.1 EXCAVATION, BACKFILL, COMPACTION(BUILDING AREA)

- A. Special Inspector shall perform inspections and verifications or coordinate the RDP for Geotechnical Engineering to perform inspections and verifications including the following:
 - 1. Identify soils requiring undercutting and replacing while observing proof rolling and when subgrade is exposed.
 - 2. Verify footing bearing strata.
 - 3. Review and accept materials proposed by Contractor for use as compacted fill based on test data and information submitted by Testing Agency. Material approval shall be based on requirements and recommendations stated in Project Geotechnical and Subsurface Investigation.
 - 4. Observe and accept filling and compaction procedures.
 - 5. Observe and accept preparation of slab-on-grade subgrade and subbase.
- B. Testing Agency shall perform field density tests for building subgrades and for fill materials including slab subbase within building area in accordance with ASTM D 6938 as follows:
 - 1. Footing subgrade and each stratum of soil on which footings will be placed.
 - 2. Building subgrade including slab subbase and each lift of compacted material.
 - 3. Inspect each subgrade and fill layer before further backfill or construction work is performed. Approval shall be based on satisfactory achievement of compaction criteria.
 - 4. Verify use of fill material and lift thicknesses in field.
- C. Testing Agency shall perform moisture content testing of slab subbase in accordance with ASTM D 6938.

2.2 CAST-IN-PLACE CONCRETE

- A. Special Inspector shall perform the following:
 - 1. Inspect reinforcing steel and placement.
 - 2. Inspect embedded bolts and anchor rods prior to concrete placement.
- B. Testing Agency shall perform the following:
 - 1. Verify use of required design mix.
 - 2. Sample and test concrete during placement as follows. Test shall be taken at point of discharge into structure:
 - a. Record specific locations where concrete was placed. Refer to column lines where possible.
 - b. For each truck, record time concrete is batched as shown in truck ticket, time placement begins/sample time, and time truck is emptied.
 - c. For each truck, sample fresh concrete in accordance with ASTM C 172, except modified for slump to comply with ASTM C 94.
 - d. For each truck, perform slump test in accordance with ASTM C 143. Perform two slump tests for pumped concrete; one at truck and one at point of discharge.
 - e. For each truck for self-consolidating concrete, measure slump flow and record visibility stability index in accordance with ASTM C 1611/C 1611M. Slump cone may be in the upright or inverted position. Use same cone position for the entire project for consistency.
 - f. For normal-weight concrete, measure air content in accordance with ASTM C 231, pressure method. For lightweight concrete, measure air content in accordance with ASTM C 173, volumetric method. Perform one test for each truck for air-entrained and non-air-entrained concrete.
 - g. Record temperature of concrete for each truck. Test in-place concrete temperature hourly when ambient temperature is 40 degrees F and below and when 80 degrees F and above.
 - h. Record air temperature and general weather conditions (cloudy, windy, sunny, etc.).
 - i. Record unit weight of fresh normal-weight concrete in accordance with ASTM C 138. Perform one test for each 50 cubic yards of concrete.
 - j. Perform concrete compressive tests as follows:

- I. Prepare compressive test specimens in accordance with ASTM C 31. Take a set of six 6 x 12 cylinders or nine 4 x 8 cylinders for each 50 cubic yards of concrete or each 5,000 square feet of slab area for each type of concrete. Store undisturbed in insulated box during cold weather. Deliver to laboratory between 16 and 32 hours after making. Perform compressive tests in accordance with ASTM C 39: two 6 x 12 specimens (three 4 x 8 specimens) tested at 7 days, two 6 x 12 specimens (three 4 x 8 specimens) tested at 28 days, and two 6 x 12 specimens (three 4 x 8 specimens) retained for later testing if required.
- II. In cold weather or whenever steel erection is scheduled to commence less than 14 days after placement of supporting foundation concrete, cast additional set of four 6 x 12 specimens (six 4 x 8 specimens) for each 50 cubic yards or fraction thereof of supporting foundation concrete. Field-cure cylinders, and test two 6 x 12 specimens (three 4 x 8 specimens) at 7 days, retaining two 6 x 12 specimens (three 4 x 8 specimens) for later testing if required. Steel erection may not begin until supporting concrete obtains 75 percent of its design strength.
- III. If concrete will be placed in separate buildings on a given project, make individual compressive strength test cylinders for each building.
- k. Perform additional testing as follows if required:
 - I. Take additional set of cylinders for compressive strength testing for each truck in which total time period between batching and completing placement has exceeded ACI-recommended, 90-minute-maximum time limit. Take additional cylinders within 10 minutes of placement completion.
 - II. Make additional tests of in-place concrete when test results indicate specified concrete strengths or other characteristics have not been attained in structure.
 - III. Perform tests to determine adequacy of concrete by cored cylinders complying with ASTM C 42 or by other methods acceptable to Architect.
 - IV. Contractor shall reimburse Owner for cost of additional tests.
3. Inspect concrete placement for proper application techniques.
4. Inspect for maintenance of specified curing temperature and techniques.
5. Perform moisture vapor emission and alkalinity testing in accordance with ASTM F 1869 and ASTM F 710, respectively, as follows:
 - a. Perform testing after building is enclosed, prior to installation of adhered floor finishes, and once HVAC systems are operational.
 - b. Test results must be reviewed and accepted by floor finish installer.
6. Verify in-situ concrete strength prior to removing of shores/forms from structural slabs.

2.4 UNIT MASONRY

- A. These provisions are for masonry walls indicated in structural drawings.
- B. Special Inspector shall perform the following:
 1. As masonry construction begins, the following shall be verified to ensure compliance:
 - a. Proportions and Construction of mortar joints.
 - b. Grade, type, size, and location of reinforcement, anchors, and connectors.
 - c. Sample panel/mockups.
 2. Prior to grouting, verify:
 - a. Grout space size is compliant with grout pour height.
 - b. Grout space is clean.
 - c. Placement of reinforcement, anchors, and connectors.
 - d. Proportions of site prepared grout.
 - e. Construction of mortar joints.
 3. During construction, the following shall be verified to ensure compliance:
 - a. Placement of masonry units.
 - b. Mortar joint construction
 - c. Grouting of CMU cells.
 - d. Size and location of structural members.
 - e. Type, size, location of anchors and connectors, including anchorage of masonry to structural members, frames, or other construction.
 - f. Welding of reinforcement.

- g. Protection of masonry during cold weather (temperature below 40°F) or hot weather (temperature above 90°F).
- 4. Testing Agency shall perform the following tests and evaluations listed below during construction for each 2,500 square feet of wall area or portion thereof.
 - a. Observe preparation of required mortar specimens, grout specimens, or prisms in accordance with ASTM C 780, ASTM C 1019, and ASTM C 1314 Rev
 - b. Verify for compliance with approved submittals:
 - i. Proportions of site-prepared mortar.
 - ii. Proportions of site-prepared grout.
 - iii. Slump flow and visual stability index (VSI) of self-consolidating grout as delivered to the site in accordance with ASTM C 1611.
 - c. Field Quality Control Testing:
 - i. Sample and evaluate mortar composition and properties in accordance with ASTM C 780.
 - ii. Sample and test grout compressive strength in accordance with ASTM C 1019.
 - iii. For each type of wall construction indicated, test masonry prisms in accordance with ASTM C 1314 and as follows:
 - I. Prepare one set of prisms for testing at 7 days and one set for testing at 28 days.

2.5 STRUCTURAL STEEL (INCLUDING STEEL JOISTS AND METAL DECK)

A. Special Inspector shall perform the following:

- 1. Verify Fabricator maintains detailed fabrication and Quality Control procedures:
 - a. Review procedures for completeness and adequacy relative to code requirements.
 - b. If Fabricator is designated as AISC-Certified Fabricator, Special Inspection for shop-fabricated members and assemblies is not required.
 - c. If Fabricator is not designated as AISC-Certified Fabricator, Contractor shall reimburse Owner via execution of credit change order for cost of Special Inspections and testing in Fabricator's shop.
- 2. Review manufacturer's Certificates of Compliance for high-strength bolts and weld filler material.
- 3. Review certified mill test reports.
- 4. Inspect steel frame joint details for compliance with approved Construction Documents.
- 5. Inspect end connections and bridging of open-web steel joists and joist girders.

B. Testing Agency shall perform the following:

- 1. Verification that copies of accepted field welding procedure specifications are available on site for reference by erector's welders.
- 2. Verification that erector's welder's qualifications are current and appropriate for joint type, welding position, and welding process to be used.
- 3. Verification that joint fit-up for partial and complete penetration groove welds are in compliance with AWS tolerances as follows:
 - a. Visually inspect 50 percent of joints scheduled for partial and complete penetration groove welds.
 - b. Visually inspect 50 percent of column splices scheduled for partial and complete penetration groove welds.
 - c. Visually inspect 100 percent of tension member splices, column splices, and moment connections that are part of the lateral force resisting system.
- 4. Material verification of structural steel and metal deck, including review of identification markings.
- 5. Perform pull-out tests on adhesive, expansion, and sleeve anchors.
- 6. Material verification of weld filler materials, including review of identification markings.
- 7. Inspect welding of structural steel and metal deck.
 - a. Visually inspect welds according to AWS.
 - b. Schedule inspection of field welding in timely manner utilizing vertical access means and methods utilized by Contractor to perform the welding.
 - c. Ultrasonic inspection (UT) according to ASTM E 587 is required for partial and complete penetration field groove welds as follows:
 - I. UT inspect 50 percent of joints scheduled for partial and complete penetration groove welds.
 - II. UT inspect 50 percent of column splices scheduled for partial and complete penetration groove welds.

- III. UT inspect 100 percent of tension member splices, column splices, and moment connections that are part of lateral force resisting system.
- IV. UT inspect 50 percent or minimum of six of the joints scheduled for partial or complete penetration groove welds completed by each welder. Increase inspection percentage to 100 percent for each welder with more than one rejected weld.
- d. Magnetic particle inspection according to ASTM E 709 is required for Fabricators not certified by AISC Quality Certification Program for 10 percent of shop fillet welds.
- e. Magnetic particle inspection according to ASTM E 709 is required for 10 percent of field fillet welds.
- f. UT inspect according to ASTM E 587 is required for 10 percent of shop partial or complete penetration welds and 100 percent of shop partial or complete penetration groove welds in tension members.
- 8. Inspect condition of erected materials.
 - a. Visually inspect erected steel for damage.
 - b. Visually inspect connections and framing to verify compliance with Contract Documents and accepted shop drawings.
- 9. Inspect mechanical fasteners for metal deck, including connections to supporting structure and side-lap fastening.
 - a. Visually inspect 100 percent of mechanical deck fasteners and 50 percent using depth gauge tool provided by fastener manufacturer.
- 10. Additional testing shall be performed as follows if required.
 - a. Testing Agency shall perform additional tests of connections and framing members field modified by Contractor to correct errors in shop drawings, fabrication, or erection.
 - b. Anchor rods and embedded structural supports incorrectly located or damaged after installation shall be field modified by Contractor as indicated in Section 033000, Paragraph 3.4 and tested by Testing Agency.
 - c. Testing and reporting of field modifications shall be in accordance with this section, Special Inspections, and have the following additional requirements:
 - I. Magnetic particle inspection according to ASTM E 709 is required for 100 percent of fillet welds.
 - II. Ultrasonic inspection according to ASTM E 587 is required for 100 percent of full-penetration welds.
 - III. Perform pull-out tests on 100 percent of each type of adhesive, expansion, or sleeve anchor used by applying a load equal to 125 percent of allowable pull-out strength listed in manufacturer's literature.
 - d. Contractor shall reimburse Owner for cost of additional tests performed.

PART 3 - DOCUMENTATION

3.1 RECORDS AND REPORTS

- A. Prepare detailed reports of each test or inspection. Include the following general information:

- 1. Project name and number.
- 2. Date of test or inspection.
- 3. Name of Testing Agency or Inspecting Agency.
- 4. Name of technician or inspector.
- 5. Weather conditions.
- 6. Locations and elevations of specific areas tested or inspected referenced to grid lines.
- 7. Description of test or inspection.
- 8. Reference to applicable ASTM standard.
- 9. Summary of observations, results, and recommendations.
- 10. Description of areas or materials requiring retesting or reinspection.

- B. Concrete compressive strength test reports shall contain the following information:

- 1. Name of Contractor and concrete supplier.
- 2. Name of concrete testing service.
- 3. Name of technician making and testing specimens.
- 4. Truck number and delivery ticket number.

5. Date and location within structure of concrete placement.
 6. Concrete type, class, mix proportions of materials, and design compressive strength at 28 days.
 7. Slump, air content, unit weight, and concrete temperature.
 8. Total time period between batching and completing placement for each truck.
 9. Compressive strength and type of break for tests.
- C. Field reports for concrete inspection shall contain general information noted above plus ambient temperature and cylinder numbers.
- D. Test reports for masonry materials shall include proportions, composition, and compressive strength.

3.2 COMMUNICATION

- A. Testing/Inspecting Agency shall immediately notify Contractor, Special Inspector, and Registered Design Professional by telephone, fax, or e-mail of test results failing to comply with requirements of Contract Documents.
- B. Special Inspector shall immediately notify Contractor of work found to be in nonconformance with Contract Documents during inspections. If nonconforming work is not corrected while Special Inspector is on-site, Special Inspector shall notify Registered Design Professional within 24 hours (one business day) and issue an inspection report noting the non-conformance.
- C. Special Inspector and each Testing/Inspecting Agent shall use a log to record and track non-conforming work during construction. Non-Conformance log shall include the following information:
1. Description of non-conformance.
 2. Date of non-conformance.
 3. Description of RDP response if received.
 4. Status of nonconformance: 'Open' or 'Closed.'

Updated log shall be attached to each inspection report. Special Inspector or Testing/Inspecting Agent may use Non-Conformance Log form provided at end of this section or other similar form.

- D. If non-conforming work is not corrected at time of substantial completion of structure or other appropriate time, Special Inspector shall notify Code Enforcement Official.

3.3 DISTRIBUTION OF REPORTS

- A. Testing/Inspecting Agency shall submit reports to Special Inspector and Registered Design Professional within 7 days of inspection or test. Legible handwritten reports may be submitted if final typed copies are not available.
- B. Special Inspector shall distribute reports to the Contractor, Owner, Architect, Code Enforcement Official, and RDP for Structural Engineering within 7 days of inspections. Legible handwritten reports may be submitted if final typed copies are not available.
- C. If requested by the Code Enforcement Official, Special Inspector shall submit interim reports that include inspections and tests performed since beginning of construction or since previous interim report. Interim reports shall be addressed to the Code Enforcement Official with copies sent to the Registered Design Professionals (Structural Engineer and Architect) and Contractor. Interim reports shall be signed by Agent performing inspections.

3.4 FINAL REPORT OF SPECIAL INSPECTIONS

- A. At completion of work, each Testing/Inspecting Agency shall submit Agent's Final Report of Special Inspections to Special Inspector stating work was completed in substantial conformance with Contract Documents and appropriate inspections and tests were performed. Testing/Inspecting Agency may use Agent's Final Report of Special Inspections form provided at end of this section or other similar form.

- B. At completion of work, Special Inspector shall compile a Final Report of Special Inspections including each Agent's Final Report of Special Inspections. The Final Report of Special Inspections shall state required inspections have been performed and itemize nonconforming work not corrected or resolved as required by the BCNYS. Interim reports from all Agents will not be included unless specifically requested by the Owner or Code Enforcement Official. The Final Report shall be stamped by a New York State Professional Engineer.
- C. Special Inspector may use Final Report of Special Inspections form provided at end of this section or other similar form based on CASE Form 102-2001.
- D. Special Inspector shall submit Final Report of Special Inspections to Registered Design Professional and Code Enforcement Official prior to issuance of a Certificate of Use and Occupancy.

AGENT X NON-CONFORMANCE LOG

PROJECT:

PROJECT NUMBER:

Non- Conformance Item No. (See Note 1)	Special Inspection Report No. Reference/Date	Summary of Non-Conformance	Date of RDP Response Received	SI Reinspection Required	Date Contractor Verification Received (See Note 1)	Status (See Note 2)
NC 1						
NC 2						
NC 3						
NC 4						
NC 5						
NC 6						

1. New items are in **bold**. For each non-conformance item above, the General Contractor or Subcontractor must sign and submit the Contractor Verification statement located in the RDP Response Report.

2. Non-conformance items remain " OPEN " until the Contractor Verification have been received. When the signed verifications have been received by the RDP, the item will be " CLOSED " .

Testing/Inspection Agent's Final Report of Special Inspections

Project Name: _____ Inspection Agent: _____
Location: _____ Inspection Agent Project No.: _____
Owner: _____ Special Inspector: _____
Owner Address: _____ Structural RDP: _____
Ryan Biggs | Clark Davis Project No.: _____

To the best of my information, knowledge, and belief, the Special Inspections and testing required for this project and designated for this Agent in the **Statement of Special Inspections** (which includes Specification Section **014533** and the Schedule of Special Inspections) have been performed and discovered discrepancies have been reported and resolved except for the following:

Comments:

[Attach continuation sheets if required to complete description of uncorrected discrepancies.]

Respectfully submitted,
Agent of the Special Inspector
[TITLE]

(Type or print name)

Signature

Date

Address

City, State, Zip

Design Professional Seal or Certification

Final Report of Special Inspections

Project Name: _____ Special Inspector: _____
Location: _____ Special Inspector Project No.: _____
Owner: _____ Architect of Record: _____
Owner Address: _____ Structural RDP: _____
Ryan Biggs | Clark Davis Project No.: _____

To the best of my information, knowledge, and belief, Special Inspections required for this project, as indicated in the **Statement of Special Inspections**, (which includes Specification Section **014533** and the Schedule of Special Inspections) have been performed and discovered discrepancies have been reported and resolved except for the following:

Comments:

[Attach continuation sheets if required to complete description of uncorrected discrepancies.]

Interim reports submitted prior to this Final Report form a basis for and are to be considered an integral part of this Final Report. Upon request, the interim Testing and Special Inspection reports can be provided. Agent's Final Reports of Special Inspections are attached and are also a part of this Final Report.

Respectfully submitted,
Special Inspector
[TITLE]

(Type or print name)

Signature

Date

Professional Seal

SCHEDULE OF SPECIAL INSPECTIONS FOR BUILDING STRUCTURES

INSPECTION AGENTS
1. SPECIAL INSPECTOR, P.E.
2. GEOTECHNICAL ENGINEERING/INSPECTOR
3. TESTING/INSPECTING AGENCY
4. TESTING/INSPECTING AGENCY

THE OWNER OR THE OWNER'S REPRESENTATIVE SHALL RETAIN A SPECIAL INSPECTOR WHO WILL PERFORM INSPECTIONS AND TESTING AND/OR OVERSEE THE WORK OF AN INSPECTION AND TESTING AGENCY. THE SPECIAL INSPECTOR SHALL BE A PROFESSIONAL ENGINEER EXPERIENCED IN THE DESIGN OF BUILDINGS AND REGISTERED IN THE STATE OF NEW YORK.

THE CONTRACTOR OR SUBCONTRACTOR PERFORMING THE WORK CANNOT RETAIN THE SPECIAL INSPECTOR. ANY CONFLICT OF INTEREST MUST BE DISCLOSED TO THE CODE ENFORCEMENT OFFICIAL PRIOR TO COMMENCING CONSTRUCTION.

THE NAMES AND QUALIFICATIONS OF AGENTS MUST BE SUBMITTED TO THE CODE ENFORCEMENT OFFICIAL AND REGISTERED DESIGN PROFESSIONAL PRIOR TO COMMENCING CONSTRUCTION. THE QUALIFICATIONS OF ALL PERSONNEL PERFORMING INSPECTION AND TESTING ACTIVITIES ARE SUBJECT TO APPROVAL BY THE CODE ENFORCEMENT OFFICIAL. MINIMUM QUALIFICATIONS OF THE TESTING AGENTS ARE INDICATED IN THE SCHEDULE.

KEY OF MINIMUM QUALIFICATIONS OF INSPECTION AGENTS (MQIA)	
PE	NEW YORK STATE REGISTERED PROFESSIONAL ENGINEER
RDP	NEW YORK STATE REGISTERED DESIGN PROFESSIONAL ENGINEER
EIT	ENGINEER IN TRAINING SUPERVISED BY A PE – INTERN ENGINEER
ACI-CCI	AMERICAN CONCRETE INSTITUTE CERTIFIED CONCRETE CONSTRUCTION INSPECTOR
ACI-CFTT	AMERICAN CONCRETE INSTITUTE CERTIFIED CONCRETE FIELD TESTING TECHNICIAN – GRADE 1
ICC-RCSI	ICC REINFORCED CONCRETE SPECIAL INSPECTOR
ICC-RCC	ICC REINFORCED CONCRETE CERTIFICATION
ICC-SMC	ICC STRUCTURAL MASONRY CERTIFICATION
ICC-SSWC	ICC STRUCTURAL STEEL AND WELDING CERTIFICATION
AWS-CWI	AMERICAN WELDING SOCIETY CERTIFIED WELDING INSPECTOR
ICC-SAFC	ICC SPRAY-APPLIED FIREPROOFING CERTIFICATION
ASNT	AMERICAN SOCIETY OF NON-DESTRUCTIVE TESTING – LEVEL II OR III
ICC-PCC	ICC PRESTRESSED CONCRETE CERTIFICATION

CATEGORY	MINIMUM QUALIFICATIONS OF INSPECTION AGENTS (MQIA)
A. REINFORCED CONCRETE	1. CURRENT ICC REINFORCED CONCRETE SPECIAL INSPECTOR OR ACI CONCRETE CONSTRUCTION INSPECTOR
	2. CONCRETE FIELD TESTING CAN BE BY AN ACI CONCRETE FIELD TESTING TECHNICAL WITH GRADE 1 CERTIFICATION
	3. INTERN ENGINEER WITH RELEVANT EXPERIENCE
	4. NEW YORK STATE REGISTERED DESIGN PROFESSIONAL ENGINEER (RDP) WITH RELEVANT EXPERIENCE
B. PRE-STRESSED PRE-TENSION CONCRETE	1. CURRENT ICC REINFORCED CONCRETE CERTIFICATION AND ACI CONCRETE FIELD TESTING TECHNICAL WITH GRADE 1 CERTIFICATION PLUS ONE YEAR OF RELEVANT EXPERIENCE
	2. INTERN ENGINEER WITH RELEVANT EXPERIENCE
	3. RDP WITH RELEVANT EXPERIENCE
C. PRE-STRESSED POST-TENSION CONCRETE	1. CURRENT POST-TENSIONING INSTITUTE (PTI) CERTIFICATION
	2. INTERN ENGINEER WITH RELEVANT EXPERIENCE
	3. RDP WITH RELEVANT EXPERIENCE
D. WELDING	1. CURRENT AWS CERTIFIED WELDING INSPECTOR
	2. CURRENT ICC STRUCTURAL STEEL AND WELDING CERTIFICATE PLUS ONE YEAR OF RELEVANT EXPERIENCE
	3. CURRENT LEVEL II CERTIFICATION FROM THE AMERICAN SOCIETY FOR NON-DESTRUCTIVE TESTING (NDT)
	4. CURRENT LEVEL III PROVIDED PREVIOUSLY CERTIFIED AS NDT LEVEL II
E. HIGH-STRENGTH BOLTING AND STEEL FRAME INSPECTION	1. CURRENT ICC STRUCTURAL STEEL AND WELDING CERTIFICATE PLUS ONE YEAR OF RELEVANT EXPERIENCE
	2. INTERN ENGINEER WITH RELEVANT EXPERIENCE
	3. RDP WITH RELEVANT EXPERIENCE
F. MASONRY	1. CURRENT ICC STRUCTURAL MASONRY AND ONE YEAR OF RELEVANT EXPERIENCE
	2. INTERN ENGINEER WITH RELEVANT EXPERIENCE
	3. RDP WITH RELEVANT EXPERIENCE
G. SPRAYED FIRE-RESISTANT MATERIALS	1. CURRENT ICC SPRAY-APPLIED FIREPROOFING CERTIFICATION AND ONE YEAR OF RELEVANT EXPERIENCE
	2. INTERN ENGINEER WITH RELEVANT EXPERIENCE
	3. RDP WITH RELEVANT EXPERIENCE
H. EXCAVATION AND FILLING VERIFICATION OF SOILS PILES AND DRILLED PIERS MODULAR RETAINING WALLS	1. CURRENT LEVEL II CERTIFICATION IN GEOTECHNICAL ENGINEERING TECHNOLOGY/CONSTRUCTION FROM THE NATIONAL INSTITUTE FOR CERTIFICATION IN ENGINEERING TECHNOLOGIES (NICET)
	2. INTERN ENGINEER WITH RELEVANT EXPERIENCE
	3. RDP WITH RELEVANT EXPERIENCE
I. INSPECTION OF FABRICATORS	1. PRECAST: CURRENT ICC REINFORCED CONCRETE CERTIFICATION PLUS ONE YEAR OF RELEVANT EXPERIENCE
	2. BAR JOISTS: SEE WELDING REQUIREMENTS
	3. METAL BUILDINGS: SEE WELDING REQUIREMENTS
	4. STRUCTURAL STEEL: SEE WELDING REQUIREMENTS

J. EXTERIOR AND INTERIOR ARCHITECTURAL WALL PANELS	1. INTERN ENGINEER WITH RELEVANT EXPERIENCE
	2. RDP WITH RELEVANT EXPERIENCE
K. EXTERIOR INSULATION AND FINISH SYSTEM	1. INTERN ENGINEER WITH RELEVANT EXPERIENCE
	2. RDP WITH RELEVANT EXPERIENCE
L. SMOKE CONTROL	1. EXPERTISE IN FIRE PROTECTION ENGINEERING, MECHANICAL ENGINEERING, AND CERTIFIED AS AN AIR BALANCER
	2. THE RDP RESPONSIBLE FOR DESIGN
M. SEISMIC RESISTANCE	1. SEE APPLICABLE CATEGORIES IN THIS TABLE
G. GENERAL	1. QUALIFIED PERSON WITH ONE YEAR OF RELEVANT EXPERIENCE
	2. INTERN ENGINEER WITH RELEVANT EXPERIENCE
	3. RDP WITH RELEVANT EXPERIENCE

<input checked="" type="checkbox"/>	CONCRETE CONSTRUCTION: SPECIAL INSPECTION AND TESTING IS REQUIRED. (TABLE 1705.3)						
	TYPE	AGENT NO.	MQIA	CONT.	PERIODIC	REFERENCED STANDARD	CODE
<input checked="" type="checkbox"/>	INSPECT REINFORCEMENT, INCLUDING PRESTRESSING TENDONS, AND VERIFY PLACEMENT.	1 OR 3	A.1, A.3 M.1 B.1, B.2 C.1, C.2		X	ACI 318 Ch. 20, 25.2, 25.3, 26.6.1 - 26.6.3	1908.4
<input checked="" type="checkbox"/>	A. FOOTINGS, FOUNDATIONS WALLS, AND PIERS.				X 50%		
<input type="checkbox"/>	B. RETAINING WALLS.				X 75%		
<input checked="" type="checkbox"/>	C. SLABS ON GRADE.				X 50%		
<input type="checkbox"/>	D. SLABS ON DECK.				X 50%		
<input type="checkbox"/>	E. CONCRETE BEAMS, COLUMNS, AND GRADE BEAMS.				X 75%		
<input checked="" type="checkbox"/>	F. STRUCTURAL SLABS.				X 100%		
<input type="checkbox"/>	G. SHEAR WALLS.				X 100%		
<input type="checkbox"/>	REINFORCING BAR WELDING:	3	D.1, D.2, M.1				
<input type="checkbox"/>	A. VERIFY WELDABILITY OF REINFORCING BARS OTHER THAN ASTM A706;				X	AWS D1.4	
<input type="checkbox"/>	B. INSPECT SINGLE-PASS FILLET WELDS, MAXIMUM 5/16"; AND				X 100%	ACI 318:26.6.4	
<input type="checkbox"/>	C. INSPECT ALL OTHER WELDS			X			
<input checked="" type="checkbox"/>	INSPECT ANCHORS CAST IN CONCRETE.	1 OR 3	A.1, A.3, A.4		X 50%	ACI 318:17.8.2	

<input checked="" type="checkbox"/>	INSPECT ANCHORS POST-INSTALLED IN HARDENED CONCRETE MEMBERS.	1 OR 3	E.1, E.2, E.3				TABLE 1705.3 FOOTNOTE 'b'.
<input checked="" type="checkbox"/>	A. ADHESIVE ANCHORS INSTALLED IN HORIZONTALLY OR UPWARDLY INCLINED ORIENTATIONS TO RESIST SUSTAINED TENSION LOADS.			X		ACI 318: 7.8.2.4	
<input checked="" type="checkbox"/>	B. MECHANICAL AND ADHESIVE ANCHORS NOT DEFINED IN "A".				X	ACI 318: 17.8.2	
<input checked="" type="checkbox"/>	VERIFY USE OF REQUIRED DESIGN MIX.	3	A.2		X 100%	ACI 318 Ch. 19, 26.4.3, 26.4.4	1904.1, 1904.2, 1908.2, 1908.3
<input checked="" type="checkbox"/>	PRIOR TO CONCRETE PLACEMENT, FABRICATE SPECIMENS FOR STRENGTH TESTS, PERFORM SLUMP AND AIR CONTENT TESTS, AND DETERMINE THE TEMPERATURE OF CONCRETE.	3	A.2	X		ASTM C172 ASTM C31 ACI 318: 26.5, 26.12	1908.10
<input checked="" type="checkbox"/>	A. TAKE SIX STANDARD CYLINDERS FOR EACH 50 CUBIC YARDS OF CONCRETE OR EACH 5000 SF OF SLAB AREA FOR EACH CLASS OF CONCRETE.						
<input checked="" type="checkbox"/>	B. RECORD TIME CONCRETE IS BATCHED, TIME CONCRETE IS SAMPLED, AND TIME THE TRUCK IS EMPTY.						
<input checked="" type="checkbox"/>	C. PERFORM ONE SLUMP TEST FOR EACH TRUCK; TWO IF THE						

<input checked="" type="checkbox"/>	CONCRETE IS PUMPED.						
<input checked="" type="checkbox"/>	D. MEASURE AIR CONTENT FOR EACH TRUCK.						
<input checked="" type="checkbox"/>	E. RECORD CONCRETE AND AMBIENT AIR TEMPERATURE.						
<input checked="" type="checkbox"/>	F. RECORD UNIT WEIGHT OF CONCRETE.						
<input checked="" type="checkbox"/>	G. PERFORM COMPRESSIVE STRENGTH TESTS.						
<input checked="" type="checkbox"/>	H. PERFORM SLUMP FLOW AND RECORD VISIBILITY STABILITY INDEX (VSI) FOR SELF-CONSOLIDATING CONCRETE.	3	B.2	X			
<input checked="" type="checkbox"/>	INSPECT CONCRETE AND SHOTCRETE PLACEMENT FOR PROPER APPLICATION TECHNIQUES.	3	A.1, A.2	X		ACI 318: 26.5	1908.6, 1908.7, 1908.8
<input checked="" type="checkbox"/>	VERIFY MAINTENANCE OF SPECIFIED CURING TEMPERATURE AND TECHNIQUES.	3	A.1, A.2		X	ACI 318: 26.5.3-26.5.5	1908.9
<input type="checkbox"/>	INSPECT PRE-STRESSED/POST-TENSION CONCRETE FOR:	1 OR 3	C.1, C.2, C.3				
<input type="checkbox"/>	A. APPLICATION OF PRE-STRESSING FORCES			X		ACI 318: 26.10	
<input type="checkbox"/>	B. GROUTING OF BONDED PRE-STRESSING TENDONS			X			
<input type="checkbox"/>	C. PLACEMENT OF TENDONS PRIOR TO STRESSING				X		
<input type="checkbox"/>	D. TENDONS ANCHORAGE				X		

<input type="checkbox"/>	INSPECT ERECTION OF PRECAST CONCRETE MEMBERS.	1 OR 3	B.1, B.2, B.2.3		X	ACI 318: 26.9, 26.10	
<input type="checkbox"/>	A. GROUTING OF PRECAST CONCRETE PLANK JOINTS.	1 OR 3	A.1-A.4	X			
<input type="checkbox"/>	B. VERIFY USE OF REQUIRED MIX DESIGN	3	A.1-A.4	X			
<input type="checkbox"/>	C. SAMPLE AND TEST GROUT IN ACCORDANCE WITH ABOVE.	3	A.1, A.2	X			
<input type="checkbox"/>	D. CONNECTIONS AND BEARING OF PRECAST CONCRETE MEMBERS INCLUDING ARCHITECTURAL WALL PANELS.	1 OR 3	A.1-A.4 D.1-D.3 J.1, J.2		X		
<input checked="" type="checkbox"/>	VERIFY IN-SITU CONCRETE STRENGTH, PRIOR TO STRESSING OF TENDONS IN POST-TENSIONED CONCRETE AND PRIOR TO REMOVAL OF SHORES AND FORMS FROM BEAMS AND STRUCTURAL SLABS	3	A.2, C.1		X	ACI 318: 26.11.2	
<input type="checkbox"/>	INSPECT FORMWORK FOR SHAPE, LOCATION, AND DIMENSIONS OF CONCRETE MEMBER BEING FORMED	1 OR 3	A.1, A.3, A.4		X	ACI 318: 26.11.1.2(b)	
<input checked="" type="checkbox"/>	INSPECT AND TEST CONCRETE SLABS ON GRADE AND METAL DECK:	3	A.1, A.2				
<input type="checkbox"/>	A. FLOOR FLATNESS AND LEVELNESS.				X 50%	ASTM E 1155	
<input checked="" type="checkbox"/>	B. MOISTURE VAPOR EMISSION AND ALKALINITY. PERFORM 4 TESTS FOR EACH			X		ASTM F 1869 ASTM F 710	

	2000 SF OF FLOOR AREA AND MINIMUM OF 4 TESTS IN EACH AREA OF THE BUILDING WHERE ADHERED FLOOR FINISHES ARE BEING APPLIED.						
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<input type="checkbox"/>	SPECIAL CASES: CONCRETE REPAIRS: SPECIAL INSPECTION AND TESTING IS REQUIRED. (SECTION 1705.1.1)						
	TYPE	AGENT NO.	MQIA	CONT.	PERIODIC	REFERENCED STANDARD	CODE
<input type="checkbox"/>	INSPECT REINFORCEMENT.	1 OR 3	A.1, A.3		X 50%	ACI 318 Ch. 20, 25.2, 25.3, 26.6.1 - 26.6.3	1908.4
<input type="checkbox"/>	VERIFY USE OF REQUIRED REPAIR MATERIALS.	3	A.2		X 100%		
<input type="checkbox"/>	A. INSPECT PREPARATION OF CONCRETE SURFACES FOR PATCHING AND CRACK REPAIR.	3	A.2		X 100%		
<input type="checkbox"/>	B. INSPECT INSTALLATION OF PATCHES AND CRACK REPAIRS.	3	A.2	X 50%			
<input type="checkbox"/>	C. DOCUMENT QUANTITY OF REPAIRS.	3	A.2		X 100%		
<input type="checkbox"/>	D. TEST PATCHED AREAS AFTER THREE DAYS FOR SOUNDNESS AND DELAMINATION BY SOUNDING WITH A HAMMER.	3	A.2		X 100%		
<input type="checkbox"/>	PERFORM PULL-OUT TESTS ON REINFORCEMENT AND ANCHORS DRILLED INTO ADHESIVE:	3	A.2		X 100%		
<input type="checkbox"/>	A. TEST BY PULLING WITH A CLAW HAMMER USING THE WEIGHT OF ONE PERSON.						
<input type="checkbox"/>	INSPECT FOR MAINTENANCE OF SPECIFIED PLACEMENT TEMPERATURE & CURING TECHNIQUES.	3	A.2	X 50%			

<input type="checkbox"/>	PERFORM ADHESION TESTS ON COATINGS.	3	A.2		3 LOCATIONS ON MOCKUP	ASTM 3359 METHOD A	
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<input type="checkbox"/>	MASONRY CONSTRUCTION: LEVEL 1 – FOR RISK CATEGORY I, II, OR III, DESIGNED USING PRESCRIPTIVE OR EMPIRICAL DESIGN METHODS: SPECIAL INSPECTION IS REQUIRED. (SECTION 1705.4)						
	TYPE	AGENT NO.	MQIA	CONT.	PERIODIC	REFERENCED STANDARD	CODE
<input type="checkbox"/>	VERIFY CERTIFICATES OF COMPLIANCE PRIOR TO CONSTRUCTION	1	F.2, F.3		X	TMS 402/ TMS 602 TABLE 3.1.1	1705.4

NOTE:

THE REQUIREMENTS OF THIS SECTION APPLY TO MASONRY CONSTRUCTION INCLUDING MASONRY VENEERS, MASONRY PARTITION WALLS, AND ARCHITECTURAL WALL PANELS, IF APPLICABLE.

<input checked="" type="checkbox"/>	MASONRY CONSTRUCTION: LEVEL 2 – FOR RISK CATEGORY I, II, OR III, DESIGNED USING ENGINEERED DESIGN METHODS, OR RISK CATEGORY IV DESIGNED USING PRESCRIPTIVE OR EMPIRICAL DESIGN METHODS. SPECIAL INSPECTION IS REQUIRED. (SECTION 1705.4)						
	TYPE	AGENT NO.	MQIA	CONT.	PERIODIC	REFERENCED STANDARD	CODE
<input checked="" type="checkbox"/>	VERIFY COMPLIANCE WITH THE APPROVED SUBMITTALS	1	F.2, F.3		X		
	VERIFY COMPLIANCE OF SAMPLE PANEL/MOCKUP				X		
<input checked="" type="checkbox"/>	AS MASONRY CONSTRUCTION BEGINS, FOR FIRST FIVE DAYS OF CONSTRUCTION AND FOR EVERY 2500 SF OF WALL AREA, VERIFY THAT THE FOLLOWING ARE IN COMPLIANCE:	1 OR 3	F.1-F.3				
<input checked="" type="checkbox"/>	A. PROPORTIONS OF SITE-PREPARED MORTAR				X		
<input checked="" type="checkbox"/>	B. CONSTRUCTION OF MORTAR JOINTS.				X		
<input type="checkbox"/>	C. GRADE AND SIZE OF PRESTRESSING TENDONS AND ANCHORAGES.				X		
<input checked="" type="checkbox"/>	D. GRADE, TYPE, SIZE AND LOCATION OF REINFORCEMENT, CONNECTORS, ANCHORAGES. AND PRESTRESSING TENDONS				X		
<input type="checkbox"/>	E. PRESTRESSING TECHNIQUE				X		
<input type="checkbox"/>	F. PROPERTIES OF THIN-BED MORTAR FOR AAC MASONRY			X 1 ST 5000 SF	X		
						TMS 402/ TMS 602 TABLE 3.1.2	

<input checked="" type="checkbox"/>	PRIOR TO GROUTING, VERIFY THAT THE FOLLOWING ARE IN COMPLIANCE:	3	F.1				
<input checked="" type="checkbox"/>	A. GROUT SPACE AND GROUT POUR HEIGHT				X		
<input checked="" type="checkbox"/>	B. GRADE, TYPE, AND SIZE OF REINFORCEMENT AND ANCHOR BOLTS AND PRESTRESSING TENDONS AND ANCHORAGES				X		
<input checked="" type="checkbox"/>	C. PLACEMENT OF REINFORCEMENT, CONNECTORS, AND PRESTRESSING TENDONS AND ANCHORAGES				X		
<input checked="" type="checkbox"/>	D. PROPORTIONS OF SITE-PREPARED GROUT AND PRESTRESSING GROUT FOR BONDED TENDONS				X		
<input checked="" type="checkbox"/>	E. CONSTRUCTION OF MORTAR JOINTS				X		
<input checked="" type="checkbox"/>	VERIFY DURING CONSTRUCTION:	3	F.1				
<input checked="" type="checkbox"/>	A. PLACEMENT OF MASONRY UNITS				X		
	B. MORTAR JOINT CONSTRUCTION						
	C. SIZE AND LOCATION OF STRUCTURAL ELEMENTS						
<input checked="" type="checkbox"/>	B. TYPE, SIZE, AND LOCATION OF ANCHORAGE OF MASONRY TO STRUCTURAL MEMBERS, FRAMES, OR OTHER CONSTRUCTION				X		

<input type="checkbox"/>	C. WELDING OF REINFORCEMENT			X			
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<input checked="" type="checkbox"/>	D. PREPARATION, CONSTRUCTION, AND PROTECTION OF MASONRY DURING COLD WEATHER (TEMPERATURE BELOW 40°F (4.4°C)) OR HOT WEATHER (TEMPERATURE ABOVE 90°F (32.2°C))				X		
<input type="checkbox"/>	E. APPLICATION AND MEASUREMENT OF PRESTRESSING FORCE			X			
<input checked="" type="checkbox"/>	F. PLACEMENT OF GROUT AND PRESTRESSING GROUT FOR BONDED TENDONS IS IN COMPLIANCE			X			
<input type="checkbox"/>	G. PLACEMENT OF AAC MASONRY UNITS AND CONSTRUCTION OF THIN-BED MORTAR JOINTS			X 1 ST 5000 SF	X		
<input type="checkbox"/>	H. VERIFY SLUMP FLOW AND VISUAL STABILITY INDEX (VSI) OF SELF-CONSOLIDATING GROUT AS DELIVERED TO THE SITE.			X			
<input checked="" type="checkbox"/>	OBSERVE PREPARATION OF GROUT SPECIMENS, MORTAR SPECIMENS, AND/OR PRISMS FOR EVERY 2500 SF OF WALL	3	F.1		X		

NOTE:

THE REQUIREMENTS OF THIS SECTION APPLY TO MASONRY CONSTRUCTION INCLUDING MASONRY VENEERS, MASONRY PARTITION WALLS, AND ARCHITECTURAL WALL PANELS, IF APPLICABLE.

<input checked="" type="checkbox"/>	STEEL CONSTRUCTION: SPECIAL INSPECTION IS REQUIRED. (SECTION 1705.2.1)						
	TYPE	AGENT NO.	MQIA	CONT.	PERIODIC	REFERENCED STANDARD	CODE
<input checked="" type="checkbox"/>	MATERIAL VERIFICATION OF STRUCTURAL STEEL AND METAL DECK:						
<input checked="" type="checkbox"/>	A. IDENTIFICATION MARKINGS TO CONFORM TO ASTM STANDARDS SPECIFIED IN THE APPROVED CONSTRUCTION DOCUMENTS.	1 OR 3	E.1-E.3		X 100%		
<input checked="" type="checkbox"/>	B. MANUFACTURER'S CERTIFIED MILL TEST REPORTS REQUIRED.	1			X 100%		
<input checked="" type="checkbox"/>	MINIMUM INSPECTIONS PRIOR TO WELDING	3	D.1, D.2, M.1	X		AISC 360 TABLE N5.4-1	
<input checked="" type="checkbox"/>	MINIMUM INSPECTIONS DURING WELDING	3	D.1, D.2, M.1	X		AISC 360 TABLE N5.4-2	
<input checked="" type="checkbox"/>	MINIMUM INSPECTIONS AFTER WELDING	3	D.1, D.2, M.1		X 100%	AISC 360 TABLE N5.4-3	
<input checked="" type="checkbox"/>	ULTRASONIC TESTING SHALL BE PERFORMED ON CJP GROOVE WELDS SUBJECTS TO TRANSVERSELY APPLIED TENSION LOADING IN BUTT-T, AND CORNER JOINTS IN MATERIALS 5/16 INCH THICK OR GREATER	3	D.1, D.2, M.1			AISC 360 N5.5b	
<input type="checkbox"/>	A. FOR RISK CATEGORY III OR IV STRUCTURES				X 100%		
<input checked="" type="checkbox"/>	B. FOR RISK CATEGORY II STRUCTURES				X 10%		
<input checked="" type="checkbox"/>	MAGNETIC PARTICLE TESTING SHALL BE PERFORMED ON FILLET WELDS				X 10%		
<input type="checkbox"/>	MINIMUM INSPECTIONS PRIOR TO HIGH-STRENGTH BOLTING (NOT REQUIRED FOR SNUG-TIGHT JOINTS).	3	E.1, M.1	X		AISC 360 N6, TABLE N5.6-1	

<input type="checkbox"/>	MINIMUM INSPECTIONS DURING HIGH-STRENGTH BOLTING (NOT REQUIRED FOR SNUG-TIGHT JOINTS).	3	E.1, M.1			AISC 360 N6, TABLE N5.6-2	
<input type="checkbox"/>	A. TURN-OF-NUT WITH MATCH MARKING, DIRECT-TENSION-INDICATOR METHOD, TWIST-OFF-TYPE TENSION CONTROL BOLT METHOD				X 100%		
<input type="checkbox"/>	B. CALIBRATED WRENCH METHOD, TURN-OF-NUT METHOD WITHOUT MATCHMARKING.			X			
<input type="checkbox"/>	MINIMUM INSPECTION AFTER HIGH-STRENGTH BOLTING	3	E.1, M.1		X 100%	AISC 360 N6, TABLE N5.6-3	
<input checked="" type="checkbox"/>	INSPECT FABRICATED OR ERECTED STEEL AS APPROPRIATE TO VERIFY COMPLIANCE WITH THE CONSTRUCTION DRAWINGS. INSPECT BRACES, STIFFENERS, MEMBER LOCATIONS, AND JOINT DETAILS.	1 OR 3	E.1, E.2, E.3, M.1		X	AISC 360 N5.8	
<input checked="" type="checkbox"/>	VERIFY COLUMN PLUMBNESS AND SPLICES	3	E.1		X 100%	AISC 360 N2.3(f)	
<input checked="" type="checkbox"/>	INSPECT DURING PLACEMENT OF ANCHOR RODS AND OTHER EMBEDMENTS SUPPORTING STRUCTURAL STEEL FOR COMPLIANCE WITH THE CONSTRUCTION DRAWINGS.	1 OR 3	A.1, A.2, A.3, A.4	X		AISC 360 N5.8	

<input checked="" type="checkbox"/>	PERFORM PULL-OUT TESTS ON DRILLED-IN, ADHESIVE, EXPANSION, AND SLEEVE ANCHORS:	3	E.1		X 100%	ACI 318 17.8.2	
<input checked="" type="checkbox"/>	A. TEST 10% OF EACH ANCHOR TYPE (MINIMUM OF 2) BY APPLYING A LOAD EQUAL TO 125% ALLOWABLE PULL-OUT STRENGTH.						
<input checked="" type="checkbox"/>	B. TEST 100% OF ANCHORS BY PULLING WITH A CLAW HAMMER USING THE WEIGHT OF ONE MAN.						
<input checked="" type="checkbox"/>	C. ADHESIVE ANCHORS INSTALLED IN HORIZONTALLY OR UPWARDLY INCLINED ORIENTATIONS TO RESIST SUSTAINED TENSION LOADS.			X		ACI 318 17.8.2.4	
<input type="checkbox"/>	INSPECT WELDING OF STEEL HEADED STUD ANCHORS.	3	D.1, D.2, M.1	X		AWS D1.1/D1.1M	
<input checked="" type="checkbox"/>	INSPECT WELDING OF RAILING SYSTEM					1705.2.1. PER AISC 360-16. AWS D1.1 & D1.3	

NOTE:
THE REQUIREMENTS OF THIS SECTION APPLY TO PRE-ENGINEERED STRUCTURAL COMPONENTS INCLUDING JOISTS, PURLINS, GIRTS, ETC.

<input checked="" type="checkbox"/> OPEN-WEB STEEL JOISTS AND/OR JOIST GIRDERS: SPECIAL INSPECTION IS REQUIRED. (TABLE 1705.2.3)							
	TYPE	AGENT NO.	MQIA	CONT.	PERIODIC	REFERENCED STANDARD	CODE
<input checked="" type="checkbox"/>	INSTALLATION OF OPEN-WEB STEEL JOISTS AND JOIST GIRDERS.					SJI 100, SJI 200	
<input checked="" type="checkbox"/>	A. END CONNECTIONS						
<input checked="" type="checkbox"/>	a. WELDING	3	D.1, D.2, M.1		X		
<input checked="" type="checkbox"/>	b. BOLTED		E.1, M.1				
<input checked="" type="checkbox"/>	B. BRIDGING – HORIZONTAL OR DIAGONAL						
<input checked="" type="checkbox"/>	a. STANDARD BRIDGING	1 OR 3	E.1, E.2, E.3		X		
<input checked="" type="checkbox"/>	b. BRIDGING THAT DIFFERS FROM THE SJI SPECIFICATIONS	1	E.3				

NOTE:

THE REQUIREMENTS OF THIS SECTION APPLY TO PRE-ENGINEERED STRUCTURAL COMPONENTS INCLUDING JOISTS, PURLINS, GIRTS, ETC.

<input checked="" type="checkbox"/>	COLD-FORMED STEEL DECK: SPECIAL INSPECTION IS REQUIRED (SECTION 1705.2.2)						
	TYPE	AGENT NO.	MQIA	CONT.	PERIODIC	REFERENCED STANDARD	CODE
<input checked="" type="checkbox"/>	INSPECTION OF EXECUTION TASKS PRIOR TO DECK PLACEMENT.	1 OR 3	E.1, E.2, E.3		X	SDI QA/QC TABLE 1.1	
<input checked="" type="checkbox"/>	INSPECTION OF EXECUTION TASKS AFTER DECK PLACEMENT.	1 OR 3	E.1, E.2, E.3		X	SDI QA/QC TABLE 1.2	
<input checked="" type="checkbox"/>	INSPECTION OF EXECUTION TASKS PRIOR TO WELDING.	3	D.1, D.2, M.1		X	SDI QA/QC TABLE 1.3	
<input checked="" type="checkbox"/>	INSPECTION OF EXECUTION TASKS DURING WELDING.	3	D.1, D.2, M.1	X		SDI QA/QC TABLE 1.4	
<input checked="" type="checkbox"/>	INSPECTION OF EXECUTION TASKS AFTER WELDING.	3	D.1, D.2, M.1		X	SDI QA/QC TABLE 1.5	
<input checked="" type="checkbox"/>	INSPECTION OF EXECUTION TASKS PRIOR TO MECHANICAL FASTENING.	3	E.1, E.2, E.3, M.1		X	SDI QA/QC TABLE 1.6	
<input checked="" type="checkbox"/>	INSPECTION OF EXECUTION TASKS DURING MECHANICAL FASTENING.	3	E.1, E.2, E.3, M.1	X		SDI QA/QC TABLE 1.7	
<input checked="" type="checkbox"/>	INSPECTION OF EXECUTION TASKS AFTER MECHANICAL FASTENING.	3	E.1, E.2, E.3, M.1		X	SDI QA/QC TABLE 1.8	

<input checked="" type="checkbox"/>	SOILS: SPECIAL INSPECTION AND TESTING ARE REQUIRED. (TABLE 1705.6)						
	TYPE	AGENT NO.	MQIA	CONT.	PERIODIC	REFERENCED STANDARD	CODE
<input checked="" type="checkbox"/>	VERIFY SITE PREPARATION IN ACCORDANCE WITH THE PROJECT GEOTECHNICAL EVALUATION:						
<input checked="" type="checkbox"/>	A. IDENTIFY SOILS REQUIRING UNDERCUTTING AND REPLACING WHILE OBSERVING PROOF ROLLING AND WHEN SUBGRADE IS EXPOSED.	2	H.2, H.3	X			
<input checked="" type="checkbox"/>	B. REVIEW AND ACCEPT FILL MATERIALS.	2	H.2, H.3		X		
<input checked="" type="checkbox"/>	C. OBSERVE AND ACCEPT BACKFILLING AND COMPACTION PROCEDURES.	2	H.2, H.3	X			
<input checked="" type="checkbox"/>	D. OBSERVE AND ACCEPT PREPARATION OF SLAB SUBGRADE AND SUBBASE.	2	H.2, H.3	X			
<input checked="" type="checkbox"/>	VERIFY MATERIALS BELOW SHALLOW FOUNDATION ARE ADEQUATE TO ACHIEVE THE DESIGN BEARING CAPACITY.	2	H.2, H.3		X	GEOTECH REPORT, CONTRACT DOCS	
<input checked="" type="checkbox"/>	VERIFY EXCAVATIONS ARE EXTENDED TO PROPER DEPTH AND HAVE REACHED PROPER MATERIAL.	2	H.1, H.2, H.3		X	GEOTECH REPORT, CONTRACT DOCS	
<input checked="" type="checkbox"/>	PERFORM CLASSIFICATION AND TESTING OF COMPACTED FILL MATERIALS.	3	H.1		X	GEOTECH REPORT, CONTRACT DOCS	

<input checked="" type="checkbox"/>	VERIFY USE OF PROPER MATERIALS, DENSITIES, AND LIFT THICKNESS DURING PLACEMENT AND COMPACTION OF COMPACTED FILL	2 OR 3	H.1, H.2, H.3	X		GEOTECH REPORT, CONTRACT DOCS	
<input checked="" type="checkbox"/>	A. ONE TEST OF SUBGRADE FOR EACH SPREAD FOOTING AND EACH 20-FOOT LENGTH OF STRIP FOOTING.						
<input checked="" type="checkbox"/>	B. ONE TEST OF SUBGRADE AND SUBBASE FOR EACH 2000 SF OF SLAB-ON-GRADE, BUT NOT LESS THAN 4 TESTS.						
<input checked="" type="checkbox"/>	C. ONE TEST OF EACH LIFT OF FILL MATERIALS FOR EACH 2000 SF OF BUILDING AREA, BUT NOT LESS THAN 4 TESTS.						
<input checked="" type="checkbox"/>	PRIOR TO PLACEMENT OF COMPACTED FILL, INSPECT SUBGRADE AND VERIFY THAT SITE HAS BEEN PREPARED PROPERLY.	2	H.2, H.3		X	GEOTECH REPORT, CONTRACT DOCS	

END OF SECTION 014533 (08/20)

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SECTION 015000 - TEMPORARY FACILITIES AND CONTROLS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Special Conditions and other Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. Section includes requirements for temporary utilities, support facilities, and security and protection facilities.
- B. Related Requirements:
 - 1. Section 011100 "Summary" for work restrictions and limitations on utility interruptions.

1.3 USE CHARGES

- A. General: Installation and removal of and use charges for temporary facilities shall be included in the Contract Sum unless otherwise indicated. Allow other entities to use temporary services and facilities without cost, including, but not limited to, Architect, testing agencies, and authorities having jurisdiction.
- B. Water and Sewer Service from Existing System: Water from Owner's existing water system is available for use without payment of use charges. Provide connections and extensions of services as required for construction operations. Provide temporary backflow preventer.
- C. Electric Power Service from Existing System: Electric power from Owner's existing system is available for use.

1.4 QUALITY ASSURANCE

- A. Electric Service: Comply with NECA, NEMA, and UL standards and regulations for temporary electric service. Install service to comply with NFPA 70.
- B. Tests and Inspections: Arrange for authorities having jurisdiction to test and inspect each temporary utility before use. Obtain required certifications and permits.
- C. Accessible Temporary Egress: Comply with applicable provisions in the U.S. Architectural & Transportation Barriers Compliance Board's ADA-ABA Accessibility Guidelines and ICC/ANSI A117.1.

1.5 PROJECT CONDITIONS

- A. Temporary Use of Permanent Facilities: Engage Installer of each permanent service to assume responsibility for operation, maintenance, and protection of each permanent service during its use as a construction facility before Owner's acceptance, regardless of previously assigned responsibilities.

PART 2 - PRODUCTS

2.1 TEMPORARY FACILITIES

- A. Field Offices, General: Prefabricated or mobile units with serviceable finishes, temperature controls, and foundations adequate for normal loading.
- B. Common-Use Field Office: Of sufficient size to accommodate needs of Owner, Architect, and construction personnel office activities and to accommodate Project meetings specified in other Division 01 Sections. Keep office clean and orderly. Furnish and equip offices as follows:
- C. Storage and Fabrication Sheds: Provide sheds sized, furnished, and equipped to accommodate materials and equipment for construction operations.
 - 1. Store combustible materials apart from building.

2.2 EQUIPMENT

- A. Fire Extinguishers: Portable, UL rated; with class and extinguishing agent as required by locations and classes of fire exposures.
- B. HVAC Equipment: Unless Owner authorizes use of permanent HVAC system, provide vented, self-contained, liquid-propane-gas or fuel-oil heaters with individual space thermostatic control.
 - 1. Use of gasoline-burning space heaters, open-flame heaters, or salamander-type heating units is prohibited.
 - 2. Heating Units: Listed and labeled for type of fuel being consumed, by a qualified testing agency acceptable to authorities having jurisdiction, and marked for intended location and application.

PART 3 - EXECUTION

3.1 INSTALLATION, GENERAL

- A. Locate facilities where they will serve 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.

3.2 TEMPORARY UTILITY INSTALLATION

- A. General: Install temporary service or connect to existing service.
 - 1. Arrange with utility company, Owner, and existing users for time when service can be interrupted, if necessary, to make connections for temporary services.
- B. Water Service: Connect to Owner's existing water service facilities. Clean and maintain water service facilities in a condition acceptable to Owner. At Substantial Completion, restore these facilities to condition existing before initial use.
- C. Sanitary Facilities: Provide temporary toilets, wash facilities, and drinking water for use of construction personnel. Comply with requirements of authorities having jurisdiction for type, number, location, operation, and maintenance of fixtures and facilities.

- D. Heating and Cooling: Except as indicated in Section "Multiple Contract Summary," each Prime Contract shall provide temporary heating and cooling required by construction activities for curing or drying of completed installations or for protecting installed construction from adverse effects of low temperatures or high humidity. Select equipment that will not have a harmful effect on completed installations or elements being installed.
- E. Isolation of Work Areas in Occupied Facilities: Prevent dust, fumes, and odors from entering occupied areas.
 - 1. Perform daily construction cleanup and final cleanup using approved, HEPA-filter-equipped vacuum equipment.
- F. Ventilation and Humidity Control: Provide temporary ventilation required by construction activities for curing or drying of completed installations or for protecting installed construction from adverse effects of high humidity. Select equipment that will not have a harmful effect on completed installations or elements being installed. Coordinate ventilation requirements to produce ambient condition required and minimize energy consumption.
 - 1. Provide dehumidification systems when required to reduce substrate moisture levels to level required to allow installation or application of finishes.
- G. Electric Power Service: Connect to Owner's existing electric power service. Maintain equipment in a condition acceptable to Owner.
- H. Lighting: Provide temporary lighting with local switching that provides adequate illumination for construction operations, observations, inspections, and traffic conditions.
 - 1. Install and operate temporary lighting that fulfills security and protection requirements without operating entire system.
 - 2. Install lighting for Project identification sign.

3.3 SUPPORT FACILITIES INSTALLATION

- A. Parking: Use designated areas of Owner's existing parking areas for construction personnel.
- B. Waste Disposal Facilities: Comply with requirements specified in Section 017419 "Construction Waste Management and Disposal."
- C. Lifts and Hoists: Provide facilities necessary for hoisting materials and personnel.
 - 1. Truck cranes and similar devices used for hoisting materials are considered "tools and equipment" and not temporary facilities.

3.4 SECURITY AND PROTECTION FACILITIES INSTALLATION

- A. Protection of Existing Facilities: Protect existing vegetation, equipment, structures, utilities, and other improvements at Project site and on adjacent properties, except those indicated to be removed or altered. Repair damage to existing facilities.
- B. Environmental Protection: Provide protection, operate temporary facilities, and conduct construction as required to comply with environmental regulations and that minimize possible air, waterway, and subsoil contamination or pollution or other undesirable effects.
 - 1. Comply with work restrictions specified in Section 011000 "Summary."
- C. Barricades, Warning Signs, and Lights: Comply with requirements of authorities having jurisdiction for erecting structurally adequate barricades, including warning signs and lighting.

- D. 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 weathertight enclosure for building exterior.
 - 1. Where heating or cooling is needed and permanent enclosure is incomplete, insulate temporary enclosures.
- E. Temporary Fire Protection: Install and maintain temporary fire-protection facilities of types needed to protect against reasonably predictable and controllable fire losses. Comply with NFPA 241; manage fire-prevention program.
 - 1. Prohibit smoking in construction areas.
 - 2. Supervise welding operations, combustion-type temporary heating units, and similar sources of fire ignition according to requirements of authorities having jurisdiction.
 - 3. 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.

3.5 MOISTURE AND MOLD CONTROL

- A. Contractor's Moisture-Protection Plan: Avoid trapping water in finished work. Document visible signs of mold that may appear during construction.
- B. Exposed Construction Phase: Before installation of weather barriers, when materials are subject to wetting and exposure to airborne mold spores, protect as follows:
 - 1. Protect porous materials from water damage.
 - 2. Protect stored and installed material from flowing or standing water.
 - 3. Keep porous and organic materials from coming into prolonged contact with concrete.
 - 4. Remove standing water from decks.
 - 5. Keep deck openings covered or dammed.
- C. Partially Enclosed Construction Phase: After installation of weather barriers but before full enclosure and conditioning of building, when installed materials are still subject to infiltration of moisture and ambient mold spores, protect as follows:
 - 1. Do not load or install drywall or other porous materials or components, or items with high organic content, into partially enclosed building.
 - 2. Keep interior spaces reasonably clean and protected from water damage.
 - 3. Periodically collect and remove waste containing cellulose or other organic matter.
 - 4. Discard or replace water-damaged material.
 - 5. Do not install material that is wet.
 - 6. Discard, replace, or clean stored or installed material that begins to grow mold.
 - 7. Perform work in a sequence that allows any wet materials adequate time to dry before enclosing the material in drywall or other interior finishes.

3.6 OPERATION, TERMINATION, AND REMOVAL

- A. Supervision: Enforce strict discipline in use of temporary facilities. To minimize waste and abuse, limit availability of temporary facilities to essential and intended uses.
- B. Maintenance: Maintain facilities in good operating condition until removal.
 - 1. Maintain operation of temporary enclosures, heating, cooling, humidity control, ventilation, and similar facilities on a 24-hour basis where required to achieve indicated results and to avoid possibility of damage.

- C. Temporary Facility Changeover: Do not change over from using temporary security and protection facilities to permanent facilities until Substantial Completion.
- D. Termination and Removal: Remove each temporary facility when need for its service has ended, when it has been replaced by authorized use of a permanent facility, or no later than Substantial Completion. Complete or, if necessary, restore permanent construction that may have been delayed because of interference with temporary facility. Repair damaged Work, clean exposed surfaces, and replace construction that cannot be satisfactorily repaired.
 - 1. Materials and facilities that constitute temporary facilities are property of Contractor. Owner reserves right to take possession of Project identification signs.
 - 2. Remove temporary roads and paved areas not intended for or acceptable for integration into permanent construction. Where area is intended for landscape development, remove soil and aggregate fill that do not comply with requirements for fill or subsoil. Remove materials contaminated with road oil, asphalt and other petrochemical compounds, and other substances that might impair growth of plant materials or lawns. Repair or replace street paving, curbs, and sidewalks at temporary entrances, as required by authorities having jurisdiction.
 - 3. At Substantial Completion, repair, renovate, and clean permanent facilities used during construction period. Comply with final cleaning requirements specified in Section 017700 "Closeout Procedures."

END OF SECTION 015000

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SECTION 016000 - PRODUCT REQUIREMENTS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Special Conditions and other Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. Section includes administrative and procedural requirements for selection of products for use in Project; product delivery, storage, and handling; manufacturers' standard warranties on products; special warranties; and comparable products.
- B. Related Requirements:
 - 1. Section 012500 "Substitution Procedures" for requests for substitutions.
 - 2. Section 014200 "References" for applicable industry standards for products specified.

1.3 DEFINITIONS

- A. Products: Items obtained for incorporating into the Work, whether purchased for Project or taken from previously purchased stock. The term "product" includes the terms "material," "equipment," "system," and terms of similar intent.
 - 1. Named Products: Items identified by manufacturer's product name, including make or model number or other designation shown or listed in manufacturer's published product literature, that is current as of date of the Contract Documents.
 - 2. New Products: Items that have not previously been incorporated into another project or facility. Products salvaged or recycled from other projects are not considered new products.
 - 3. Comparable Product: Product that is demonstrated and approved through submittal process to have the indicated qualities related to type, function, dimension, in-service performance, physical properties, appearance, and other characteristics that equal or exceed those of specified product.
- B. Basis-of-Design Product Specification: A specification in which a specific manufacturer's product is named and accompanied by the words "basis-of-design product," including make or model number or other designation, to establish the significant qualities related to type, function, dimension, in-service performance, physical properties, appearance, and other characteristics for purposes of evaluating comparable products of additional manufacturers named in the specification.

1.4 ACTION SUBMITTALS

- A. Comparable Product Requests: Submit request for consideration of each comparable product. Identify product or fabrication or installation method to be replaced. Include Specification Section number and title and Drawing numbers and titles.
 - 1. Include data to indicate compliance with the requirements specified in "Comparable Products" Article.
 - 2. Architect's Action: If necessary, Architect will request additional information or documentation for evaluation within one week of receipt of a comparable product request. Architect will notify Contractor of approval or rejection of proposed comparable product request within 15 days of receipt of request, or seven days of receipt of additional information or documentation, whichever is later.

- a. Form of Approval: As specified in Section 013300 "Submittal Procedures."
- b. Use product specified if Architect does not issue a decision on use of a comparable product request within time allocated.

- B. Basis-of-Design Product Specification Submittal: Comply with requirements in Section 013300 "Submittal Procedures." Show compliance with requirements.

1.5 QUALITY ASSURANCE

- A. Compatibility of Options: If Contractor is given option of selecting between two or more products for use on Project, select product compatible with products previously selected, even if previously selected products were also options.

1.6 PRODUCT DELIVERY, STORAGE, AND HANDLING

- A. Deliver, store, and handle products using means and methods that will prevent damage, deterioration, and loss, including theft and vandalism. Comply with manufacturer's written instructions.

- B. Delivery and Handling:

- 1. Schedule delivery to minimize long-term storage at Project site and to prevent overcrowding of construction spaces.
- 2. Coordinate delivery with installation time to ensure minimum holding time for items that are flammable, hazardous, easily damaged, or sensitive to deterioration, theft, and other losses.
- 3. Deliver products to Project site in an undamaged condition in manufacturer's original sealed container or other packaging system, complete with labels and instructions for handling, storing, unpacking, protecting, and installing.
- 4. Inspect products on delivery to determine compliance with the Contract Documents and to determine that products are undamaged and properly protected.

- C. Storage:

- 1. Store products to allow for inspection and measurement of quantity or counting of units.
- 2. Store materials in a manner that will not endanger Project structure.
- 3. Store products that are subject to damage by the elements, under cover in a weathertight enclosure above ground, with ventilation adequate to prevent condensation.
- 4. Protect foam plastic from exposure to sunlight, except to extent necessary for period of installation and concealment.
- 5. Comply with product manufacturer's written instructions for temperature, humidity, ventilation, and weather-protection requirements for storage.
- 6. Protect stored products from damage and liquids from freezing.
- 7. Provide a secure location and enclosure at Project site for storage of materials and equipment by Owner's construction forces. Coordinate location with Owner.

1.7 PRODUCT WARRANTIES

- A. Warranties specified in other Sections shall be in addition to, and run concurrent with, other warranties required by the Contract Documents. Manufacturer's disclaimers and limitations on product warranties do not relieve Contractor of obligations under requirements of the Contract Documents.

- 1. Manufacturer's Warranty: Written warranty furnished by individual manufacturer for a particular product and specifically endorsed by manufacturer to Owner.
- 2. Special Warranty: Written warranty required by the Contract Documents to provide specific rights for Owner.

- B. Special Warranties: Prepare a written document that contains appropriate terms and identification, ready for execution.

1. Manufacturer's Standard Form: Modified to include Project-specific information and properly executed.
2. Specified Form: When specified forms are included with the Specifications, prepare a written document using indicated form properly executed.
3. See other Sections for specific content requirements and particular requirements for submitting special warranties.

C. Submittal Time: Comply with requirements in Section 017700 "Closeout Procedures."

PART 2 - PRODUCTS

2.1 PRODUCT SELECTION PROCEDURES

A. General Product Requirements: Provide products that comply with the Contract Documents, are undamaged and, unless otherwise indicated, are new at time of installation.

1. Provide products complete with accessories, trim, finish, fasteners, and other items needed for a complete installation and indicated use and effect.
2. Standard Products: If available, and unless custom products or nonstandard options are specified, provide standard products of types that have been produced and used successfully in similar situations on other projects.
3. Owner reserves the right to limit selection to products with warranties not in conflict with requirements of the Contract Documents.
4. Where products are accompanied by the term "as selected," Architect will make selection.
5. Descriptive, performance, and reference standard requirements in the Specifications establish salient characteristics of products.
6. Or Equal: For products specified by name and accompanied by the term "or equal," or "or approved equal," or "or approved," comply with requirements in "Comparable Products" Article to obtain approval for use of an unnamed product.

B. Product Selection Procedures:

1. Products:
 - a. Restricted List: Where Specifications include a list of names of both manufacturers and products, provide one of the products listed that complies with requirements. Comparable products or substitutions for Contractor's convenience will be considered unless otherwise indicated.
 - b. Nonrestricted List: Where Specifications include a list of names of both available manufacturers and products, provide one of the products listed, or an unnamed product, that complies with requirements. Comply with requirements in "Comparable Products" Article for consideration of an unnamed product.
2. Manufacturers:
 - a. Restricted List: Where Specifications include a list of manufacturers' names, provide a product by one of the manufacturers listed that complies with requirements. Comparable products or substitutions for Contractor's convenience will be considered unless otherwise indicated.
 - b. Nonrestricted List: Where Specifications include a list of available manufacturers, provide a product by one of the manufacturers listed, or a product by an unnamed manufacturer, that complies with requirements. Comply with requirements in "Comparable Products" Article for consideration of an unnamed manufacturer's product.
3. Basis-of-Design Product: Where Specifications name a product, or refer to a product indicated on Drawings, and include a list of manufacturers, provide the specified or indicated product or a comparable product by one of the other named manufacturers. Drawings and Specifications indicate sizes, profiles, dimensions, and other characteristics that are based on the product named. Comply with requirements in "Comparable Products" Article for consideration of an unnamed product by one of the other named manufacturers.

- C. Visual Matching Specification: Where Specifications require "match Architect's sample", provide a product that complies with requirements and matches Architect's sample. Architect's decision will be final on whether a proposed product matches.
 - 1. If no product available within specified category matches and complies with other specified requirements, comply with requirements in Section 012500 "Substitution Procedures" for proposal of product.
- D. Visual Selection Specification: Where Specifications include the phrase "as selected by Architect from manufacturer's full range" or similar phrase, select a product that complies with requirements. Architect will select color, gloss, pattern, density, or texture from manufacturer's product line that includes both standard and premium items.

2.2 COMPARABLE PRODUCTS

- A. Conditions for Consideration: Architect will consider Contractor's request for comparable product when the following conditions are satisfied. If the following conditions are not satisfied, Architect may return requests without action, except to record noncompliance with these requirements:
 - 1. Evidence that the proposed product does not require revisions to the Contract Documents, that it is consistent with the Contract Documents and will produce the indicated results, and that it is compatible with other portions of the Work.
 - 2. Detailed comparison of significant qualities of proposed product with those named in the Specifications. Significant qualities include attributes such as performance, weight, size, durability, visual effect, and specific features and requirements indicated.
 - 3. Evidence that proposed product provides specified warranty.
 - 4. List of similar installations for completed projects with project names and addresses and names and addresses of architects and owners, if requested.
 - 5. Samples, if requested.

PART 3 - EXECUTION (Not Used)

END OF SECTION 016000

SECTION 017300 - EXECUTION

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Special Conditions and other Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. This Section includes general procedural requirements governing execution of the Work including, but not limited to, the following:
 - 1. Construction layout.
 - 2. Field engineering and surveying.
 - 3. General installation of products.
 - 4. Progress cleaning and protection during construction.
 - 5. Starting and adjusting.
 - 6. Protection of installed construction.
 - 7. Correction of the Work.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION

3.1 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. Acceptance of Conditions: Examine substrates, areas, and conditions, with Installer or Applicator present where indicated, for compliance with requirements for installation tolerances and other conditions affecting performance. Record observations.
 - 1. Written Report: Where a written report listing conditions detrimental to performance of the Work is required by other Sections, include the following:
 - a. Description of the Work.
 - b. List of detrimental conditions, including substrates.
 - c. List of unacceptable installation tolerances.
 - d. Recommended corrections.
 - 2. Verify compatibility with and suitability of substrates, including compatibility with existing finishes or primers.
 - 3. Examine roughing-in for mechanical and electrical systems to verify actual locations of connections before equipment and fixture installation.
 - 4. Examine walls, floors, and roofs for suitable conditions where products and systems are to be installed.
 - 5. Proceed with installation only after unsatisfactory conditions have been corrected. Proceeding with the Work indicates acceptance of surfaces and conditions.

3.2 PREPARATION

- A. **Field Measurements:** Take field measurements as required to fit the Work properly. Recheck measurements before installing each product. Where portions of the Work are indicated to fit to other construction, verify dimensions of other construction by field measurements before fabrication. Coordinate fabrication schedule with construction progress to avoid delaying the Work.
- B. **Space Requirements:** Verify space requirements and dimensions of items shown diagrammatically on Drawings.
- C. **Review of Contract Documents and Field Conditions:** Immediately on discovery of the need for clarification of the Contract Documents, submit a request for information to Architect. Include a detailed description of problem encountered, together with recommendations for changing the Contract Documents. Submit requests for information (RFI) on standard form included in this Project Manual.

3.3 CONSTRUCTION LAYOUT

- A. **Verification:** Before proceeding to lay out the Work, verify layout information shown on Drawings. If discrepancies are discovered, notify Architect and Construction Site Coordinator promptly.

3.4 INSTALLATION

- A. **General:** Locate the Work and components of the Work accurately, in correct alignment and elevation, as indicated.
 - 1. Make vertical work plumb and make horizontal work level.
 - 2. Where space is limited, install components to maximize space available for maintenance and ease of removal for replacement.
 - 3. Conceal pipes, ducts, and wiring in finished areas, unless otherwise indicated.
- B. **Comply with manufacturer's written instructions and recommendations for installing products in applications indicated.**
- C. **Install products at the time and under conditions that will ensure the best possible results. Maintain conditions required for product performance until Substantial Completion.**
- D. **Conduct construction operations so no part of the Work is subjected to damaging operations or loading in excess of that expected during normal conditions of occupancy.**
- E. **Tools and Equipment:** Do not use tools or equipment that produce harmful noise levels.
- F. **Templates:** Obtain and distribute to the parties involved templates for work specified to be factory prepared and field installed. Check Shop Drawings of other work 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 Architect.
- 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:**
 - 1. Use products, cleaners, and installation materials that are not considered hazardous.

3.5 PROGRESS CLEANING AND PROTECTION DURING CONSTRUCTION

- A. General: Each Subcontractor shall clean Project site and work areas daily, including common areas. Coordinate progress cleaning for joint-use areas where more than one installer has worked. Enforce requirements strictly among Subcontractor's employees. This includes sweeping floors clean as may be deemed necessary by Construction Site Coordinator. Dispose of material lawfully.
 - 1. Comply with requirements in NFPA 241 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 deg F.
 - 3. Containerize hazardous and unsanitary waste materials separately from other waste. Mark containers appropriately and dispose of legally, according to regulations.
- B. Site: Maintain Project site free of waste materials and debris.
- C. Work Areas: Each Prime Contractor shall clean areas where work is in progress to the level of cleanliness necessary for proper execution of the Work.
 - 1. Remove liquid spills promptly.
 - 2. Where dust would impair proper execution of the Work, broom-clean or vacuum the entire work area, as appropriate and when directed by Construction Site Coordinator.
- D. Installed Work: Prime Contractor shall keep all installed work clean for subcontractors retained who are no longer required to be present on site. 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.
 - 1. Provide cleaning products compliant with VOC requirements.
- E. Concealed Spaces: Remove debris from concealed spaces before enclosing the space.
- F. Exposed Surfaces in Finished Areas: Clean exposed surfaces and protect as necessary to ensure freedom from damage and deterioration at time of Substantial Completion.
- 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.
- H. 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 at Substantial Completion.
- I. Clean and provide maintenance on completed construction as frequently as necessary through the remainder of the construction period. Adjust and lubricate operable components to ensure operability without damaging effects.
- J. Limiting Exposures: Supervise construction operations to assure that no part of the construction completed or in progress, is subject to harmful, dangerous, damaging, or otherwise deleterious exposure during the construction period.
- K. Each day Prime Contractor shall affect the following:
 - 1. Areas of intense activity, such as cutting and sawing must be swept clean and reorganized at the end of each day.
 - 2. Areas of moderate activity such as installation of plumbing, ductwork, electrical work must be returned to good order at the end of each day.
 - 3. Debris below scaffolds (and shoring/reshoring) must at all times, be kept sufficiently consolidated to keep walkways free of tripping hazards. These work areas must also be swept clean immediately upon removal of scaffolds.

4. All swept up debris, waste materials, and packing must be removed and placed in the dumpster by noon of the following workday.
5. All stored materials must be kept in good order.
6. As portions of the work are completed, all used and excess materials must be removed promptly.
7. Daily clean-up and good housekeeping is the responsibility of each Prime Contractor individually and will be monitored by the Construction Site Coordinator.
8. Prime Contractors and their retained subcontractors, Installers or manufacturers shall promptly comply with requests of Construction Site Coordinator to organize scattered materials.

L. Vacuum clean interior building areas when ready to receive finish painting, and continue vacuum cleaning on an as-needed basis or as directed by Construction Site Coordinator until building is ready for Substantial Completion or occupancy.

M. Schedule cleaning operations so that dust and other contaminants resulting from cleaning process will not fall on wet, newly painted surfaces.

3.6 STARTING AND ADJUSTING

- A. Start equipment and operating components to confirm proper operation. Remove malfunctioning units, replace with new units, and retest.
- B. Adjust operating components for proper operation without binding. Adjust equipment for proper operation.
- C. Test each piece of equipment to verify proper operation. Test and adjust controls and safeties. Replace damaged and malfunctioning controls and equipment.
- D. Manufacturer's Field Service: If a factory-authorized service representative is required to inspect field-assembled components and equipment installation, comply with qualification requirements in Division 01 Section "Quality Requirements."

3.7 PROTECTION OF INSTALLED CONSTRUCTION

- A. Provide final protection and maintain conditions that ensure installed Work is without damage or deterioration at time of Substantial Completion.
- B. Comply with manufacturer's written instructions for temperature and relative humidity.
- C. Clean and protect construction in progress and adjoining materials in place, during handling and installation. Apply protective covering where required to assure protection from damage or deterioration at Substantial Completion.
- D. Clean and provide maintenance on completed construction as frequently as necessary or as requested by Construction Site Coordinator, through the remainder of the construction period. Adjust and lubricate operable components to assure operability without damaging effects.
- E. Limiting Exposure: Each Prime Contractor to supervise construction operations to assure that no part of the construction, complete or in progress, is subject to harmful, dangerous, damaging, or otherwise deleterious exposure during the construction period. Where applicable, such exposures include, but are not limited to, the following:
 1. Excessive static or dynamic loading.
 2. Excessive internal or external pressures.
 3. Excessive high or low temperatures.
 4. Thermal shock.
 5. Excessive high or low humidity.
 6. Air contamination or pollution.
 7. Ice or water.
 8. Solvents or chemicals.
 9. Light.

10. Radiation.
11. Puncture.
12. Abrasion.
13. Heavy traffic.
14. Soiling, staining and corrosion.
15. Bacteria.
16. Rodent and insect infestation.
17. Combustion.
18. Electrical current.
19. High-speed operation.
20. Improper lubrication.
21. Unusual wear or misuse.
22. Contact between incompatible materials.
23. Destructive testing.
24. Misalignment.
25. Excessive weathering.
26. Unprotected storage.
27. Improper shipping and handling.
28. Vandalism or theft.

- F. Each Prime Contractor for its Work shall provide final protection and maintain conditions that ensure installed Work is without damage or deterioration at time of Substantial Completion.
- G. Comply with manufacturer's written instructions for temperature and relative humidity.

3.8 CORRECTION OF THE WORK

- A. Repair or remove and replace defective construction. Restore damaged substrates and finishes. Comply with requirements in Division 01 Section "Cutting and Patching."
1. Repairing includes replacing defective parts, refinishing damaged surfaces, touching up with matching materials, and properly adjusting operating equipment.
- B. Restore permanent facilities used during construction to their specified condition.
- C. Remove and replace damaged surfaces that are exposed to view if surfaces cannot be repaired without visible evidence of repair.
- D. Repair components that do not operate properly. Remove and replace operating components that cannot be repaired.
- E. Remove and replace chipped, scratched, and broken glass or reflective surfaces.

END OF SECTION 017300

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SECTION 017329 - CUTTING AND PATCHING

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Special Conditions and other Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. This Section includes procedural requirements for cutting and patching.
 - 1. Unless otherwise assigned within the Documents, all cutting and patching shall be performed by each Prime Contractor as required to execute their work.
- B. See Divisions 00 through 33 Sections for specific requirements and limitations applicable to cutting and patching individual parts of the Work.

1.3 DEFINITIONS

- A. Cutting: Removal of in-place construction necessary to permit installation or performance of other Work.
- B. Patching: Fitting and repair work required to restore surfaces to original conditions after installation of other Work.
- C. Demolition: Removal, Cutting.

1.4 QUALITY ASSURANCE

- A. Maintain existing interior nonstructural elements (interior walls, doors, floor coverings, and ceiling systems) not indicated to be removed; do not cut such existing construction beyond indicated limits.
- B. Maintain existing non-shell, nonstructural components (walls, flooring, and ceilings) not indicated to be removed; do not cut such existing construction beyond indicated limits.
- C. Structural Elements: Do not cut and patch structural elements in a manner that could change their load-carrying capacity or load-deflection ratio.
- D. Operational Elements: Do not cut and patch operating elements and related components in a manner that results in reducing their capacity to perform as intended or that results in increased maintenance or decreased operational life or safety. Operating elements include the following:
 - 1. Primary operational systems and equipment.
 - 2. Air or smoke barriers.
 - 3. Mechanical systems piping and ducts.
 - 4. Control systems.
 - 5. Communication systems.
 - 6. Electrical wiring systems.
 - 7. Operating systems of special construction in Division 13 Sections.
- E. Miscellaneous Elements: Do not cut and patch miscellaneous elements or related components in a manner that could change their load-carrying capacity, that results in reducing their capacity to perform as intended, or that results in increased maintenance or decreased operational life or safety. Miscellaneous elements include the following:

1. Water, moisture, or vapor barriers.
2. Membranes and flashings.
3. Exterior curtain-wall construction.
4. Equipment supports.
5. Piping, ductwork, vessels, and equipment.
6. Noise- and vibration-control elements and systems.

- 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 Architect's opinion, reduce the building's aesthetic qualities. Remove and replace construction that has been cut and patched in a visually unsatisfactory manner.
- G. Cutting and Patching Conference: Before proceeding, meet at Project site with parties involved in cutting and patching, including mechanical and electrical trades. Review areas of potential interference and conflict. Coordinate procedures and resolve potential conflicts before proceeding.

1.5 WARRANTY

- A. 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.

PART 2 - PRODUCTS

2.1 MATERIALS

- A. General: Comply with requirements specified in other Sections.
- B. In-Place Materials: Use materials identical to in-place materials. For exposed surfaces, use materials that visually match in-place adjacent surfaces to the fullest extent possible.
1. If identical materials are unavailable or cannot be used, use materials that, when installed, will match the visual and functional performance of in-place materials.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine surfaces to be cut and patched and conditions under which cutting and patching are to be performed.
1. Compatibility: Before patching, verify compatibility with and suitability of substrates, including compatibility with in-place finishes or primers.
 2. Proceed with installation only after unsafe or unsatisfactory conditions have been corrected.

3.2 PREPARATION

- A. Temporary Support: Provide temporary support of Work to be cut.
- B. Protection: Protect in-place construction during cutting and patching to prevent damage. Provide protection from adverse weather conditions for portions of Project that might be exposed during cutting and patching operations.
- C. Adjoining Areas: Avoid interference with use of adjoining areas or interruption of free passage to adjoining areas.

- D. Existing Utility Services and Mechanical/Electrical Systems: Where existing services/systems are required to be removed, relocated or abandoned, bypass such services/systems before cutting to minimize and prevent interruption to occupied areas.

3.3 PERFORMANCE

- A. General: Employ skilled workers to perform cutting and patching. Proceed with cutting and patching at the earliest feasible time, and complete without delay.
 - 1. Cut in-place construction to provide for installation of other components or performance of other construction, and subsequently patch as required to restore surfaces to their original condition.
- B. Cutting: Cut in-place construction by sawing, drilling, breaking, chipping, grinding, and similar operations, including excavation, using methods least likely to damage elements retained or adjoining construction. If possible, review proposed procedures with original Installer; comply with original Installer's written recommendations.
 - 1. In general, use hand or small power tools designed for sawing and grinding, not hammering and chopping. Cut holes and slots as small as possible, neatly to size required, and with minimum disturbance of adjacent surfaces. Temporarily cover openings when not in use.
 - 2. Finished Surfaces: Cut or drill from the exposed or finished side into concealed surfaces.
 - 3. Concrete and Masonry: Cut using a cutting machine, such as an abrasive saw or a diamond-core drill.
 - 4. Excavating and Backfilling: Comply with requirements in applicable Division 31 Sections where required by cutting and patching operations.
 - 5. Mechanical and Electrical Services: Cut off pipe or conduit in walls or partitions to be removed. Cap, valve, or plug and seal remaining portion of pipe or conduit to prevent entrance of moisture or other foreign matter after cutting.
 - 6. Proceed with patching after construction operations requiring cutting are complete.
- C. Patching: Patch construction by filling, repairing, refinishing, closing up, and similar operations following performance of other Work. Patch with durable seams that are as invisible as possible. Provide materials and comply with installation requirements specified in other Sections.
 - 1. Inspection: Where feasible, test and inspect patched areas after completion to demonstrate integrity of installation.
 - 2. Exposed Finishes: Restore exposed finishes of patched areas and extend finish restoration into retained adjoining construction in a manner that will eliminate evidence of patching and refinishing.
 - a. Clean piping, conduit, and similar features before applying paint or other finishing materials.
 - b. Restore damaged pipe covering to its original condition.
 - 3. Floors and Walls: Where walls or partitions that are removed extend one finished area into another, patch and repair floor and wall surfaces in the new space. Provide an even surface of uniform finish, color, texture, and appearance. Remove in-place floor and wall coverings and replace with new materials, if necessary, to achieve uniform color and appearance.
 - a. Where patching occurs in a painted surface, apply primer and intermediate paint coats over the patch and apply final paint coat over entire unbroken surface containing the patch. Provide additional coats until patch blends with adjacent surfaces.
 - b. Where demolition of a wall leaves a remaining perpendicular wall unfinished, restore the wall finish with similar materials blending the finishes into each other flush and seamlessly.
 - c. At masonry walls, cut any protruding reinforcing back below the finished surface. Remove enough masonry material to provide finished masonry faces within the existing coursing.
 - d. At masonry walls cut any protruding reinforcing back below the finished surface. Remove enough masonry material to provide finished masonry faces within the existing coursing.
 - e. Where demolition of a wall leaves a remaining end of the wall unfinished, restore the wall finish with similar materials blending the finishes into each other flush and seamlessly.
 - f. Where demolition of a wall leaves a remaining column exposed, provide gypsum board enclosure of equivalent rating if any.

- g. Where the removal of a wall, equipment and/or furnishing leaves an unfinished condition at the floor, patch the floor and extend the finished floor system across the demolition area.
 - h. Where the removal of a wall, equipment and/or furnishing leaves an unfinished condition at the ceiling, patch the floor and extend the finished ceiling system across the demolition area.
 - i. Where the removal of a louver, grill, ductwork or other construction in a finished space or elsewhere, fill the opening with material that matches the existing adjacent materials and finishes.
 - j. Where the removal leaves a raised painted edge, remove raised edge and feather paint finish to the extent that the raised painted edge is not detected.
 - 4. Ceilings: Patch, repair, or rehang in-place ceilings as necessary to provide an even-plane surface of uniform appearance.
 - 5. Exterior Building Enclosure: Patch components in a manner that restores enclosure to a weathertight condition.
- D. Cleaning: Clean areas and spaces where cutting and patching are performed. Completely remove paint, mortar, oils, putty, and similar materials.

END OF SECTION 017329

SECTION 017700 - CLOSEOUT PROCEDURES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Special Conditions and other Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. Section includes administrative and procedural requirements for contract closeout, including, but not limited to, the following:
 - 1. Substantial Completion procedures.
 - 2. Final completion procedures.
 - 3. Warranties.
 - 4. Final cleaning.
 - 5. Repair of the Work.
- B. Related Requirements:
 - 1. Section 017300 "Execution" for progress cleaning of Project site.
 - 2. Section 017823 "Operation and Maintenance Data" for operation and maintenance manual requirements.
 - 3. Section 017839 "Project Record Documents" for submitting record Drawings, record Specifications, and record Product Data.
 - 4. Section 017900 "Demonstration and Training" for requirements for instructing Owner's personnel.
- C. Disclaimers and Limitations: Manufacturer's disclaimers and limitations on product warranties do not relieve the Contractor of the warranty on the Work that incorporates the products, nor does it relieve suppliers, manufacturers, and subcontractors required to countersign special warranties with the Contractor.

1.3 ACTION SUBMITTALS

- A. Product Data: For cleaning agents.
- B. Contractor's List of Incomplete Items: Initial submittal at Substantial Completion.
- C. Certified List of Incomplete Items: Final submittal at Final Completion.

1.4 MAINTENANCE MATERIAL SUBMITTALS

- A. Schedule of Maintenance Material Items: For maintenance material submittal items specified in other Sections.

1.5 SUBSTANTIAL COMPLETION PROCEDURES

- A. Contractor's List of Incomplete Items: Prepare and submit a list of items to be completed and corrected (Contractor's punch list), indicating the value of each item on the list and reasons why the Work is incomplete.

- B. Submittals Prior to Substantial Completion: Complete the following a minimum of 10 days prior to requesting inspection for determining date of Substantial Completion. List items below that are incomplete at time of request.
1. Certificates of Release: Obtain and submit releases from authorities having jurisdiction permitting Owner unrestricted use of the Work and access to services and utilities. Include occupancy permits, operating certificates, and similar releases.
 2. Submit closeout submittals specified in other Division 01 Sections, including project record documents, operation and maintenance manuals, final completion construction photographic documentation, damage or settlement surveys, property surveys, and similar final record information.
 3. Submit closeout submittals specified in individual Sections, including specific warranties, workmanship bonds, maintenance service agreements, final certifications, and similar documents.
 4. Submit maintenance material submittals specified in individual Sections, including tools, spare parts, extra materials, and similar items, and deliver to location designated by Architect. Label with manufacturer's name and model number where applicable.
 5. Submit test/adjust/balance records.
- C. Procedures Prior to Substantial Completion: Complete the following a minimum of 10 days prior to requesting inspection for determining date of Substantial Completion. List items below that are incomplete at time of request.
1. Advise Owner of pending insurance changeover requirements.
 2. Make final changeover of permanent locks and deliver keys to Owner. Advise Owner's personnel of changeover in security provisions.
 3. Complete startup and testing of systems and equipment.
 4. Perform preventive maintenance on equipment used prior to Substantial Completion.
 5. Instruct Owner's personnel in operation, adjustment, and maintenance of products, equipment, and systems. Submit demonstration and training video recordings specified in Section 017900 "Demonstration and Training."
 6. Advise Owner of changeover in heat and other utilities.
 7. Participate with Owner in conducting inspection and walkthrough with local emergency responders.
 8. Terminate and remove temporary facilities from Project site, along with mockups, construction tools, and similar elements.
 9. Complete final cleaning requirements, including touchup painting.
 10. Touch up and otherwise repair and restore marred exposed finishes to eliminate visual defects.
- D. Inspection: Submit a written request for inspection to determine Substantial Completion a minimum of 10 days prior to date the work will be completed and ready for final inspection and tests. On receipt of request, Architect will either proceed with inspection or notify Contractor of unfulfilled requirements. Architect will prepare the Certificate of Substantial Completion after inspection or will notify Contractor of items, either on Contractor's list or additional items identified by Architect, that must be completed or corrected before certificate will be issued.
1. Reinspection: Request reinspection 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 completion.

1.6 FINAL COMPLETION PROCEDURES

- A. Submittals Prior to Final Completion: Before requesting final inspection for determining final completion, complete the following:
1. Submit a final Application for Payment according to Section 012900 "Payment Procedures."
 2. Certified List of Incomplete Items: Submit certified copy of Architect's Substantial Completion inspection list of items to be completed or corrected (punch list), endorsed and dated by Architect. Certified copy of the list shall state that each item has been completed or otherwise resolved for acceptance.
 3. Certificate of Insurance: Submit evidence of final, continuing insurance coverage complying with insurance requirements.

- B. Inspection: Submit a written request for final inspection to determine acceptance a minimum of 10 days prior to date the work will be completed and ready for final inspection and tests. On receipt of request, Architect will either proceed with inspection or notify Contractor of unfulfilled requirements. Architect will prepare a final Certificate for Payment after inspection or will notify Contractor of construction that must be completed or corrected before certificate will be issued.

- 1. Reinspection: Request reinspection when the Work identified in previous inspections as incomplete is completed or corrected.

1.7 LIST OF INCOMPLETE ITEMS (PUNCH LIST)

- A. Organization of List: Include name and identification of each space and area affected by construction operations for incomplete items and items needing correction including, if necessary, areas disturbed by Contractor that are outside the limits of construction. Use CSI Form 14.1A or similarly formatted document.

- 1. Organize list of spaces in sequential order, starting with exterior areas first and proceeding from lowest floor to highest floor.
 - 2. Organize items applying to each space by major element, including categories for ceiling, individual walls, floors, equipment, and building systems.
 - 3. Include the following information at the top of each page:
 - a. Project name.
 - b. Date.
 - c. Name of Architect.
 - d. Name of Contractor.
 - e. Page number.
 - 4. Submit list of incomplete items in the following format:

1.8 SUBMITTAL OF PROJECT WARRANTIES

- A. Time of Submittal: Submit written warranties on request of Architect for designated portions of the Work where commencement of warranties other than date of Substantial Completion is indicated, or when delay in submittal of warranties might limit Owner's rights under warranty.
- B. Partial Occupancy: Submit properly executed warranties within 15 days of completion of designated portions of the Work that are completed and occupied or used by Owner during construction period by separate agreement with Contractor.
- C. Organize warranty documents into an orderly sequence based on the table of contents of Project Manual.
 - 1. Bind warranties and bonds in heavy-duty, three-ring, vinyl-covered, loose-leaf binders, thickness as necessary to accommodate contents, and sized to receive 8-1/2-by-11-inch (215-by-280-mm) paper.
 - 2. Provide heavy paper dividers with plastic-covered tabs for each separate warranty. Mark tab to identify the product or installation. Provide a typed description of the product or installation, including the name of the product and the name, address, and telephone number of Installer.
 - 3. Identify each binder on the front and spine with the typed or printed title "WARRANTIES," Project name, and name of Contractor.
 - 4. Warranty Electronic File: Scan warranties and bonds and assemble complete warranty and bond submittal package into a single indexed electronic PDF file with links enabling navigation to each item. Provide bookmarked table of contents at beginning of document.
- D. Provide additional copies of each warranty to include in operation and maintenance manuals.

PART 2 - 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 3 - EXECUTION

3.1 FINAL CLEANING

- A. General: Perform 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 before requesting inspection for certification of Substantial Completion for entire Project or for a designated portion of Project:
 - a. Clean Project site, yard, and grounds, in areas disturbed by construction activities, including landscape development areas, of rubbish, waste material, litter, and other foreign substances.
 - b. Sweep paved areas broom clean. Remove petrochemical spills, stains, and other foreign deposits.
 - c. Rake grounds that are neither planted nor paved to a smooth, even-textured surface.
 - d. Remove tools, construction equipment, machinery, and surplus material from Project site.
 - e. Remove snow and ice to provide safe access to building.
 - f. Clean exposed exterior and interior hard-surfaced finishes to a dirt-free condition, free of stains, films, and similar foreign substances. Avoid disturbing natural weathering of exterior surfaces. Restore reflective surfaces to their original condition.
 - g. Remove debris and surface dust from limited access spaces, including roofs, plenums, shafts, trenches, equipment vaults, manholes, attics, and similar spaces.
 - h. Sweep concrete floors broom clean in unoccupied spaces.
 - i. Vacuum carpet and similar soft surfaces, removing debris and excess nap; clean according to manufacturer's recommendations if visible soil or stains remain.
 - j. Clean transparent materials, including mirrors and glass in doors and windows. Remove glazing compounds and other noticeable, vision-obscuring materials. Polish mirrors and glass, taking care not to scratch surfaces.
 - k. Remove labels that are not permanent.
 - l. Wipe surfaces of mechanical and electrical equipment and similar equipment. Remove excess lubrication, paint and mortar droppings, and other foreign substances.
 - m. Clean plumbing fixtures to a sanitary condition, free of stains, including stains resulting from water exposure.
 - n. Replace disposable air filters and clean permanent air filters. Clean exposed surfaces of diffusers, registers, and grills.
 - o. Clean ducts, blowers, and coils if units were operated without filters during construction or that display contamination with particulate matter on inspection.
 - p. Clean light fixtures, lamps, globes, and reflectors to function with full efficiency.
 - q. Leave Project clean and ready for occupancy.
- C. Pest Control: Comply with pest control requirements in Section 015000 "Temporary Facilities and Controls." Prepare written report.

3.2 REPAIR OF THE WORK

- A. Complete repair and restoration operations before requesting inspection for determination of Substantial Completion.
- B. Repair or remove and replace defective construction. Repairing includes replacing defective parts, refinishing damaged surfaces, touching up with matching materials, and properly adjusting operating equipment. Where damaged or worn items cannot be repaired or restored, provide replacements. Remove and replace operating components that cannot be repaired. Restore damaged construction and permanent facilities used during construction to specified condition.
 - 1. Remove and replace chipped, scratched, and broken glass, reflective surfaces, and other damaged transparent materials.
 - 2. Touch up and otherwise repair and restore marred or exposed finishes and surfaces. Replace finishes and surfaces that that already show evidence of repair or restoration.
 - a. Do not paint over "UL" and other required labels and identification, including mechanical and electrical nameplates. Remove paint applied to required labels and identification.
 - 3. Replace parts subject to operating conditions during construction that may impede operation or reduce longevity.
 - 4. Replace burned-out bulbs, bulbs noticeably dimmed by hours of use, and defective and noisy starters in fluorescent and mercury vapor fixtures to comply with requirements for new fixtures.

END OF SECTION 017700

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SECTION 017823 - OPERATION AND MAINTENANCE DATA

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Special Conditions and other Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. Section includes administrative and procedural requirements for preparing operation and maintenance manuals, including the following:
 - 1. Operation and maintenance documentation directory.
 - 2. Emergency manuals.
 - 3. Operation manuals for systems, subsystems, and equipment.
 - 4. Product maintenance manuals.
 - 5. Systems and equipment maintenance manuals.
- B. Related Requirements:
 - 1. Section 013300 "Submittal Procedures" for submitting copies of submittals for operation and maintenance manuals.

1.3 DEFINITIONS

- A. System: An organized collection of parts, equipment, or subsystems united by regular interaction.
- B. Subsystem: A portion of a system with characteristics similar to a system.

1.4 CLOSEOUT SUBMITTALS

- A. Manual Content: Operations and maintenance manual content is specified in individual Specification Sections to be reviewed at the time of Section submittals. Submit reviewed manual content formatted and organized as required by this Section.
 - 1. Architect will comment on whether content of operations and maintenance submittals are acceptable.
 - 2. Where applicable, clarify and update reviewed manual content to correspond to revisions and field conditions.
- B. Format: Submit operations and maintenance manuals in the following format:
 - 1. PDF electronic file. Assemble each manual into a composite electronically indexed file. Submit on digital media acceptable to Architect.
 - a. Name each indexed document file in composite electronic index with applicable item name. Include a complete electronically linked operation and maintenance directory.
 - b. Enable inserted reviewer comments on draft submittals.
- C. Initial Manual Submittal: Submit draft copy of each manual at least 30 days before commencing demonstration and training. Architect will comment on whether general scope and content of manual are acceptable.

- D. Final Manual Submittal: Submit each manual in final form prior to requesting inspection for Substantial Completion and at least 15 days before commencing demonstration and training. Architect will return copy with comments.
 - 1. Correct or revise each manual to comply with Architect's comments. Submit copies of each corrected manual within 15 days of receipt of Architect's comments and prior to commencing demonstration and training.

PART 2 - PRODUCTS

2.1 OPERATION AND MAINTENANCE DOCUMENTATION DIRECTORY

- A. Directory: Prepare a single, comprehensive directory of emergency, operation, and maintenance data and materials, listing items and their location to facilitate ready access to desired information. 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.
- B. List of Systems and Subsystems: List systems alphabetically. Include references to operation and maintenance manuals that contain information about each system.
- C. List of Equipment: List equipment for each system, organized alphabetically by system. For pieces of equipment not part of system, list alphabetically in separate list.
- D. Tables of Contents: Include a table of contents for each emergency, operation, and maintenance manual.
- E. Identification: In the documentation directory and in each operation and maintenance manual, identify each system, subsystem, and piece of equipment with same designation used in the Contract Documents. If no designation exists, assign a designation according to ASHRAE Guideline 4, "Preparation of Operating and Maintenance Documentation for Building Systems."

2.2 REQUIREMENTS FOR EMERGENCY, OPERATION, AND MAINTENANCE MANUALS

- A. Organization: Unless otherwise indicated, organize each manual into a separate section for each system and subsystem, and a separate section for each piece of equipment not part of a system. Each manual shall contain the following materials, in the order listed:
 - 1. Title page.
 - 2. Table of contents.
 - 3. Manual contents.
- B. Title Page: Include the following information:
 - 1. Subject matter included in manual.
 - 2. Name and address of Project.
 - 3. Name and address of Owner.
 - 4. Date of submittal.
 - 5. Name and contact information for Contractor.
 - 6. Name and contact information for Construction Manager.
 - 7. Name and contact information for Architect.
 - 8. Name and contact information for Commissioning Authority.
 - 9. Names and contact information for major consultants to the Architect that designed the systems contained in the manuals.

10. Cross-reference to related systems in other operation and maintenance manuals.
- C. Table of Contents: List each product included in manual, identified by product name, indexed to the content of the volume, and cross-referenced to Specification Section number in Project Manual.
 1. If operation or maintenance documentation requires more than one volume to accommodate data, include comprehensive table of contents for all volumes in each volume of the set.
- D. Manual Contents: Organize into sets of manageable size. Arrange contents alphabetically by system, subsystem, and equipment. If possible, assemble instructions for subsystems, equipment, and components of one system into a single binder.
- E. Manuals, Electronic Files: Submit manuals in the form of a multiple file composite electronic PDF file for each manual type required.
 1. Electronic Files: Use electronic files prepared by manufacturer where available. Where scanning of paper documents is required, configure scanned file for minimum readable file size.
 2. File Names and Bookmarks: Enable bookmarking of individual documents based on file names. Name document files to correspond to system, subsystem, and equipment names used in manual directory and table of contents. Group documents for each system and subsystem into individual composite bookmarked files, then create composite manual, so that resulting bookmarks reflect the system, subsystem, and equipment names in a readily navigated file tree. Configure electronic manual to display bookmark panel on opening file.

2.3 EMERGENCY MANUALS

- A. Content: Organize manual into a separate section for each of the following:
 1. Type of emergency.
 2. Emergency instructions.
 3. Emergency procedures.
- B. Type of Emergency: Where applicable for each type of emergency indicated below, include instructions and procedures for each system, subsystem, piece of equipment, and component:
 1. Fire.
 2. Flood.
 3. Gas leak.
 4. Water leak.
 5. Power failure.
 6. Water outage.
 7. System, subsystem, or equipment failure.
 8. Chemical release or spill.
- C. Emergency Instructions: Describe and explain warnings, trouble indications, error messages, and similar codes and signals. Include responsibilities of Owner's operating personnel for notification of Installer, supplier, and manufacturer to maintain warranties.
- D. Emergency Procedures: Include the following, as applicable:
 1. Instructions on stopping.
 2. Shutdown instructions for each type of emergency.
 3. Operating instructions for conditions outside normal operating limits.
 4. Required sequences for electric or electronic systems.
 5. Special operating instructions and procedures.

2.4 OPERATION MANUALS

- A. Content: In addition to requirements in this Section, include operation data required in individual Specification Sections and the following information:
1. System, subsystem, and equipment descriptions. Use designations for systems and equipment indicated on Contract Documents.
 2. Performance and design criteria if Contractor has delegated design responsibility.
 3. Operating standards.
 4. Operating procedures.
 5. Operating logs.
 6. Wiring diagrams.
 7. Control diagrams.
 8. Piped system diagrams.
 9. Precautions against improper use.
 10. License requirements including inspection and renewal dates.
- B. Descriptions: Include the following:
1. Product name and model number. Use designations for products indicated on Contract Documents.
 2. Manufacturer's name.
 3. Equipment identification with serial number of each component.
 4. Equipment function.
 5. Operating characteristics.
 6. Limiting conditions.
 7. Performance curves.
 8. Engineering data and tests.
 9. Complete nomenclature and number of replacement parts.
- C. Operating Procedures: Include the following, as applicable:
1. Startup procedures.
 2. Equipment or system break-in procedures.
 3. Routine and normal operating instructions.
 4. Regulation and control procedures.
 5. Instructions on stopping.
 6. Normal shutdown instructions.
 7. Seasonal and weekend operating instructions.
 8. Required sequences for electric or electronic systems.
 9. Special operating instructions and procedures.
- D. Systems and Equipment Controls: Describe the sequence of operation, and diagram controls as installed.
- E. Piped Systems: Diagram piping as installed, and identify color-coding where required for identification.

2.5 PRODUCT MAINTENANCE MANUALS

- A. Content: Organize manual into a separate section for each product, material, and finish. Include source information, product information, maintenance procedures, repair materials and sources, and warranties and bonds, as described below.
- B. Source Information: List each product included in manual, identified by product name and arranged to match manual's table of contents. For each product, list name, address, and telephone number of Installer or supplier and maintenance service agent, and cross-reference Specification Section number and title in Project Manual and drawing or schedule designation or identifier where applicable.
- C. Product Information: Include the following, as applicable:
1. Product name and model number.

2. Manufacturer's name.
3. Color, pattern, and texture.
4. Material and chemical composition.
5. Reordering information for specially manufactured products.

D. Maintenance Procedures: Include manufacturer's written recommendations and the following:

1. Inspection procedures.
2. Types of cleaning agents to be used and methods of cleaning.
3. List of cleaning agents and methods of cleaning detrimental to product.
4. Schedule for routine cleaning and maintenance.
5. Repair instructions.

E. Repair Materials and Sources: Include lists of materials and local sources of materials and related services.

F. Warranties and Bonds: Include copies of warranties and bonds and lists of circumstances and conditions that would affect validity of warranties or bonds.

1. Include procedures to follow and required notifications for warranty claims.

2.6 SYSTEMS AND EQUIPMENT MAINTENANCE MANUALS

A. Content: For each system, subsystem, and piece of equipment not part of a system, include source information, manufacturers' maintenance documentation, maintenance procedures, maintenance and service schedules, spare parts list and source information, maintenance service contracts, and warranty and bond information, as described below.

B. Source Information: List each system, subsystem, and piece of equipment included in manual, identified by product name and arranged to match manual's table of contents. For each product, list name, address, and telephone number of Installer or supplier and maintenance service agent, and cross-reference Specification Section number and title in Project Manual and drawing or schedule designation or identifier where applicable.

C. Manufacturers' Maintenance Documentation: Manufacturers' maintenance documentation including the following information for each component part or piece of equipment:

1. Standard maintenance instructions and bulletins.
2. Drawings, diagrams, and instructions required for maintenance, including disassembly and component removal, replacement, and assembly.
3. Identification and nomenclature of parts and components.
4. List of items recommended to be stocked as spare parts.

D. Maintenance Procedures: Include the following information and items that detail essential maintenance procedures:

1. Test and inspection instructions.
2. Troubleshooting guide.
3. Precautions against improper maintenance.
4. Disassembly; component removal, repair, and replacement; and reassembly instructions.
5. Aligning, adjusting, and checking instructions.
6. Demonstration and training video recording, if available.

E. Maintenance and Service Schedules: Include service and lubrication requirements, list of required lubricants for equipment, and separate schedules for preventive and routine maintenance and service with standard time allotment.

1. Scheduled Maintenance and Service: Tabulate actions for daily, weekly, monthly, quarterly, semiannual, and annual frequencies.
2. Maintenance and Service Record: Include manufacturers' forms for recording maintenance.

- F. Spare Parts List and Source Information: Include lists of replacement and repair parts, with parts identified and cross-referenced to manufacturers' maintenance documentation and local sources of maintenance materials and related services.
- G. Warranties and Bonds: Include copies of warranties and bonds and lists of circumstances and conditions that would affect validity of warranties or bonds.
 - 1. Include procedures to follow and required notifications for warranty claims.

PART 3 - EXECUTION

3.1 MANUAL PREPARATION

- A. Emergency Manual: Assemble a complete set of emergency information indicating procedures for use by emergency personnel and by Owner's operating personnel for types of emergencies indicated.
- B. Product Maintenance Manual: Assemble a complete set of maintenance data indicating care and maintenance of each product, material, and finish incorporated into the Work.
- C. Operation and Maintenance Manuals: Assemble a complete set of operation and maintenance data indicating operation and maintenance of each system, subsystem, and piece of equipment not part of a system.
 - 1. Engage a factory-authorized service representative to assemble and prepare information for each system, subsystem, and piece of equipment not part of a system.
 - 2. Prepare a separate manual for each system and subsystem, in the form of an instructional manual for use by Owner's operating personnel.
- D. Manufacturers' Data: Where manuals contain manufacturers' standard printed data, include only sheets pertinent to product or component installed. Mark each sheet to identify each product or component incorporated into the Work. If data include more than one item in a tabular format, identify each item using appropriate references from the Contract Documents. Identify data applicable to the Work and delete references to information not applicable.
 - 1. Prepare supplementary text if manufacturers' standard printed data are not available and where the information is necessary for proper operation and maintenance of equipment or systems.
- E. Drawings: Prepare drawings supplementing manufacturers' printed data to illustrate the relationship of component parts of equipment and systems and to illustrate control sequence and flow diagrams. Coordinate these drawings with information contained in record Drawings to ensure correct illustration of completed installation.
 - 1. Do not use original project record documents as part of operation and maintenance manuals.
 - 2. Comply with requirements of newly prepared record Drawings in Section 017839 "Project Record Documents."
- F. Comply with Section 017700 "Closeout Procedures" for schedule for submitting operation and maintenance documentation.

END OF SECTION 017823

SECTION 017836 - WARRANTIES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of Contract, including General and Special Conditions and other Division 1 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. This Section specifies general administrative and procedural requirements for warranties and bonds required by the Contract Documents, including manufacturers' standard warranties on products and special warranties.
 - 1. Refer to the General Conditions for terms of the Contractor's special warranty of workmanship and materials.
 - 2. General closeout requirements are included in Section "Project Closeout."
 - 3. Certifications and other commitments and agreements for continuing services to Owner are specified elsewhere in the Contract Documents.
- B. Disclaimers and Limitations: Manufacturer's disclaimers and limitations on product warranties do not relieve the Contractor of the warranty on the Work that incorporates the products, nor does it relieve suppliers, manufacturers, and subcontractors required to countersign special warranties with the Contractor.
- C. Related Sections include the following:
 - 1. Division 1 Section "Closeout Procedures" for general closeout requirements.
 - 2. Division 1 Section "Operation and Maintenance Data" for copies of warranties included in manuals.

1.3 DEFINITIONS

- A. Standard Product Warranties are preprinted written warranties published by individual manufacturers for particular products and are specifically endorsed by the manufacturer to the Owner.
- B. Special Warranties are written warranties required by or incorporated in the Contract Documents, either to extend time limits provided by standard warranties or to provide greater rights for the Owner.

1.4 WARRANTY REQUIREMENTS

- A. Related Damages and Losses: When correcting warranted Work that has failed, remove and replace other Work that has been damaged as a result of such failure or that must be removed and replaced to provide access for correction of warranted Work.
- B. Reinstatement of Warranty: When Work covered by a warranty has failed and been corrected by replacement or rebuilding, reinstate the warranty by written endorsement. The reinstated warranty shall be equal to the original warranty with an equitable adjustment for depreciation.
- C. Replacement Cost: Upon determination that Work covered by a warranty has failed, replace or rebuild the Work to an acceptable condition complying with requirements of Contract Documents. The Prime Contractor providing Work is responsible for the cost of replacing or rebuilding defective Work regardless of whether the Owner has benefited from use of the Work through a portion of its anticipated useful service life.

- D. Owner's Recourse: Written warranties made to the Owner are in addition to implied warranties, and shall not limit the duties, obligations, right and remedies otherwise available under the law, nor shall warranty periods be interpreted as limitations on time in which the Owner can enforce such other duties, obligations, rights, or remedies.
 - 1. Rejection of Warranties: The Owner reserves the right to reject warranties and to limit selections to products with warranties not in conflict with requirements of the Contract Documents.
- E. The Owner reserves the right to refuse to accept Work for the Project where a special warranty, certification, or similar commitment is required on such Work or part of the Work, until evidence is presented that entities required to countersign such commitments are willing to do so.

1.5 SUBMITTALS

- A. Submit written warranties to the Architect prior to the date certified for Substantial Completion. If the Architect Certificate of Substantial Completion designates a commencement date for warranties other than the date of Substantial Completion for the Work, or a designated portion of the Work, submit written warranties upon request of the Architect.
 - 1. When a designated portion of the Work is completed and occupied or used by the Owner, by separate agreement with the Prime Contractor during the construction period, submit properly executed warranties to the Architect within 15 days of completion of that designated portion of the Work.
- B. Prepare a written document utilizing the appropriate form, ready for execution by the Prime Contractor, or the Contractor and subcontractor, supplier or manufacturer.
- C. Form of Submittal: At Final Completion compile two copies of each required warranty and bond properly executed by the Prime Contractor, or by the Prime Contractor's, subcontractor, supplier, or manufacturer. Organize the warranty documents into an orderly sequence based on the table of contents of the Project Manual.
- D. Bind warranties and bonds in heavy-duty, commercial quality, durable 3-ring vinyl covered loose-leaf binders, thickness as necessary to accommodate contents, and sized to receive 8-1/2 by 11 inch paper.
 - 1. Provide heavy paper dividers with celluloid covered tabs for each separate warranty. Mark the tab to identify the product or installation. Provide a type description of the product or installation, including the name of the product, and the name, address and telephone number of the installer.
 - 2. Identify each binder on the front and the spine with the typed or printed title "WARRANTIES", the Project title or name, and the name of the Contractor.
- E. When operating and maintenance manuals are required for warranted construction, provide warranty, for inclusion in that required manual.

PART 2 - PART 2 – PRODUCTS (Not Used)

PART 3 - PART 3 – EXECUTION (Not Used)

END OF SECTION 017836

SECTION 017839 - PROJECT RECORD DOCUMENTS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Special Conditions and other Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. Section includes administrative and procedural requirements for project record documents, including the following:
 - 1. Record Drawings.
 - 2. Record Specifications.
 - 3. Record Product Data.
- B. Related Requirements:
 - 1. Section 017700 "Closeout Procedures" for general closeout procedures.
 - 2. Section 017823 "Operation and Maintenance Data" for operation and maintenance manual requirements.

1.3 CLOSEOUT SUBMITTALS

- A. Record Drawings: Comply with the following:
 - 1. Number of Copies: Submit copies of record Drawings as follows:
 - a. Initial Submittal:
 - 1) Submit PDF electronic files of scanned record prints.
 - 2) Architect will indicate whether general scope of changes, additional information recorded, and quality of drafting are acceptable.
 - b. Final Submittal:
 - 1) Submit PDF electronic files of scanned record prints.
- B. Record Specifications: Submit annotated PDF electronic files of Project's Specifications, including addenda and contract modifications.
- C. Record Product Data: Submit annotated PDF electronic files and directories of each submittal.
 - 1. Where record Product Data are required as part of operation and maintenance manuals, submit duplicate marked-up Product Data as a component of manual.
- D. Miscellaneous Record Submittals: See other Specification Sections for miscellaneous record-keeping requirements and submittals in connection with various construction activities. Submit annotated PDF electronic files and directories of each submittal.

PART 2 - PRODUCTS

2.1 RECORD DRAWINGS

- A. Record Prints: Maintain one set of marked-up paper copies of the Contract Drawings and Shop Drawings, incorporating new and revised drawings as modifications are issued.
1. Preparation: 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 provide information for preparation of corresponding marked-up record prints.
 - a. Give particular attention to information on concealed elements that would be difficult to identify or measure and record later.
 - b. Accurately record information in an acceptable drawing technique.
 - c. Record data as soon as possible after obtaining it.
 - d. Record and check the markup before enclosing concealed installations.
 - e. Cross-reference record prints to corresponding archive photographic documentation.
 2. Content: Types of items requiring marking include, but are not limited to, the following:
 - a. Dimensional changes to Drawings.
 - b. Revisions to details shown on Drawings.
 - c. Locations and depths of underground utilities.
 - d. Revisions to routing of piping and conduits.
 - e. Revisions to electrical circuitry.
 - f. Actual equipment locations.
 - g. Duct size and routing.
 - h. Locations of concealed internal utilities.
 - i. Changes made by Change Order or Construction Change Directive.
 - j. Changes made following Architect's written orders.
 - k. Details not on the original Contract Drawings.
 - l. Field records for variable and concealed conditions.
 - m. Record information on the Work that is shown only schematically.
 3. Mark the Contract Drawings and Shop Drawings completely and accurately. Use personnel proficient at recording graphic information in production of marked-up record prints.
 4. Mark record sets with erasable, red-colored pencil. Use other colors to distinguish between changes for different categories of the Work at same location.
 5. Mark important additional information that was either shown schematically or omitted from original Drawings.
 6. Note Construction Change Directive numbers, alternate numbers, Change Order numbers, and similar identification, where applicable.
- B. Newly Prepared Record Drawings: Prepare new Drawings instead of preparing record Drawings where Architect determines that neither the original Contract Drawings nor Shop Drawings are suitable to show actual installation.
1. New Drawings may be required when a Change Order is issued as a result of accepting an alternate, substitution, or other modification.
 2. Consult Architect for proper scale and scope of detailing and notations required to record the actual physical installation and its relation to other construction. Integrate newly prepared record Drawings into record Drawing sets; comply with procedures for formatting, organizing, copying, binding, and submitting.
- C. Format: Identify and date each record Drawing; include the designation "PROJECT RECORD DRAWING" in a prominent location.
1. Format: Annotated PDF electronic file with comment function enabled.

2. Identification: As follows:
 - a. Project name.
 - b. Date.
 - c. Designation "PROJECT RECORD DRAWINGS."
 - d. Name of Architect.
 - e. Name of Contractor.

2.2 RECORD SPECIFICATIONS

- 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.
- B. Format: Submit record Specifications as annotated PDF electronic file.

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.
- B. Format: Submit record Product Data as annotated PDF electronic file.
 1. Include record Product Data directory organized by Specification Section number and title, electronically linked to each item of record Product Data.

PART 3 - EXECUTION

3.1 RECORDING AND MAINTENANCE

- A. Recording: Maintain one copy of each submittal during the construction period for project record document purposes. Post changes and revisions to project record documents as they occur; do not wait until 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 project 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 project record documents for Architect's reference during normal working hours.

END OF SECTION 017839

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SECTION 024119 - SELECTIVE DEMOLITION AND SHORING

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Special Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. Section Includes:
 - 1. Demolition and removal of selected portions of building or structure.
 - 2. Demolition and removal of selected site elements.
 - 3. Temporary shoring for portions of the existing structure.
- B. Related Requirements:
 - 1. Section 017329 "Cutting and Patching" for cutting and patching procedures.
 - 2. Section 013516 "Alteration Project Procedures" for general protection and work procedures for alteration projects.

1.3 QUALITY ASSURANCE

- A. Regulatory Requirements: Comply with governing EPA notification regulations before beginning selective demolition. Comply with hauling and disposal regulations of authorities having jurisdiction.
- B. Standards: Comply with ANSI A10.6, OSHA Regulations, and NFPA 241.
- C. Structural Load Limitations of Existing Structure: Review load limitations of existing building structural framing system related to selective demolition including the following:
 - 1. Original building Construction Drawings provided by Owner.
 - 2. Condition of existing framing systems scheduled to remain prior to start of selective demolition and periodically during course of selective demolition.
 - 3. Support requirements for proposed demolition equipment, including existing framing systems and temporary shoring and bracing requirements.

1.4 DEFINITIONS

- A. Remove: Detach items from existing construction and dispose of them off-site unless indicated to be salvaged or reinstalled.
- B. Remove and Reinstall: Detach items from existing construction, in a manner to prevent damage, prepare for reuse, and reinstall where indicated.
- C. Existing to Remain: Leave existing items that are not to be removed and that are not otherwise indicated to be salvaged or reinstalled.

1.5 MATERIALS OWNERSHIP

- A. Unless otherwise indicated, demolition waste becomes property of Contractor.

1.6 INFORMATIONAL SUBMITTALS

- A. Proposed Protection Measures: Submit report, including Drawings, that indicates the measures proposed for protecting individuals and property, for environmental protection , for dust control and , for noise control. Indicate proposed locations and construction of barriers.
- B. Schedule of Selective Demolition Activities: Indicate the following:
 - 1. Verification by a New York State registered Professional Engineer that the existing building framing systems will safely support the demolition equipment proposed for use.
 - 2. Means and methods of temporary shoring stamped by a New York State registered Professional Engineer, including copies of calculations.

1.7 FIELD CONDITIONS

- A. Owner will occupy portions of building immediately adjacent to selective demolition area. Conduct selective demolition so Owner's operations will not be disrupted.
- B. Conditions existing at time of inspection for bidding purpose will be maintained by Owner as far as practical.
 - 1. Before selective demolition, Owner will remove the following items:
 - a. Stored material, equipment, and tools.
 - b. Furniture
- C. Notify Architect of discrepancies between existing conditions and Drawings before proceeding with selective demolition.
- D. Hazardous Materials: Present in buildings and structures to be selectively demolished. A report on the presence of hazardous materials is on file for review and use. Examine report to become aware of locations where hazardous materials are present.
 - 1. Hazardous material remediation is specified elsewhere in the Contract Documents.
 - 2. Do not disturb hazardous materials or items suspected of containing hazardous materials except under procedures specified elsewhere in the Contract Documents.
- E. Storage or sale of removed items or materials on-site is not permitted.
- F. Utility Service: Maintain existing utilities indicated to remain in service and protect them against damage during selective demolition operations.
 - 1. Maintain fire-protection facilities in service during selective demolition operations.

1.8 COORDINATION

- A. Arrange selective demolition schedule so as not to interfere with Owner's operations.
- B. Provide minimum 72-hours' notice to the Owner of activities that will affect Owner operations.

PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

- A. Regulatory Requirements: Comply with governing EPA notification regulations before beginning selective demolition. Comply with hauling and disposal regulations of authorities having jurisdiction.
- B. Standards: Comply with ASSE A10.6 and NFPA 241.

2.2 MINIMUM REQUIREMENTS FOR SHORING MATERIALS

- A. Proprietary shoring components and other products or materials used for temporary shoring and bracing shall be in good condition and of adequate strength to support intended loads with appropriate safety factors.
- B. Shoring components and materials that are damaged shall not be used. If damaged during use, replace.
- C. Shoring components and materials shall be reviewed by a competent person prior to use.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Verify that utilities have been disconnected and capped before starting selective demolition operations.
- B. Review Project Record Documents of existing construction or other existing condition and hazardous material information provided by Owner. Owner does not guarantee that existing conditions are same as those indicated in Project Record Documents.
- C. Perform an engineering survey of condition of building to determine whether removing any element might result in structural deficiency or unplanned collapse of any portion of structure or adjacent structures during selective building demolition operations.
 - 1. Perform surveys as the Work progresses to detect hazards resulting from selective demolition activities.
- D. Verify that hazardous materials have been remediated before proceeding with building demolition operations.
- E. Survey of Existing Conditions: Record existing conditions by use of preconstruction photographs or video.
 - 1. Comply with requirements specified in Section 013233 "Photographic Documentation."

3.2 UTILITY SERVICES AND MECHANICAL/ELECTRICAL SYSTEMS

- A. Existing Services/Systems to Remain: Maintain services/systems indicated to remain and protect them against damage.
- B. Existing Services/Systems to Be Removed, Relocated, or Abandoned: Locate, identify, disconnect, and seal or cap off utility services and mechanical/electrical systems serving areas to be selectively demolished.
 - 1. Arrange to shut off utilities with utility companies.

2. If services/systems are required to be removed, relocated, or abandoned, provide temporary services/systems that bypass area of selective demolition and that maintain continuity of services/systems to other parts of building.
3. Disconnect, demolish, and remove fire-suppression systems, plumbing, and HVAC systems, equipment, and components indicated on Drawings to be removed.
 - a. Piping to Be Removed: Remove portion of piping indicated to be removed and cap or plug remaining piping with same or compatible piping material.
 - b. Piping to Be Abandoned in Place: Drain piping and cap or plug piping with same or compatible piping material and leave in place.
 - c. Equipment to Be Removed: Disconnect and cap services and remove equipment.

3.3 PROTECTION

- A. Temporary Protection: Provide temporary barricades and other protection required to prevent injury to people and damage to adjacent buildings and facilities to remain.
 1. Provide protection to ensure safe passage of people around selective demolition area and to and from occupied portions of building.
 2. Provide temporary weather protection, during interval between selective demolition of existing construction on exterior surfaces and new construction, to prevent water leakage and damage to structure and interior areas.
 3. Protect walls, ceilings, floors, and other existing finish work that are to remain or that are exposed during selective demolition operations.
 4. Cover and protect furniture, furnishings, and equipment that have not been removed.
 5. Comply with requirements for temporary enclosures, dust control, heating, and cooling specified in Section 015000 "Temporary Facilities and Controls."
- B. Temporary Shoring: Design, provide, and maintain shoring, bracing, and structural supports as required to preserve stability and prevent movement, settlement, or collapse of construction and finishes to remain, and to prevent unexpected or uncontrolled movement or collapse of construction being demolished.
 1. Strengthen or add new supports when required during progress of selective demolition.
 2. Items identified to be shored are indicated in drawings. Shoring shall be designed by a New York State registered Professional Engineer to adequately support existing conditions to remain while removals and demolition operations proceed.
 3. Shoring shall meet local and national standards and regulations, including OSHA regulations.
 4. Shoring shall remain in place until the affected area has been stabilized and resupported by permanent structural framing and until reviewed and accepted by the Registered Design Professional.
- C. Remove temporary barricades and protections where hazards no longer exist.

3.4 SELECTIVE DEMOLITION, GENERAL

- A. General: Demolish and remove existing construction only to the extent required by new construction and as indicated. Use methods required to complete the Work within limitations of governing regulations and as follows:
 1. Proceed with selective demolition systematically, from higher to lower level. Complete selective demolition operations above each floor or tier before disturbing supporting members on the next lower level.
 2. Neatly cut openings and holes plumb, square, and true to dimensions required. Use cutting methods least likely to damage construction to remain or adjoining construction. Use hand tools or small power tools designed for sawing or grinding, not hammering and chopping. Temporarily cover openings to remain.
 3. Cut or drill from the exposed or finished side into concealed surfaces to avoid marring existing finished surfaces.

4. Do not use cutting torches until work area is cleared of flammable materials. At concealed spaces, such as duct and pipe interiors, verify condition and contents of hidden space before starting flame-cutting operations. Maintain portable fire-suppression devices during flame-cutting operations.
5. Maintain fire watch during and for at least 24 hours after flame-cutting operations.
6. Maintain adequate ventilation when using cutting torches.
7. Remove decayed, vermin-infested, or otherwise dangerous or unsuitable materials and promptly dispose of off-site.
8. Remove structural framing members and lower to ground by method suitable to avoid free fall and to prevent ground impact or dust generation.
9. Locate selective demolition equipment and remove debris and materials so as not to impose excessive loads on supporting walls, floors, or framing.
10. Dispose of demolished items and materials promptly.

- B. Site Access and Temporary Controls: Conduct selective demolition and debris-removal operations to ensure minimum interference with roads, streets, walks, walkways, and other adjacent occupied and used facilities.
- C. Existing Items to Remain: Protect construction indicated to remain against damage and soiling during selective demolition. When permitted by Architect, items may be removed to a suitable, protected storage location during selective demolition and cleaned and reinstalled in their original locations after selective demolition operations are complete.

3.5 SELECTIVE DEMOLITION PROCEDURES FOR SPECIFIC MATERIALS

- A. Concrete: Demolish in sections. Cut concrete full depth at junctures with construction to remain and at regular intervals using power-driven saw, and then remove concrete between saw cuts.
- B. Masonry: Demolish in small sections. Cut masonry at junctures with construction to remain, using power-driven saw, and then remove masonry between saw cuts.
- C. Concrete Slabs-on-Grade: Saw-cut perimeter of area to be demolished, and then break up and remove.
- D. Roofing: Remove no more existing roofing than what can be covered in one day by new roofing and so that building interior remains watertight and weathertight. See Section 075323 'Ethylene-Propylene-Diene-Monomer (EPDM) Roofing' for new roofing requirements.
1. Remove existing roof membrane, flashings, copings, and roof accessories.
 2. Remove existing roofing system down to substrate.

3.6 DISPOSAL OF DEMOLISHED MATERIALS

- A. Remove demolition waste materials from Project site and dispose of them in an EPA-approved construction and demolition waste landfill acceptable to authorities having jurisdiction.
1. Do not allow demolished materials 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 demolished materials.

3.7 CLEANING

- A. Clean adjacent structures and improvements of dust, dirt, and debris caused by selective demolition operations. Return adjacent areas to condition existing before selective demolition operations began.

END OF SECTION 024119

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SECTION 028200 – ASBESTOS ABATEMENT

AT: VILLAGE OF MOUNT KISCO WATER DEPARTMENT BUILDING
ASBESTOS ABATEMENT
43 COLUMBUS AVENUE
MOUNT KISCO, NY 10549

OWNER: VILLAGE OF MOUNT KISCO
104 MAIN STREET
MOUNT KISCO, NY 10549
845-294-6250

ARCHITECT: BAR DOWN STUDIO
PO BOX 721
BEACON, NY 12508

CONSULTANT: QUALITY ENVIRONMENTAL SOLUTIONS & TECHNOLOGIES, INC. (QUES&T)
1376 ROUTE 9
WAPPINGERS FALLS, NEW YORK 12590
PH. (845) 298-6031
FX. (845) 298-6251



SPECIFICATION DATED: February 21, 2022

PART I – GENERAL

1.01 DESCRIPTION

- A. All work under this contract shall be performed in strict accordance with the specifications and all applicable laws for asbestos removal projects. The Abatement Contractor shall furnish all labor, materials, supervision, services, insurance, and equipment necessary for the complete and total removal of Asbestos-containing Materials (ACM) as described herein, in attachments to the specification, Job Specific Variance(s) and/or as directed by the Bar Down Studios (here-in-after the "Owner") and/or the Owners Representative(s) to support the to the following Village of Mount Kisco projects:

VILLAGE OF MOUNT KISCO WATER DEPT. BUILDING ASBESTOS ABATEMENT
43 COLUMBUS AVENUE
MOUNT KISCO, NY 10549

- B. Abatement Contractor shall provide for personnel air monitoring to satisfy OSHA regulation 29 CFR Parts 1926.1101(f). All work performed shall be in strict accordance with applicable provisions and regulations promulgated under New York State Department of Labor, Industrial Code 56 (ICR-56).
- C. The Abatement Contractor shall satisfy the requirements for asbestos projects issued by the New York State Department of Labor concerning licensing and certification; notification; equipment; removal and disposal procedures; engineering controls; work area preparation; decontamination and clean-up procedures; and personnel air monitoring.
- D. The Abatement Contractor shall be responsible for submittal of asbestos project notification(s) and applicable fees to EPA and NYSDOL concerning this project. Project notification(s) shall be made for the cumulative total of ACM to be removed as required by ICR-56-3.4. Work practices for each individual work area established shall be consistent with the quantity of ACM contained within that work area as defined in ICR-56-2.
- E. The scope of work under this contract shall include the following:
1. All asbestos-containing materials (ACM) shall be removed in accordance with these specifications. The Abatement Contractor is responsible for field verification of estimated quantities, locations and other site conditions that may affect work.
 2. All fixed objects remaining within the work area(s) shall be protected as required by Title 12 NYCRR Section 56-7.10(b) and as described in these specifications.
 3. The containerization, labeling and disposal of all asbestos waste in accordance with applicable city, state and federal regulations and these specifications.
 4. The Abatement Contractor will be responsible for repairing all building components damaged during abatement including, but not limited to, ceiling tiles, ceiling finishes, wall finishes and/or floor finishes, etc.
 5. The Abatement Contractor shall be responsible for any and all demolition required to access materials identified in scope of work and on associated drawings.
 6. Concealed conditions that are exposed and may require additional work shall be brought to the

attention of the Owner(s) immediately. The Abatement Contractor shall not abate these areas without a written notice to proceed. If the Abatement Contractor removes additional asbestos prior to the order to proceed the additional work will not be acknowledged.

7. Permissible working hours shall be Monday through Friday 7:00 A.M. to 4:00 P.M. with one (1) hour for lunch and/or as defined by the Owner. Holidays shall be considered weekends and not included for working days. Upon written approval from the Owner, the Abatement Contractor may work past these hours. The Abatement Contractor will incur any and all costs associated for work performed beyond the defined schedule including, but not limited to: abatement activities, project/air monitoring, custodial/staffing labor, overtime, mobilizations, etc.
8. Buildings will be turned over to the Abatement Contractor as is. At that time, all electrical services and HVAC systems in the proposed work areas will be shut down. Electricity and water supply will be maintained in the building for use by the Abatement Contractor. The Abatement Contractor is responsible for securing all power in the work area(s) and establishing all temporary GFCI hookups necessary to complete his work.
9. The Abatement Contractor shall remove identified asbestos-containing floor coverings to the building substrate beneath; in areas indicted. Subsequent to final air clearances, the substrate(s) shall be washed with a neutralizing agent to prepare the substrate to accept new floor covering and eliminate residual odors.
10. The Abatement Contractor must coordinate location of waste containers with the Facility and the Owner. Deliveries and storage of equipment must be coordinated with the Facility and the Owner.
11. All "Large" and "Small" asbestos abatement projects, as defined by 12 NYCRR56 shall not be performed while the building is occupied. The term "building" means a wing or major section of a building that can be completely isolated from the rest of the building with sealed non-combustible construction. The isolated portion of the building must contain exists that do not pass through the occupied portion(s) and ventilation systems must be physically separated and sealed at the isolation barriers.

1.02 PRE-CONTRACT SUBMITTALS

Within three (3) days after bids are opened, the three (3) apparent low bidders shall be required to submit the following documentation:

A. Resume': Shall include the following:

1. Provide a list of projects of similar nature performed within the past two (2) years and include the dollar value of all projects. Provide project references to include owner, consultant, and air monitoring firms' name, contact person, address, and phone number, include location of project and date of completion.
2. Abatement Contractor license issued by New York State Department of Labor for asbestos work in accordance with ICR-56-3.
3. A list of owned equipment available to be used in the performance of the project.
4. The number of years engaged in asbestos removal.
5. An outline of the worker training courses and medical surveillance program conducted by the Abatement Contractor.

6. A standard operating procedures manual describing work practices and procedures, equipment, type of decontamination facilities, respirator program, special removal techniques, etc.
7. Documentation to the satisfaction of the Owner pertaining to the Abatement Contractor's financial resources available to perform the project. Such data shall include, but not be limited to, the firm's balance sheet for the last fiscal year.

B. Citations/Violations/Legal Proceedings

1. Submit a notarized statement describing any citations, violations, criminal charges, or legal proceedings undertaken or issued by any law enforcement, regulatory agency, or consultant concerning performance on previous asbestos abatement contracts. Briefly describe the circumstances citing the project and involved persons and agencies as well as the outcome of any actions.
2. Answer the question: "Has your firm or its agents been issued a Stop Work order on any project within the last two years?" If "Yes" provide details as discussed above.
3. Answer the question: "Are you now, or have you been in the past, a party to any litigation or arbitrations arising out of your performance on Asbestos Abatement Contracts?" If "Yes" provide details as discussed in 1. above.
4. Describe any liquidated damages assessed within the last two years.

C. Preliminary Schedule

1. Provide a detailed schedule including work dates, work shift times, estimate of manpower to be utilized and the start and completion date for completion of each major work area.

1.03 DOCUMENTATION

A. The Abatement Contractor shall be required to submit the following and receive the Consultant's approval prior to commencing work on this project:

1. Provide documentation of worker training for each person assigned to the project. Documentation shall include copies of each workers valid New York State asbestos handler certificates (for those employees who may perform asbestos removal), documentation of current respirator fit test and current OSHA required training and medical examination.
2. The attached "Asbestos Employee Medical Examination Statement" and "Asbestos Employee Training Statement" forms shall be completed, signed and submitted for each worker assigned to the project. Records of all employee training and medical surveillance shall be maintained for at least forty (40) years. Copies of the records shall be submitted to the Consultant prior to commencement.
3. The Abatement Contractor shall submit proof of a current, valid license issued by the New York State Department of Labor pursuant to the authority vested in the Commissioner by section 906 of the Labor Laws, and that the employees performing asbestos related work on this project are certified by the State of New York as required in Part 56 of Title 12 of the Official Compilation of Codes, Rules and Regulations of the State of New York latest edition. Copies of all licenses shall be submitted prior to the commencement of the project.
4. The Abatement Contractor shall submit a written respiratory protection program meeting the requirements of 29 CFR 1910.134 to the Consultant.
5. The name, address, social security number and NYS DOL certificate number of the person(s) who

will supervise the asbestos project.

6. The name and address of the deposit or waste disposal site or sites where the asbestos materials are to be deposited or disposed of. This site must be approved by the Owner. The manifesting procedure must also be specified.
 7. The name, address and New York State Dept. of Environmental Conservation ID Number of any transporters that are to be used to transport waste.
 8. A written Standard Operation Procedure (SOP) that is designed and implemented to maximize protection against human exposure to asbestos dust. The SOP shall take into consideration the workers, visitors, building employees, general public and environment. As a minimum the procedures must include the following:
 - a. Security for all work areas on an around-the-clock basis against unauthorized access.
 - b. Project organization chart including the phone numbers of at least two responsible persons who shall be authorized to dispatch men and equipment to the project in the event of an emergency; including weekends.
 - c. Description of protective clothing and NIOSH approved respirators to be used.
 - d. Description of all removal methods to be used, including HEPA air filtration and decontamination sequence with special emphasis on any procedure that may deviate from these specifications.
 - e. A list of manufacturers' certificates stating that all vacuums, negative air filtration equipment, respirators and air supply equipment meet OSHA and EPA requirements.
 - f. A list of all materials proposed to be furnished and used under this contract.
 - g. Emergency evacuation procedures in the event of fire, smoke, or accidents such as injury from falling, heat exposure, electrical shock, etc.
 - h. The name, address and ELAP number of the New York State Department of Health Certified Analytical Testing Laboratory the Contractor proposes to use for the OSHA monitoring.
 9. A detailed plan, in triplicate, for the phasing of the project, division of work areas and location of decontamination facilities, waste containers and temporary office.
 10. Work schedule, identifying firm dates and completion for actual areas. Bar chart or critical path chart indicating phases is required.
- B. The Abatement Contractor shall post their NYS DOL contractor's license and maintain a daily log documenting the dates and time of the following items within each personal decontamination unit:
1. Meetings; purpose, attendants, discussion (brief)
 2. Sign-in and sign-out of all persons entering the work area including name, date, time, social security number, position or function and general description of daily activity.
 3. Testing of barriers and enclosure systems using smoke tubes prior to the beginning of abatement activities and at least once a day thereafter until satisfactory clearance air monitoring results have been achieved.
 4. Inspection of all plastic barriers, twice daily, by the asbestos supervisor.
 5. Loss of enclosure integrity; special or unusual events, barrier breaches, equipment failures, etc.

6. Daily cleaning of enclosures.
 7. Personnel air monitoring test results for OSHA Compliance. Results shall be posted at the work site within 24 hours of testing and copies supplied to the Owner within five (5) days of testing. Abnormalities shall be supplied to the Owner immediately.
- C. Documentation with confirmation signature of Consultant's representative of the following shall be provided by the Abatement Contractor at the final closeout of the project.
1. Testing of barriers and enclosure systems using smoke tubes shall be performed prior to the beginning of abatement activities and at least once a day thereafter until satisfactory clearance air monitoring results have been achieved.
 2. Inspection of all plastic barriers.
 3. Removal of all polyethylene barriers.
 4. Consultant's inspections prior to encapsulation.
 5. Removal of waste materials.
 6. Decontamination of equipment (list items).
 7. Consultant's final inspection/final air tests.
- D. The Abatement Contractor shall provide records of all project information, to include the following which shall be submitted upon completion of the project and prior to approval of the Abatement Contractor's payment application:
1. The location and description of the abatement project.
 2. The name, address, and social security number of the person(s) who supervised the asbestos project.
 3. Certified payroll documentation Pursuant to Article 8, Section 220 of the NYS Labor Law
 4. Copies of EPA/NYS DOL Asbestos Certificates for all Workers and Supervisors employed on the Project.
 5. Copies of Medical Approval and Respirator Fit-testing for all Asbestos Workers and Supervisors employed on the Project.
 6. Copies of Abatement Contractors Daily Sign-In Sheets & Logs for persons entering and leaving the work area. – Title 12 NYCRR Part 56-7.3.
 7. Copies of Abatement Contractor's personal air sampling laboratory results.
 8. The amounts and type of asbestos materials that was removed, enclosed, encapsulated, or disturbed.
 9. The name and address of the deposit or waste disposal site or sites where the asbestos waste materials were deposited or disposed of and all related manifests, receipts and other documentation associated with the disposal of asbestos waste.
 10. The name and address of any transporters used to transport waste and all related manifests, receipts and other documentation associated with the transport of asbestos waste.

11. All other information that may be required by state, federal or local regulations.
12. Copy of the Supervisor's Daily Project Log of events as described in 1.03 B, above.

1.04 NOTIFICATIONS AND PERMITS

A. The Abatement Contractor shall be required to prepare and submit notifications to the following agencies at least ten (10) days prior to the commencement of the project:

1. Asbestos NESHAPS Contact
U.S. Environmental Protection Agency
NESHAPS Coordinator, Air Facilities Branch
26 Federal Plaza
New York, New York 10007
(212) 264-7307
 2. State of New York Department of Labor
Division of Safety and Health
Asbestos Control Bureau
State Office Building Campus, Building 12, Room 454
Albany, New York 12240
 3. Owner(s):
VILLAGE OF MOUNT KISCO
104 MAIN STREET
MOUNT KISCO, NY 10549
Ph. 914-241-0500
E-mail. kfamulare@mountkiskony.gov
 4. Owner's Representative(s): Bar Down Studios
PO Box 721
Beacon, NY 12508
ATTN: Dana Hochberg
Ph. (845) 559-3187
E-mail. dana@bardownstudio.com
 5. Environmental Consultant(s): Quality Environmental Solutions & Technologies, Inc. (QuES&T)
1376 Route 9
Wappingers Falls, New York 12590
ATTN: Gregory Dean
Ph. (845) 298-6031
Fx. (845) 298-6251
E-mail. gdean@qualityenv.com
- B. The notification shall include but not be limited to the following information:
1. Name and address of Owner.
 2. Name, address, and asbestos handling license number of the Abatement Contractor.
 3. Address and description of the building, including size, age, and prior use of the building or area; the amount, in square feet or linear feet of asbestos material to be removed; room designation numbers or other local information where asbestos material is found, including the type of asbestos material (friable or non-friable).
 4. Scheduled starting and completion dates for removal.

5. Methods to be employed in abating asbestos containing materials.
6. Procedures and equipment, including ventilating/exhaust systems, that will be employed to comply with the Code of Federal Regulation (CFR) Title 40, Part 61 of the U.S. Environmental Protection Agency.
7. The name and address of the carting company and of the waste disposal site where the asbestos waste will be deposited.

NOTE: Notifications shall be submitted using standard forms as may be used by the respective agency.

For DOL (NYS) include "Asbestos Project Notification" form (DOSH-483) with proper fee, if required. For EPA include "Notification of Demolition and Renovation"; 40 CFR Part 61.

- C. The Abatement Contractor shall secure any permits required by the city, town, county, or state that may be required and the cost for obtaining the permit shall be included in his base bid.
- D. The Abatement Contractor shall erect warning signs around the work space at every point of potential entry into the work area in accordance with OSHA 1926.58k (2), (i). These signs shall bear the following information:

DANGER

CANCER AND LUNG DISEASE HAZARD
AUTHORIZED PERSONNEL ONLY
RESPIRATORS AND PROTECTIVE
CLOTHING
ARE REQUIRED IN THIS AREA

- E. The Abatement Contractor shall post at entrances to the work place and immediate adjacent areas, notifications to building occupants, which include the name and license number of the contractor, project location and size, amount and type of ACM, abatement procedures, dates of expected occurrence and name and address of the air monitor and laboratory in compliance with ICR 56-3.6.
- F. The Abatement Contractor shall post a list of emergency telephone numbers at the job site which shall include the Owner's Representative, police, emergency squad, local hospital, Environmental Protection Agency, N.Y. State Department of Labor, Occupational Safety and Health Administration and the local Department of Health.

1.05 APPLICABLE STANDARDS

Except to the extent that more explicit or more stringent requirements are written directly into the contract documents, applicable standards of the construction industry have the same force and effects (and are made a part of contract documents by reference) as if copied directly into contract documents, or as if published copies were bound herewith. Resolution of overlapping and conflicting requirements, which result from the application of several different industry standards to the same unit of work, shall be by adherence to the most stringent requirement.

- A. Applicable standards listed in these Specifications form a part of this Specification and include, but are not necessarily limited to, standards promulgated by the following agencies and organizations:

1. ANSI:
American National Standards Institute
1430 Broadway
New York, New York 10018
2. ASHRAE:
American Society for Heating, Refrigerating
and Air Conditioning Engineers
1791 Tullie Circle NE
Atlanta, Georgia 30329
3. ASTM:
American Society for Testing and Materials
1916 Race Street
Philadelphia, Pennsylvania 19103
4. CFR
Code of Federal Regulations Available
from Government Printing Office
Washington, District of Columbia 20402
5. CGA
Compressed Gas Association
1235 Jefferson Davis Highway
Arlington, Virginia 22202
6. CS
Commercial Standard of NBS
(US Dept. of Commerce)
Government Printing Office
7. EPA
Environmental Protection Agency, Region II
26 Federal Plaza
New York, New York 10007
Asbestos Coordinator - Room 802
(212) 264-9538
Part 61, Sub-Parts A & B
National Emission Standard for Asbestos
8. FEDERAL SPECS
Federal Specification (General Services Administration)
7th and D Street, SW
Washington, District of Columbia 20406
9. NBS
National Bureau of Standards
(US Department of Commerce)
Gaithersburg, Maryland 20234
10. NEC
National Electrical Code (by NFPA)
11. NFPA
National Fire Protection Association
Batterymarch Park

Quincy, Massachusetts 02269

12. NIOSH

National Institute for Occupational Safety and Health
26 Federal Plaza
New York, New York 10007

13. NYSDOH

New York State Department of Health
Bureau of Toxic Substance Assessment
Room 359 - 3rd Floor
Tower Building Empire State Plaza
Albany, New York 12237

14. NYSDEC

New York State Department of Environmental Conservation
Room 136
50 Wolf Road
Albany, New York 12233-3245

15. NYSDOL

State of New York Department of Labor
Division of Safety and Health
Asbestos Control Program
State Campus, Building 12
Albany, New York 12240

16. OSHA

Occupational Safety and Health Administration
(US Department of Labor)
New York Regional Office - room 3445
1515 Broadway
New York, New York 10036

17. UL

Underwriters Laboratories
333 Pfingsten Road
Northbrook, Illinois 60062

B. Federal Regulations: Those which govern asbestos abatement work or hauling and disposal of asbestos waste materials:

1. U.S. Department of Labor, Occupational Safety and Health Administration, (OSHA):

- a. Asbestos Regulations
Title 29, Part 1910, of the Code of Federal Regulations.
- b. Respiratory Protection
Title 29, Part 1910, Section 134 of the Code of Federal Regulations.
- c. Construction Industry
Title 29, Part 1926, of the Code of Federal Regulations.
- d. Access to Employee Exposure & Medical Records
Title 29, Part 1910, Section 20 of the Code of Federal Regulations.

- e. Hazard Communication
Title 29, Part 1910, Section 1200 of the Code of Federal Regulations.
 - f. Specifications for Accident Prevention Signs and Tags
Title 29, Part 1910, section 145 of the Code of Federal Regulations.
2. U.S. Environmental Protection Agency (EPA):
- a. Asbestos Hazard Emergency Response Act (AHERA) Regulation Asbestos Containing Materials in Schools Final Rule & Notice Title 40, Part 763, Subpart E of the Code of Federal Regulations.
 - b. Worker Protection Rule
40 CFR Part 763, Subpart G, CPTS 62044, FLR 2843-9
Federal Register, Vol. 50, No. 134, 7/12/85, P28530-28540
 - c. Regulation for Asbestos
Title 40, Part 61, Subpart A of the Code of Federal Regulations
 - d. National Emission Standard for Asbestos
Title 40, Part 61, Subpart M (Revised Subpart B) of the Code of Federal Regulations
 - e. Resource Conservation and Recovery Act (RCRA) 1976, 1980
Hazardous and Solid Waste Amendments (HSWA) 1984
Subtitle D, Subtitle C
3. U.S. Department of Transportation (DOT):
- a. Hazardous Substances: Final Rule Regulation 49 CFR, Part 171 and 172.
- C. State Regulations: Those which govern asbestos abatement work or hauling and disposal of asbestos waste materials:
- 1. New York State Department of Environmental Conservation (DEC) Regulations regarding waste collection registration. Title 6, Part 364 of the New York State Official Compilation of Codes, Rules and Regulations - 6NYCRR 364.
 - 2. New York State Right-To-Know Law
 - 3. New York State Department of Labor Asbestos Regulations Industrial Code Rule 56.
 - 4. NYSDOH Title 10 Part 73 – Asbestos Safety Program and Environmental Laboratory Approval Program.
- D. Standards: Those which govern asbestos abatement work or hauling and disposal of asbestos waste materials:
- 1. American National Standards Institute (ANSI)
 - a. Fundamentals Governing the Design and Operation of Local Exhaust Systems
Publication Z9.2-79
 - b. Practices for Respiratory Protection
Publication Z88.2-80
- E. Guidance Documents: Those that discuss asbestos abatement work or hauling, and disposal of

asbestos waste materials are listed below only for the Abatement Contractor's information. These documents do not describe the work and are not a part of the work of this contract.

EPA:

1. Guidance for Controlling Asbestos Containing Materials in Buildings (Purple Book) EPA560/5-85-024.
2. Asbestos Waste Management Guidance EPA 530-SW-85-007.

F. Patents and Royalties: The Abatement Contractor shall pay all royalties and/or license fees. The Abatement Contractor shall defend all suits and claims for infringement of any patent rights and save the Owner and Consultant harmless from loss including attorney fees on account thereof.

1.06 DEFINITIONS

As used in or in connection with these specifications the following are terms and definitions.

Abatement - Procedure to control release from asbestos material. This includes removal, encapsulation, and enclosure.

Aggressive sampling - A method of sampling in which the person 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.

AIHA - The American Industrial Hygiene Association, 475 Wolf Ledges Parkway, Akron, Ohio 44311.

Airlock - A system for permitting entrance and exit while restricting air movement between a containment 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.

Air sampling - The process of measuring the content of a known volume of air collected during a specific period of time.

Amended water - Water to which a surfactant has been added.

Approved asbestos safety program - A program approved by the Commissioner of Health providing training in the various disciplines that may be involved in an asbestos project.

Area air sampling - Any form of air sampling or monitoring where the sampling device is placed at some stationary location.

Asbestos - Any naturally occurring hydrated mineral silicate separable into commercially usable fibers, including chrysotile (serpentine), amosite (cummingtonite-gunerite), crocidolite (riebeckite), tremolite, anthophyllite and actinolite.

Asbestos contract - An oral or written agreement contained in one or more documents for the performance of work on an asbestos project and includes all labor, goods and service.

Asbestos handler - An individual who installs, removes, applies, encapsulates, or encloses asbestos or asbestos material, or who disturbs friable asbestos. Only individuals certified by NYS Department of Labor shall be acceptable for work under this specification.

Asbestos handling certificate - A certificate issued by the Commissioner of Labor of the State of New York, to a person who has satisfactorily completed an approved asbestos safety program.

Asbestos project - Work undertaken by a contractor which involves the installation, removal, encapsulation, application or enclosure of any ACM or the disturbance of friable ACM.

Asbestos Safety Technician (AST) - Individual designated to represent the Consultant, perform third party monitoring and perform compliance monitoring at the job site during the asbestos project.

Asbestos waste material - Asbestos material or asbestos contaminated objects requiring disposal.

Authorized visitor - The building owner, his or her representative or any representative of a regulatory or other agency having jurisdiction over the project.

Background level monitoring - A method used to determine ambient airborne concentrations inside and outside of a building or structure prior to starting an abatement project.

Building owner - The 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.

Clean room - An uncontaminated area or room that is a part of the personal decontamination enclosure with provisions for storage of persons' street clothes and protective equipment.

Cleanup - The utilization of HEPA vacuuming to control and eliminate accumulations of asbestos material and asbestos waste material.

Clearance air monitoring - The employment of aggressive sampling techniques with a volume of air collected to determine the airborne concentration of residual fibers upon conclusion of an asbestos abatement project.

Commissioner - Commissioner of the New York State Department of Labor.

Contractor - A company, unincorporated association, firm, partnership or corporation and any owner or operator thereof, which engages in an asbestos project or employs persons engaged in an asbestos project.

Curtained doorway - A device that consists of at least three overlapping sheets of 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 the left side. All sheets shall have weights attached to the bottom to insure that the sheets hang straight and maintain a seal over the doorway when not in use.

Decontamination enclosure system - A series of connected rooms, separated from the work area and from each other by air locks, for the decontamination of persons, materials, equipment, and authorized visitors.

Encapsulant (sealant) or encapsulating agent - A liquid material that can be applied to asbestos material and which prevents the release of asbestos from the material by creating a membrane over the surface.

Enclosure - The construction of airtight walls, ceilings and floors between the asbestos material and the facility environment, or around surfaces coated with asbestos materials, or any other appropriate procedure that prevents the release of asbestos materials.

Equipment room - A contaminated area or room that is part of the personal decontamination enclosure system with provisions for the storage of contaminated clothing and equipment.

Fixed object - A unit of equipment, furniture or other fixture in the work area which cannot be readily removed from the work area.

Friable Asbestos Material - That condition of crumbled, pulverized, powdered, crushed or exposed asbestos capable of being released into the air by hand pressure.

Friable material containment - The encapsulation or enclosure of any friable asbestos material.

Glovebag technique - A method for removing asbestos material from heating, ventilating, and air conditioning (HVAC) ducts, piping runs, valves, joints, elbows, and other nonplanar surfaces in a noncontained work area. The glovebag assembly is a manufactured device consisting of a glovebag constructed of at least six mil transparent plastic, two inward-projecting longsleeve gloves, which may contain an inward projecting waterwand sleeve, an internal tool pouch, and an attached, labeled receptacle or portion for asbestos waste. The glovebag is constructed and installed in such a manner that it surrounds the object or area to be decontaminated and to contain all asbestos fibers released during the abatement process.

HEPA filter - A high efficiency particulate air filter capable of trapping and retaining 99.97 percent of particulate greater than 0.3 microns equivalent aerodynamic diameter.

HEPA vacuum equipment - Vacuuming equipment with a high efficiency particulate air filtration system.

Holding area - A chamber in the waste decontamination enclosure located between the washroom and an adjacent uncontaminated area.

Homogeneous work area - A site within the abatement work area that contains one type of asbestos material and where one type of abatement is used.

Large asbestos project - An asbestos project involving the installation, removal, disturbance, enclosure, or encapsulation of 160 square feet or more of asbestos or asbestos material or 260 linear feet or more of asbestos or asbestos material.

Minor asbestos project - An asbestos project involving the installation, removal, disturbance, enclosure, or encapsulation of 10 square feet or less of asbestos or asbestos material, or 25 linear feet or less of asbestos or asbestos material.

Movable object - A unit of equipment, furniture or fixture in the work area that can be readily removed from the work area.

Negative air pressure equipment - A local exhaust system equipped with HEPA filtration. The system shall be capable of creating and maintaining a negative pressure differential between the outside and the inside of the work area.

Non-asbestos material - Any material containing one percent or less asbestos by weight.

Occupied area - Any frequented portion of the work site where abatement is not taking place.

Outside air - The air outside the building or structure.

Personal air monitoring - A method used to determine an individual's exposure to airborne contaminants. The sample is collected outside the respirator in the person's breathing zone.

Plasticize - To cover floors, walls, ceilings and other surfaces with 6 mil fire retardant plastic sheeting as herein specified.

Project - Any form of work performed in connection with the abatement of asbestos or alteration, renovation, modification or demolition of a building or structure that may disturb asbestos or asbestos material.

Removal - The stripping of any asbestos material.

Repair - Corrective action using required work practices to control fiber release from damaged areas.

Respiratory protection - Respiratory protection required of licensed asbestos workers and authorized visitors in accordance with the applicable laws.

Satisfactory clearance air monitoring results - For all post- abatement samples, airborne concentrations of total fibers that are less than 0.01 fibers per cubic centimeter or background levels, whichever are greater, using phase contrast microscopy (PCM).

Shower room - A room between the clean room and the equipment room in the personal decontamination enclosure with hot and cold running water controllable at the top and arranged for complete showering during decontamination.

Small asbestos project - An asbestos project involving the installation, removal, disturbances, enclosure, or encapsulation of more than 10 and less than 160 square feet of asbestos or asbestos material of more than 25 and less than 260 linear feet of asbestos or asbestos material.

Staging area - The area near the waste transfer airlock where containerized asbestos waste has been placed prior to removal from the work area.

Surfactant - A chemical wetting agent added to water to improve its penetration.

Visible emissions - An emissions of particulate material that can be seen without the aid of instruments.

Washroom - A room between the work area and the holding area in the waste decontamination enclosure system, where equipment and waste containers are wet cleaned and/or HEPA vacuumed.

Waste decontamination enclosure system - An area, consisting of a washroom and a holding area, designated for the controlled transfer of materials and equipment.

Wet cleaning - The process of eliminating asbestos contamination from surfaces, equipment or other objects by using cloths, mops, or other cleaning tools.

Work area - Designated rooms, spaces, or areas where asbestos abatement takes place.

Work site - Premises where asbestos abatement is taking place.

Work Surface - Substrate surface from which asbestos-containing material has been removed.

1.07 UTILITIES, SERVICE AND TEMPORARY FACILITIES

- A. The Owner shall make available to the Abatement Contractor all reasonable amounts of water and electrical power at no charge.
- B. The Abatement Contractor shall provide, at his own expense, all electrical, water, and waste connections, extensions, and construction materials, supplies, etc. All connections must be approved in advance by the Owner and all work relative to the utilities must be in accordance with the applicable building codes.
- C. The Abatement Contractor shall provide scaffolding, ladders and staging, etc. as necessary to accomplish the work of this contract. The type, erection and use of all scaffolding, ladders and staging, etc. shall comply with all applicable OSHA provisions.
- D. All connections to the Owner's water system shall include reduced pressure backflow protection or double check and double gate valves. Valves shall be temperature and pressure rated for operation of the temperatures 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 valves shall be piped to the nearest drain or located over an existing sink or grade where water will not damage existing finishes or equipment.
- E. The Abatement Contractor shall use only heavy-duty abrasion resistant hoses with a pressure rating greater than the maximum pressure of the water distribution system to provide water to each work area and to each decontamination unit. Provide fittings as required to allow for connection to existing wall hydrants or spouts, as well as temporary water heating equipment, branch piping, showers, shut-off nozzles and equipment. All water must be shut off at the end of each shift.
- F. The Abatement Contractor shall provide service to decontamination unit electrical subpanel with minimum 60 amp, 2 pole circuit breaker or fused disconnect and ground-fault circuit interrupters (GFCI), reset button and pilot light, connected to the building's main distribution panel. Subpanel and disconnect shall be sized and equipped to accommodate all electrical equipment required for completion of the work. This electrical subpanel shall be used for hot water heater, PAPR battery recharging and air sampling pumps.
- G. The Abatement Contractor shall provide UL rated 40-gallon electric hot water heater to supply hot water for the decontamination unit shower. Activate from 30 amp circuit breaker on the electrical subpanel located within the decontamination unit. Provide with relief valve compatible with water heater operation; relief valve down to drip pan on floor with type L copper. Wiring of the hot water heater shall be in compliance with NEMA, NEC, and UL standards.
- H. The Abatement Contractor shall provide identification warning signs at power outlets, which are other than 110-120 volt power. Provide polarized outlets for plug-in type outlets, to prevent insertion of 110-120 plugs into higher voltage outlets. Dry transformers shall be provided where required to provide voltages necessary for work operations. All outlets or power supplies shall be protected by ground fault circuit interrupter (GFCI) at the power source.
- I. The Abatement Contractor shall use only grounded extension cords; use "hard-service" cords where exposed to abrasion and traffic. Use single lengths or use waterproof connectors to connect separate lengths of electric cords, if single lengths will not reach areas of work.
- J. The Abatement Contractor shall provide general service incandescent lamps of wattage indicated or required for adequate illumination; Protect lamps with guard cages or tempered glass enclosures; Provide exterior fixtures where fixtures are exposed to moisture.
- K. The Abatement Contractor shall provide temporary heat or air conditioning as necessary to maintain comfortable working temperatures inside and immediately outside the work areas. Heating and A/C equipment shall have been tested and labeled by UL, FM or another recognized trade association related to the fuel being used. Fuel burning heaters shall not be used inside containment areas. The Contractor shall also provide a comfortable working environment for occupied areas that are

impacted by the asbestos removal.

- L. The Abatement Contractor shall comply with recommendations of the NFPA standard in regard to the use and application of fire extinguishers. Locate fire extinguishers where they are most convenient and effective for their intended purpose, but provide not less than one extinguisher in each work area, equipment room, clean room and outside the work area

1.08 REMOVAL OF FIXTURES

- A. In locations where the Abatement Contractor is directed to dispose of fixtures he shall either decontaminate the fixtures and dispose of them as non-asbestos containing materials or he shall place them in an appropriate container and dispose of them as asbestos containing material.
- B. In locations where the Abatement Contractor is directed to remove and reinstall fixtures, the fixtures shall be removed, decontaminated, labeled, protected with plastic, and stored by the contractor in a location as directed by the Owner.
- C. Upon completion of the asbestos removal and upon receiving satisfactory clearance air monitoring results, all items to be replaced shall be restored to their original location and reinstalled by the Abatement Contractor.

PART 2 – PRODUCTS

2.01 MATERIALS AND EQUIPMENT

A. GENERAL REQUIREMENTS

- 1. Materials shall be stored off the ground, away from wet or damp surfaces and under protective cover to prevent damage or contamination.
- 2. Damaged or deteriorating materials shall not be used and shall be removed from the premises.
- 3. Power tools used to drill, cut into, or otherwise disturb asbestos material shall be equipped with HEPA filtered local exhaust ventilation.
- 4. The Abatement Contractor shall make available to authorized visitors, ladders and/or scaffolds of sufficient dimension and quantity so that all work surfaces can be easily and safely reached for inspection. Scaffold joints and ends shall be sealed with tape to prevent incursion of asbestos. Scaffolds and ladders shall comply with all applicable codes.

B. PLASTIC BARRIERS (POLYETHYLENE)

- 1. In sizes and shapes to minimize the number of joints.
 - a. Six mil. (.006") fire-retardant for vertical protection (walls, entrances, and openings).
 - b. Six mil. (.006") fire-retardant for horizontal protection (fixed equipment) and heating grilles.
 - c. Six mil. (.006") reinforced fire-retardant for floors of decon units.
- 2. Provide two (2) layers over all roof, wall and ceiling openings. Floor penetrations shall be sealed with a rigid material prior to plasticizing to prevent tripping and fall hazards. All seams within a layer shall be separated by a minimum distance of six feet and sealed airtight. All seams between layers shall be staggered.
- 3. Barrier Attachment - Commercially available duct tape (fabric or paper) and spray-on adhesive. Duct tape shall be capable of sealing joints of adjacent sheets of plastic, facilitating attachment of

plastic sheets to finished or unfinished surfaces of dissimilar materials and adhering under both dry and wet conditions.

C. SIGNS

1. Danger signs shall be provided and shall conform to 29 CFR 1926.1101 and be 14" x 20". These signs shall bear the following information:

DANGER
ASBESTOS
CANCER AND LUNG DISEASE HAZARD
RESPIRATORS AND PROTECTIVE
CLOTHING
ARE REQUIRED IN THIS AREA

D. DANGER LABELS AND TAPE

1. Labels shall be affixed to any asbestos contaminated material in accordance with the requirements of 29 CFR 1910.1200 (f) of OSHA's Hazard Communication Standard, and shall contain the following information:

DANGER
CONTAINS ASBESTOS FIBERS
AVOID BREATHING DUST
CANCER AND LUNG DISEASE HAZARD

2. A label shall be affixed on each container of asbestos waste in accordance with the requirements of 49 CFR Parts 171 and 172, Hazardous Substances; Final Rule (U.S. Department of Transportation), and shall contain the following information:

RQ HAZARDOUS SUBSTANCE
SOLID, NOS, ORM-E, NA 9188
(ASBESTOS)

3. A label shall be affixed on each container of asbestos waste in accordance with the requirements of 40 CFR Part 61.150, NESHAP; Asbestos; Final Rule (USEPA) and shall contain the name of the waste generator and the location at which the waste was generated.

NOTE: All containers marked as above (1, 2 and 3) shall be disposed of as asbestos waste.

4. Provide 3" red barrier tape printed with black lettered "DANGER ASBESTOS REMOVAL". Locate barrier tape across all corridors, entrances and access routes to asbestos work area.

E. PROTECTIVE EQUIPMENT

1. Respiratory Requirements

- a. Where fiber levels permit, and in compliance with regulatory requirements, Powered Air Purifying Respirators are the minimum allowable respiratory protection permitted to be utilized during

removal operations.

- b. Where not in violation of NIOSH, OSHA, and any other regulatory requirements, the Abatement Contractor shall provide the following minimum respiratory protection to the maximum use concentrations indicated:

<u>MSHA/NIOSH Approved Respiratory Protection</u>	<u>Maximum Use Concentration</u>
Half-Mask Air Purifying with HEPA Filters	10x PEL
Full-Facepiece Air Purifying HEPA Filters and Quantitative Fit Test	10x PEL
Powered Air Purifying (PAPR), Loose fitting Helmet or Hood, HEPA Filter	25x PEL
Powered Air Purifying (PAPR), Full Facepiece, HEPA Filter	50x PEL
Supplied Air, Continuous Flow Loose fitting Helmet or Hood	25x PEL
Supplied Air, Continuous Flow Full Facepiece, HEPA Filter	50x PEL
Full Facepiece-Supplied Air Pressure Demand, HEPA Filter	100x PEL
Full Facepiece-Supplied Air Pressure Demand, with Aux. SCBA, Pressure Demand or Continuous Flow	>100x PEL

2. Disposable Clothing -"Tyvek" manufactured by Dupont or approved equal.
3. NIOSH approved safety goggles to protect eyes.
4. Polyethylene bags, 6 mil. (.006") thick (use double bags).

NOTE: Workers must wear disposable coveralls and respirator masks at all times while in the work area. Contaminated coveralls or equipment must be left in work area and not worn into other parts of the building.

F. TOOLS AND EQUIPMENT

1. Airless Sprayer - An airless sprayer, suitable for application of encapsulating material, shall be used.
2. Scaffolding - Scaffolding, as required to accomplish the specified work, shall meet all applicable safety regulations.
3. Transportation Equipment - Transportation equipment, as required, shall be suitable for loading, temporary storage, transport and unloading of contaminated waste without exposure to persons or

property. Water tight, hard wall containers shall be provided to retain and dispose of any asbestos waste material with sharp-edged components that may tear plastic bags or sheeting. The containers shall be marked with danger labels.

4. Surfactant - Wetting Agents - "Asbestos-Wet" - Aquatrols Corp. of America or approved equal and shall be non-carcinogenic.
5. Portable (negative air pressure) asbestos filtration system - by Micro-Trap or approved equal.
6. Vacuum, HEPA type equal to "Nilfisk" #GA73, or "Pullman/Holt" #75 ASA.
7. Amended Water Sprayer - The water sprayer shall be an airless or other low-pressure sprayer for amended water application.
8. Other Tools and Equipment - The Abatement Contractor shall provide other suitable tools for the stripping, removal, encapsulation, and disposal activities including but not limited to: hand-held scrapers, nylon brushes, sponges, rounded edge shovels, brooms, and carts.

PART 3 – EXECUTION

3.01 PRE-ABATEMENT WORK AREA PREPARATION

- A. The work area shall be vacated by the occupants prior to work area preparation and not reoccupied until satisfactory clearance air monitoring results have been achieved.
- B. Caution signs shall be posted at all locations and approaches to a location where airborne concentrations of asbestos may exceed ambient background levels. Signs shall be posted that permit a person to read the sign and take the necessary protective measures to avoid exposure.
- C. Shut down and lock out electric power to all work areas. The Abatement Contractor shall provide temporary power and lighting and ensure safe installation of temporary power sources and equipment used where high humidity and/or water shall be sprayed in accordance with all applicable codes. All power to work areas shall be brought in from outside the area through a ground-fault interrupter at the source.
- D. Isolate the work area HVAC system.
- E. The personnel decontamination enclosure system shall be installed or constructed prior to preparatory work in the work area and in particular before the disturbance of asbestos material. The waste decontamination enclosure system shall be installed or constructed prior to commencement of abatement activities.
- F. Movable objects within the work area shall be pre-cleaned using HEPA filtered vacuum equipment an/or wet cleaning and such objects shall be removed from the work area to an uncontaminated location. If disposed of as asbestos waste material, cleaning is not required.
- G. Fixed objects and other items, which are to remain within the work area, shall be pre-cleaned using HEPA filtered vacuum equipment and/or wet cleaning. Such objects shall be enclosed with two layers of at least six mil plastic sheeting and sealed with tape.
- H. The work area shall be pre-cleaned using HEPA filtered vacuum equipment and/or wet cleaning. Methods that raise dust, such as dry sweeping or vacuuming with equipment not equipped with HEPA filters, shall be prohibited. Asbestos material shall not be disturbed during pre-cleaning.
- I. Isolation barriers that seal off all openings, including windows, corridors, doorways, ducts, and any other penetrations of the work area, shall be constructed using two layers of at least six mil fire-retardant plastic sheeting sealed with tape. Also, all seams in mechanical system components that pass through the work area shall be sealed. Doorways and corridors, which shall not be used

for passage during work, shall also be sealed.

- J. Removal of mounted objects. After isolation barriers are in place, objects such as light fixtures, electrical track, alarm systems, ventilation equipment and other items not previously sealed, shall be double sealed with six mil fire-retardant plastic sheeting. Localized HEPA filtered vacuum equipment shall be used during fixture removal to reduce asbestos dispersal.
- K. Individual roof and floor drains shall be sealed watertight using two layers of 6-mil fire-retardant plastic sheeting and tape prior to plasticizing. Openings in floor shall be fully covered with plywood sheeting secured to the floor in such a way as to minimize a tripping hazard prior to plasticizing.
- L. Emergency and fire exits from the work area shall be maintained or alternate exits shall be established according to all applicable codes.
- M. Adequate toilet facilities shall be supplied by the Abatement Contractor and shall be located either in the clean area of the personnel decontamination enclosure or shall be readily accessible to the personnel decontamination enclosure.

3.02 LARGE ASBESTOS PROJECT PERSONNEL DECONTAMINATION ENCLOSURE SYSTEM (ICR 56-7.5)

- A. The personnel decontamination enclosure shall be constructed prior to preparatory work in the work area and in particular before the disturbance of asbestos material.
 - 1. Construction and use of personnel decontamination enclosure systems shall be in accordance with ICR-56 and any Applicable or Site-Specific Variances utilized on this project. Such systems may consist of existing rooms outside of the work area, if the layout is appropriate, that can be enclosed is plastic sheeting and are accessible from the work area. When this situation does not exist, enclosure systems may be constructed out of metal, wood, or plastic support.
 - 2. The personnel decontamination enclosure system shall consist of a clean room, a shower room, and an equipment room, in series, separated from each other and from the work area by three airlocks.
 - 3. There shall be one shower per six full shift abatement persons calculated on the basis of the largest shift.
 - 4. The personnel decontamination enclosure system shall be fully framed, sheathed for safety and constructed to prevent unauthorized entry.
 - 5. Personnel decontamination enclosure systems constructed at the work site shall utilize at least six mil fire-retardant opaque plastic sheeting. At least two layers of six mil fire-retardant reinforced plastic sheeting shall be used for the flooring of this area.
 - 6. All prefabricated decontamination units shall be completely decontaminated and sealed prior to separation and removal from the work area. Mobile decontamination units shall remain in place until satisfactory clearance results have been attained.
 - 7. The clean room shall be sized to accommodate all authorized persons. Benches, lockers, and hooks shall be provided for street clothes. Shelves for storing respirators shall also be provided. Clean clothing, replacement filters for respirators, towels and other necessary items shall be provided. The clean room shall not be used for the storage of tools, equipment, or materials. It shall not be used for office space. A lockable door shall be provided to permit access to the clean room from outside the work area or enclosure. It shall be used to secure the work area and decontamination enclosure during off-shift hours.

8. The shower room shall contain one or more showers. Each shower head shall be supplied with hot and cold water adjustable at the tap. The shower enclosure shall be constructed to ensure against leakage of any kind. Uncontaminated soap, shampoo and towels shall be available at all times. Shower water shall be drained, collected, and filtered through a system with at least 5.0-micron particle size collection capability. A system containing a series of several filters with progressively smaller pore sizes shall be used to avoid rapid clogging of the filtration system by large particles. Filtered wastewater shall be discharged in accordance with applicable codes. Contaminated filters shall be disposed of as asbestos waste. The shower room shall be constructed in such way that travel through the decontamination unit shall be through the shower.
9. The equipment room shall be used for the storage of equipment and tools after decontamination using a HEPA filtered vacuum and/or wet cleaning. A one-day supply of replacement filters, in sealed containers, for HEPA vacuums and negative pressure ventilation equipment, extra tools, containers of surfactant and other materials and equipment that may be required during the abatement project may also be stored here. A walk-off pan filled with water shall be located in the work area just outside the equipment room for persons to clean foot covering when leaving the work area. A drum lined with a labeled, at least six mil plastic bag is required for collection of clothing and shall be located in this room. Contaminated footwear and work clothes shall be stored in this area.

3.03 WASTE DECONTAMINATION ENCLOSURE SYSTEM (ICR 56-7.5)

A. General Requirements

1. A waste decontamination enclosure system shall consist of the following:
 - a. A washroom/cleanup room shall be constructed with an airlock doorway to the work area and another airlock doorway to the holding area.
 - b. The holding area shall be constructed with an airlock doorway to the washroom/cleanup room and another lockable door to the outside.
2. Where there is only one egress from the work area, the holding area of the waste decontamination enclosure system may branch off from the equipment decontamination room, which doubles as a waste washroom, of the personnel decontamination enclosure.
3. The waste washroom shall be equipped with a drain installed to collect water and deliver it to the shower drain where it shall be filtered through a system with at least 5.0-micron particle size collection capability. A system containing a series of several filters with progressively smaller pore sizes shall be used to avoid rapid clogging of the filtration system by large particles. Filtered wastewater shall be discharged in accordance with applicable codes. Contaminated filters shall be disposed of as asbestos waste.
4. The waste washroom shall be constructed in such a way that travel through the rooms shall be through the waste washroom

3.04 WORK AREA ENTRY AND EXIT PROCEDURES

- #### A. The following procedures shall be followed throughout the asbestos abatement project until satisfactory clearance air monitoring results have been achieved:
1. All persons shall enter and exit the work area through the personnel decontamination enclosure system.
 2. All persons who enter the work area or an enclosure shall sign the entry/exit log, located in the clean room, upon every entry and exit.

3. All persons, before entering the work area, or an enclosure shall read and be familiar with all posted regulations, personal protection requirements, including work area entry and exit procedures, and emergency procedures. The entry/exit log headings shall indicate, and the signatures shall be used to acknowledge, that these have been reviewed and understood by all persons prior to entry.
4. All persons shall proceed first to the clean room, remove all street clothing, store these items in clean sealable plastic bags or lockers and don coveralls, head covering, foot covering and gloves. All persons shall also don NIOSH approved respiratory protection. Clean respirators and protective clothing shall be utilized, by each person, for each separate entry into the work area. Respirators shall be inspected prior to each use and tested for proper seal using quantitative or qualitative fit checks.
5. Persons wearing designated personal protective equipment shall proceed from the clean room through the shower room to the equipment room, where necessary tools are collected and any additional clothing shall be donned, before entry into the work area.
6. Before leaving the work area, all persons shall remove gross contamination from the outside of respirators and protective clothing by brushing, wet cleaning, and/or HEPA vacuuming.
7. Persons shall proceed to the equipment room where all coveralls, head covering, foot covering, and gloves shall be removed. Disposable clothing shall be deposited into labeled containers for disposal. Reusable contaminated clothing, footwear, head gear and gloves shall be stored in the equipment room when not being used in the work area.
8. Still wearing respirators, persons shall proceed to the shower area, clean the outside of the respirator and the exposed face area under running water prior to removal of the respirator, and then fully and vigorously shower and shampoo to remove residual asbestos contamination. Respirators shall be washed thoroughly with soap and water. Some types of respirators will require slight modification of these procedures. An airline respirator with HEPA filtered disconnect protection shall be disconnected in the equipment room and worn into the shower. A powered air-purifying respirator facepiece shall be disconnected from the filter/power pack assembly prior to entering the shower.
9. After showering and drying, all persons shall proceed to the clean room and don clean personal protective equipment if returning to the work area or street clothing if exiting the enclosure.

3.05 EQUIPMENT AND WASTE CONTAINER DECONTAMINATION & REMOVAL PROCEDURES

- A. The following procedures shall be followed throughout the asbestos abatement project until satisfactory clearance air monitoring results have been achieved.
 1. External surfaces of contaminated containers and equipment shall be cleaned by wet cleaning and/or HEPA vacuuming in the work area before moving such items into the waste decontamination enclosure system airlock by persons assigned to this duty. These work area persons shall not enter the airlock.
 2. These contaminated items shall be removed from the airlock by persons stationed in the washroom during waste removal operations. These washroom persons shall remove gross contamination from the exterior of their respirators and protective clothing by brushing, HEPA vacuuming and/or wet cleaning.
 3. Once in the waste decontamination enclosure system, external surfaces of contaminated containers and equipment shall be cleaned a second time by wet cleaning.
 4. The cleaned containers of asbestos material and equipment are to be dried of any excessive pooled

or beaded liquid, placed in uncontaminated plastic bags or sheeting, and sealed airtight.

5. The clean re-containerized items shall be moved into the airlock that leads to the holding area. The washroom persons shall not enter this airlock or the work area until waste removal is finished for that period.
6. Containers and equipment shall be moved from the airlock and into the holding area by persons dressed in clean personal protective equipment, who have entered from uncontaminated areas.
7. The cleaned containers of asbestos material and equipment shall be placed in water tight carts with doors or tops that shall be closed and secured. These carts shall be held in the holding area pending removal. The carts shall be wet cleaned and/or HEPA vacuumed at least once each day.
8. The exit from the decontamination enclosure system shall be secured to prevent unauthorized entry.
9. Where the waste removal enclosure is part of the personnel decontamination enclosure, waste removal shall not occur during shift changes or when otherwise occupied. Precautions shall be taken to prevent short circuiting and cycling of air outward through the shower and clean room.
10. Containers labeled with Asbestos hazard warnings shall not be used to dispose of non-asbestos waste.

3.06 ENGINEERING CONTROLS

A. Ventilation.

1. The Abatement Contractor shall employ HEPA equipped vacuums or negative air pressure equipment for ventilation as required.
2. All negative air pressure equipment ventilation units shall be equipped with HEPA filtration. The Contractor shall provide a manufacturer's test certificate for each unit documenting the capability of trapping and retaining 99.97 percent of asbestos fibers greater than 0.3 microns equivalent aerodynamic diameter.
3. A power supply shall be available to satisfy the requirements of the total of all ventilating units.
4. On electric power failure, abatement shall stop immediately and shall not resume until power is restored and exhaust units are operating fully. On extended power failure, longer than one hour, the decontamination facilities, after the evacuation of all persons from the work area, shall be sealed airtight.
5. If extending the exhaust of the ventilation units 50 feet from the building would result in an exhaust location either in the road, blocking driveway access to the facility or within 50 feet of other buildings, a second unit will be run in series with the primary unit.

3.07 MAINTENANCE OF DECONTAMINATION ENCLOSURE SYSTEMS AND WORK AREA BARRIERS

A. GENERAL REQUIREMENTS

1. The Consultant must review and approve installation before commencement of work. Upon completion of the construction of all plastic barriers and decontamination system enclosures and prior to beginning actual abatement activities.
2. All plastic barriers inside the work area, in the personnel decontamination enclosure system, in the

waste decontamination enclosure system and at partitions constructed to isolate the work area from occupied areas, shall be inspected by the asbestos supervisor at least twice daily. The barriers shall be inspected before the start of and following the completion of the day's abatement activities. Inspections and observations shall be documented in the project log.

3. Damage and defects in the barriers and/or enclosure systems shall be repaired immediately upon discovery and prior to resumption of abatement activities.
4. At any time during the abatement activities, if visible emissions are observed outside of the work area or if damage occurs to the barriers, work shall be stopped, repairs made, and visible residue immediately cleaned up using HEPA vacuuming methods prior to the resumption of abatement activities.
5. The Abatement Contractor shall HEPA vacuum and/or wet clean the waste decontamination enclosure system and the personnel decontamination enclosure system at the end of each day of abatement activities.

3.08 HANDLING AND REMOVAL PROCEDURES

The Abatement Contractor may utilize existing provisions of ICR-56, Applicable Variances or a Site-Specific Variance, approved by the Owner's Consultant, to permit the conduct of this work.

3.09 ABATEMENT PROCEDURES

A. AIR SAMPLING - By Owner

1. Air sampling and analysis shall be conducted according to the requirements of Subpart 56-4 before the start, during and after the completion of the asbestos removal project.
2. In addition to the requirements of Subpart 56-4, air monitoring shall be conducted in accordance with any approved job specific variance(s) or applicable variance utilized.
3. Clearance samples may be analyzed using PCM to maintain compliance with ICR-56.
4. If applicable, clearance samples will be analyzed using TEM to maintain compliance with ICR-56 and 40 CFR 763.90[i].

B. The provisions of the Applicable Variances or a Job Specific Variance shall apply only in those areas where approval has been granted by the NYS DOL and the Contractor has obtained concurrence from the Owner's Consultant. All other applicable provisions of Industrial Code Rule 56-1 through 56-12 shall be complied.

C. A copy of the NYS DOL Job Specific or Applicable Variance, if applicable, shall be conspicuously posted at the work area(s).

D. The Abatement Contractor shall construct a decontamination unit at the work site. The Abatement Contractor shall, as a minimum, comply with the requirements of 29 CFR 1926.1101(j); Hygiene facilities and practices for employees.

3.10 ENCAPSULATION PROCEDURES

The following procedures shall be followed to seal in non-visible residue, after obtaining satisfactory clearance air monitoring results, while conducting lockdown encapsulation on any surfaces which were the subject of removal or other remediation activities:

- 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. Sealants considered for use in encapsulation shall first be tested to ensure that the sealant is adequate for its intended use. A section of the work surface shall be evaluated following this initial test application of the sealant to quantitatively determine the sealant's effectiveness in terms of penetrating and locking down the asbestos fibers. The American Society of Testing and Materials (ASTM) Committee E06.21.06E on Encapsulation of Building Materials has developed a guidance document to assist in the selection of an encapsulant.
- C. The encapsulant solvent or vehicle shall not contain a volatile hydrocarbon.
- D. Encapsulants shall be applied using airless spray equipment.
 - 1. 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. Encapsulation shall be utilized as a surface sealant once all asbestos containing materials have been removed in a work area. 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.

3.11 CLEANUP PROCEDURES

- A. The following cleanup procedures shall be required.
 - 1. Cleanup of accumulations of loose asbestos material shall be performed whenever enough loose asbestos materials have been removed to fill a single leak tight container of the type commensurate with the material properties. In no case shall cleanup be performed less than once prior to the close of each working day. Asbestos material shall be kept wet until cleaned up.
 - 2. Accumulations of dust shall be cleaned off all surfaces on a daily basis using HEPA vacuum cleaning methods.
 - 3. Decontamination enclosures shall be HEPA vacuumed at the end of each shift.
 - 4. Accumulations of asbestos waste material shall be containerized utilizing HEPA vacuums or rubber or plastic dust pans, squeegees, or shovels. Metal shovels shall not be used to pick up or move waste.
 - 5. Excessive water accumulation or flooding in the area shall require work to stop until the water is collected and disposed of properly.
- B. The following cleanup procedures shall be required after completion of all removal activities.
 - 1. All accumulations of asbestos waste material shall be containerized utilizing HEPA vacuums or rubber or plastic dust pan, squeegees or shovels. Metal shovels shall not be used to pick up or move waste. HEPA vacuums shall be used to clean all surfaces after gross cleanup.
 - 2. Cleaning. All surfaces in the work area shall be HEPA vacuumed. To pick up excess liquid and wet debris, a wet purpose shop vacuum may be used and shall be decontaminated prior to removal from the work area.
 - 3. Windows, doors, HVAC system vents and all other openings shall remain sealed. Decontamination enclosure systems shall remain in place and be utilized.
 - 4. All containerized waste shall be removed from the work area and the holding area.

5. All tools and equipment shall be decontaminated and removed from the work area.
6. A final visual inspection and clearance air monitoring, as per the schedule for air sampling and analysis, shall be conducted.
7. The isolation barriers and decontamination unit shall be removed only after satisfactory clearance air monitoring results have been achieved.

3.12 SAFETY MONITORING – CONSULTANT:

The Consultant will designate an Asbestos Safety Technician (AST) to represent the Owner during the removal program. The AST must be on the job site at all times during abatement work. Absolutely no abatement or preparation work will occur without the presence of the AST.

The AST will conduct four (4) milestone inspections.

1. Pre-commencement inspection shall be conducted as follows:
 - a. Notification in writing to the Consultant shall be made by the Abatement Contractor to request a pre-commencement inspection at least 48 hours in advance of the desired date of inspection. This inspection shall be requested prior to beginning preparatory work in another work area.
 - b. The AST shall ensure that:
 - i. The job site is properly prepared and that all containment measures are in place;
 - ii. The designated supervisor shall present to the inspector a valid supervisor's license issued by the New York Department of Labor;
 - iii. All workers shall present to the inspector a valid handler's license issued by the New York Department of Labor;
 - iv. Measures for the disposal of removed asbestos material are in place and shall conform to the adopted standards;
 - v. The Abatement Contractor has a list of emergency telephone numbers at the job site which shall include the monitoring firm employed by the Owner and telephone numbers for fire, police, emergency squad, local hospital, and health officer.
 - c. If all is in order, the AST shall issue a written notice to proceed in the field. If the job site is not in order, then any needed corrective action must be taken before any work is to commence. Conditional approvals shall not be granted.

Progress inspection shall be conducted as follows:

- a. Primary responsibility for ensuring that the abatement work progresses in accordance with these technical specifications and regulatory requirements rests with the Abatement Contractor. The AST shall continuously be present to observe the progress of work and perform required tests.
- b. If the AST observes irregularities at any time, he shall direct such corrective action as may be necessary. If the Abatement Contractor fails to take the corrective action required, or if the Abatement Contractor or any of their employees habitually and/or excessively violate the requirements of any regulation, then the AST shall inform the Owner who shall issue a Stop Work Order to the Abatement Contractor and have the work site secured until all violations are abated.

Clean-up inspections shall be conducted as follows:

- a. Notice for clean-up inspection shall be requested by the Abatement Contractor at least 24 hours in advance of the desired date of inspection;
 - b. The clean-up inspection shall be conducted prior to the removal of any isolation or critical barriers and before final air clearance monitoring;
 - c. The AST shall ensure that:
 - i. The work site has been properly cleaned and is free of visible asbestos containing material and debris.
 - ii. All removed asbestos has been properly placed in a locked secure container outside of the work area.
 - d. If all is in order, the AST shall issue a written notice of authorization to remove surface barriers from the work area. All isolation barriers shall remain in place until satisfactory clearance air sampling has been completed.
4. Clearance Visual Inspection shall be conducted after the removal of non-critical plastic sheeting. The AST shall insure that:
- a. The work area is free of all visible asbestos or suspect asbestos debris and residue.
 - b. All waste has been properly bagged and removed from the work area.
 - c. Should clearance visual inspection identify residual debris, as determined by the AST, the Abatement Contractor is responsible for recleaning the area at his own cost and shall bear all costs of reinspection until acceptable levels are achieved.
- B. The Abatement Contractor shall be required to receive written approval before proceeding after each milestone inspection.
- 3.13 PERSONNEL AIR MONITORING – CONTRACTOR (29 CFR 1926.1101)
- A. Personnel air monitoring shall be provided to determine both short-term (STEL) and full shift during when abatement activities occur. Personnel sampling shall be performed in each work area in order to accurately determine the concentrations of airborne asbestos to which workers may be exposed.
 - B. The Abatement Contractor shall have a qualified "Competent Person" (as specified in 29 CFR 1926 OSHA) to conduct personnel air monitoring.
 - C. The laboratory performing the air sample analysis shall be certified by NYS DOH ELAP and approved by the consultant.
 - D. Personnel air monitoring test results for OSHA Compliance. Results shall be posted at the work site within 24 hours of testing and copies supplied to the Owner within five (5) days of testing. Abnormalities shall be supplied to the Owner immediately.
- 3.14 CLEARANCE AIR MONITORING
- A. Air samples will be collected in and around the work areas at the completion of abatement activities.
 - B. Clearance samples may be analyzed using PCM to maintain compliance with ICR-56.
 - C. If applicable, clearance samples will be analyzed using TEM to maintain compliance with ICR-56 and

40 CFR part 763 "Asbestos-Containing Materials in Schools; Final Rule and Notice" section 763.90.

D. ***RETESTING***

Should clearance air monitoring yield fiber concentrations above the "Clearance" criteria of either 0.01 fibers per CC and/or background levels (PCM) –OR- seventy (70) structures per square millimeter (TEM/AHERA), the Abatement Contractor is responsible for re-cleaning the area at his own cost and shall bear all costs associated with the retesting of the work area(s) including monitoring labor, sampling, analysis, etc. until such levels are achieved.

3.15 RESPIRATORY PROTECTION REQUIREMENT

- A. Respiratory protection shall be worn by all individuals inside the work area from the initiation of the asbestos project until all areas have successfully passed clearance air monitoring in accordance with these specifications. The Abatement Contractor shall keep available at all times two PAPR's with new filters and charged batteries for use by authorized visitors.
- B. All respiratory protection shall be MSHA/NIOSH approved in accordance with the provisions of 30 CFR Part II. All respiratory protection shall be provided by the Abatement Contractor, and used by workers in conjunction with the written respiratory protection program.
- C. The Abatement Contractor shall provide respirators that meet the requirements of 29 CFR Parts 1910 and 1926.
 - 1. Full facepiece Type C supplied-air respirators operated in pressure demand mode equipped with an auxiliary self-contained breathing apparatus, operated in pressure demand or continuous flow, shall be worn during gross removal, demolition, renovation and/or other disturbance of ACM whenever airborne fiber concentrations inside the work area are greater than 10.0 f/cc.
 - 2. Full facepiece Type C supplied-air respirators operated in pressure demand mode with HEPA filter disconnect protection shall be work during gross removal, demolition, renovation and/or other disturbance of ACM with an amphibole content and/or whenever airborne fiber concentrations inside the work area are equal to or greater than 0.5 f/cc and less than or equal to 10.0 f/cc.
 - 3. Full facepiece powered air-purifying respirators (PAPR) equipped with HEPA filters shall be worn during the removal, encapsulation, enclosure, repair and/or other disturbance of friable ACM if airborne fiber concentrations inside the work area are less than 0.5 f/cc. A supply of charged replacement batteries, HEPA filters and flow test meter shall be available in the clean room for use with powered air-purifying respirators. HEPA filters shall be changed daily or as flow testing indicates change is necessary. Any Type C supplied-air respirator operated in continuous flow, with HEPA filter disconnect protection, may be substituted for a powered air-purifying respirator.
 - 4. Loose fitting helmets or hoods with powered air-purifying respirators (PAPR) equipped with HEPA filters may be worn during the removal, encapsulation, enclosure, repair and/or other disturbance of friable ACM if airborne fiber concentrations inside the work area are less than 0.25 f/cc. A supply of charged replacement batteries, HEPA filters and flow test meter shall be available in the clean room for use with powered air-purifying respirators. HEPA filters shall be changed daily or as flow testing indicates change is necessary. Any Type C supplied-air respirator operated in continuous flow may be substituted for a powered air- purifying respirator.
 - 5. Half-mask or full-face air-purifying respirators with HEPA filters shall be worn only during the preparation of the work area and final clean up procedures provided airborne fiber concentrations inside the work area are less than 0.1 f/cc.
 - 6. Use of single use dust respirators is prohibited for the above respiratory protection.

- D. 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.

- E. The Abatement Contractor shall ensure that the workers are qualitatively or quantitatively fit tested by an Industrial Hygienist initially and every six months thereafter with the type of respirator he/she will be using.
- F. 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.
- G. No facial hair, which interferes with the face-to-mask sealing surface, shall be permitted to be worn when wearing respiratory protection that requires a mask-to-face seal.
- H. Contact lenses shall not be worn in conjunction with respiratory protection.
- I. If a worker wears glasses, a spectacle kit to fit their respirator shall be provided by the Abatement Contractor at the Abatement Contractor's expense.
- J. Respiratory protection maintenance and decontamination procedures shall meet the following requirement:
 - 1. Respiratory protection shall be inspected and decontaminated on a daily basis in accordance with OSHA 29 CFR 1910.134(b); and
 - 2. HEPA 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; and
 - 4. Airline respirators with HEPA filtered disconnect shall be disconnected in the equipment room and worn into the shower. Powered air-purifying respirator facepieces 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.
- K. No visitors shall be allowed to enter the contaminated area if they do not have their medical certification and training certificate. Authorized visitors shall be provided with suitable PAPR respirators and instructions on the proper use of respirators whenever entering the work area.

3.16 DISPOSAL OF WASTE

A. APPLICABLE REGULATIONS

- 1. All asbestos waste shall be stored, transported, and disposed of as per, but not limited to, the following Regulations:
 - a. NYS Code Rule 56
 - b. U.S. Department of Transportation (DOT)
Hazardous Substances

Title 29, Part 171 and 172 of the code of Federal Regulations
regarding waste collector registration

- c. Regulations regarding waste collector registration Title 6, part 364 of the New York State Official Compilation of Codes, Rules and Regulations – 6 NYCRR 364
 - d. USEPA NESHAPS 40 CFR 61
 - e. USEPA ASBESTOS WASTE MANAGEMENT GUIDANCE EPA/530-SW-85-007
- B. TRANSPORTER OR HAULER - The Abatement Contractor shall bear full responsibility for proper characterization, transportation, and disposal of all solid or liquid waste, generated during the project, in a legal manner. The Owner shall approve all transportation and disposal methods.
- 1. The Abatement Contractor's Transporter (hauler) and disposal site shall be approved by the Owner. The Abatement Contractor shall remove within 48 hours all asbestos waste from the site after completing the clean-up.
 - 2. The Transporter must possess and present to the Owner's representative a valid New York State Department of Environmental Conservation Part 364 asbestos hauler's permit to verify license plate and permit numbers. The Owner's representative will verify the authenticity of the hauler's permit with the proper authority.
 - 3. The Abatement Contractor shall give 24-hour notification prior to removing any waste from the site. All waste shall be removed from site only during normal working hours. No waste may be taken from the site without authorization from the Owner's representative.
 - 4. The Abatement Contractor shall have the Transporter give the date and time of arrival at the disposal site.
 - 5. The Transporter with the Abatement Contractor and Owner's consultant shall inspect all material in the transport container prior to taking possession and signing the Waste Manifest. The Transporter shall not have any off-site transfers or be combined with any other off-site asbestos material.
 - 6. The Transporter must travel directly to the disposal site with no unauthorized stops.
- C. WASTE STORAGE CONTAINER
- 1. During loading and on-site storage, the asbestos waste container shall be labeled with EPA Danger signage:

<p style="text-align: center;">DANGER CONTAINS ASBESTOS FIBERS AVOID CREATING DUST CANCER AND LUNG DISEASE HAZARD</p>

- 2. The NYS DEC Hauler's Permit number shall be on both sides and back of the container.
- 3. The Container will not be permitted to leave the site without the proper signage.
- 4. A copy of the completed waste manifest shall be forwarded directly to the Owner's Consultant by the disposal facility.

5. Packaging of Non-friable Asbestos. Use of an open top container shall require written request, by the Contractor, and written approval by the Owners Representative, and be performed in compliance with all applicable regulations.
 - a) A chute, if used, shall be air/dust tight along its lateral perimeter and at the terminal connection to the dumpster at ground level (solid wall and top container). The upper end of the chute shall be furnished with a hinged lid, to be closed when the chute is not being used.
 - b) The container shall be lined with a minimum of two (2) layers of 6 mil. Fire-retardant polyethylene draped loosely over the sides so as to facilitate being wrapped over the top of the load and sealed prior to transport from the site.
 - c) Prior to transport from the work site the Dumpster will be disconnected from the chute and sealed air/dust tight utilizing six mil plastic and tape. The waste material will be transported as an asbestos containing material by appropriate legal methods.
6. Packaging Friable Asbestos.
 - a) The container shall be a solid wall, hard top and lockable container.
 - b) The container shall be locked upon arrival at the site to restrict access. Security shall be provided at the entrance to the container during the loading process and immediately locked upon completion.
 - c) The interior walls, floor and ceiling shall be lined with two (2) layers of 6 mil. Fire-retardant polyethylene.
 - d) The waste shall be loaded in such a manner as to protect the integrity of the individual waste packages.
 - e) Prior to transport from the work site the interior of the Dumpster will sealed air/dust tight utilizing six mil plastic and tape. The waste material will be transported as an asbestos containing material by appropriate legal methods.

D. WASTE DISPOSAL MANIFEST

1. The Asbestos Waste Manifest shall be equivalent to the "Waste Shipment Record" included in 40 CFR 61. A copy of the Contractor's manifest shall be reviewed by the Owner's Consultant and shall be the only manifest used.
2. The Manifest shall be verified by the Owner's Consultant indicating that all the information and amounts are accurate, and the proper signatures are in place.
3. The Manifest shall have the signatures of the Abatement Contractor and the Transporter prior to any waste being removed from the site.
4. The Manifest shall be signed by the Disposal Facility owner or operator to certify receipt of asbestos containing materials covered by the manifest.
5. A copy of the completed manifest shall be provided by the Abatement Contractor to the Owner's Consultant and remain on site for inspection.
6. Abatement Contractor shall maintain a waste disposal log which indicates load number, date and time left site, container size, type of waste, quantity of waste, name of hauler, NYS DES permit number, trailer and tractor license number, and date manifest was returned to Consultant.
7. The Disposal Facility owner or operator shall return a signed copy of the Waste Manifest directly

to:

TOWN OF MOUNT KISCO
104 MAIN STREET
MOUNT KISCO, NY 10549

8. Copies of the completed Waste Manifest are to be sent by the disposal facility to the Hauler and Abatement Contractor.
9. Submit signed dump tickets and manifests with final payment request.
10. Final payment request will not be honored without signed dump ticket or manifests accounting for all asbestos waste removed from the site.

E. VIOLATIONS OF SPECIFICATIONS

1. Violations of the safety, hygiene, environmental, procedures herein, any applicable federal, state or local requirements or failure to cooperate with the Owner's representative shall be grounds for dismissal and/or termination of this contract.

3.17 LOCATION OF WORK – BASE BID

(Please see attached Drawings for approximate locations)

Asbestos Abatement Contractor is responsible for providing all demolition activities required to access materials, as well as for providing all labor, equipment, and materials necessary.

- **Interiors-**
 - Asbestos Abatement contractor Responsible for complete and total removal and disposal of approximately 500 SF of Non-Friable Asbestos-Containing 12" x 12" Floor Tile on concrete slab down to the building substrate in the 1st Floor Bay 2 Storage Room, and the 2nd Floor Break Room & Stair Landing, as detailed on attached ACM Location Drawings.
 - Asbestos Abatement Contractor responsible for complete and total removal and disposal of approximately 4 SF of Friable Asbestos-containing Mudded Elbows/Fittings/etc. in the Locker Room Bathroom, and Back Corner of the Locker Room, as detailed on attached ACM Location Drawings.
- **Exteriors-**
 - Asbestos Abatement Contractor responsible for complete and total removal and disposal of approximately 100 LF of Non-Friable Asbestos-containing Window Glazing (Metal to Glass). The contractor will also be responsible for removal of approximately 25 SF of Non-Friable (can be rendered friable) Asbestos-containing Cementitious Panels Under Windows on the Exterior of the Building as detailed on attached ACM Location Drawings.

END OF WORK LOCATIONS

3.18 GENERAL

- A. The Abatement Contractor shall be responsible for all demolition required to access materials identified in scope of work and on associated drawings.
- B. Concealed conditions that are exposed and may require additional work shall be brought to the attention of the Owner immediately. The Abatement Contractor shall not abate these areas without a written notice to proceed. Additional asbestos abatement performed prior to the order to proceed will not be acknowledged.

- C. Power tools used to drill, cut into, or otherwise disturb asbestos containing material shall be equipped with HEPA filtered local exhaust ventilation.
- D. The Abatement Contractor shall provide access to GFCI electrical power, required to perform the area air monitoring for this project, within and immediately adjacent to each work area.
- E. Unwrapped or unbagged ACM shall be immediately placed in an impermeable waste bag or wrapped in plastic sheeting.
- F. Coordinate all removal operations with the Owner.

.....

RETURN THIS EXECUTED FORM WITH COMPLETED BID SHEET

.....

Asbestos Employee Medical Examination Statement
Certificate of Worker Release
Asbestos Employee Training Statement
CERTIFICATE OF WORKERS'S ACKNOWLEDGEMENT

PROJECT NAME: DPW Garage

Village of Mount Kisco

43 Columbus Avenue, Mount Kisco, NY 10549

ABATEMENT CONTRACTOR'S

NAME: _____

WORKING WITH ASBESTOS INVOLVES POTENTIAL EXPOSURE TO AIRBORNE ASBESTOS FIBERS. INHALING ASBESTOS FIBERS HAS BEEN LINKED WITH VARIOUS TYPES OF CANCER AND RESPIRATORY DISEASES. SMOKING CIGARETTES AND INHALATION OF ASBESTOS FIBERS INCREASES THE RISK THAT YOU WILL DEVELOP LUNG CANCER ABOVE THAT OF THE NON-SMOKING PUBLIC.

The Contract for this project requires the Abatement Contracting Company to: 1) supply proper respiratory protection devices, and training on their use, to their employees; 2) provide training on safe work practices, and on use of the equipment used on the project, to their employees; and, 3) provide annual medical examinations to their employees meeting the requirements of 29 CFR 1926.1101. The Abatement Contracting Company's signature on this certificate, documents that these contractual obligations are fulfilled, and that you understand the information presented to you.

*****DO NOT SIGN THIS FORM UNLESS YOU FULLY UNDERSTAND THIS
INFORMATION*****

RESPIRATORY PROTECTION: I have been trained in the proper use and limitations of the type of respiratory protection devices to be used on this project. I have reviewed the written respiratory protection program manual and a copy is available for my use. Respiratory protection equipment has been provided, by the Contractor, at no cost to me.

TRAINING COURSE: I have been trained in the risks and dangers associated with handling asbestos, breathing asbestos dust, proper work procedures, personal protection, and engineering controls. I have satisfactorily completed and Asbestos Safety Training Program for New York State and have been issued a New York State Department of Health Certificate of Asbestos Safety Training.



MEDICAL EXAMINATION: I have satisfactorily completed a medical examination within the last 12 months that meets the OSHA requirement for an asbestos worker and included at least 1) medical history 2) pulmonary function 3) medical examination 4) approval to wear respiratory protection devices and may have included an evaluation of a chest x-ray.

Signature: _____
Printed Name: _____ Date: _____

Witness Signature: _____
Printed Name: _____ Date: _____

.....
RETURN THIS EXECUTED FORM WITH COMPLETED BID SHEET
.....

ESTIMATE OF ACM QUANTITIES

PROJECT NAME: DPW Garage
Village of Mount Kisco
43 Columbus Avenue, Mount Kisco, NY 10549

EACH ABATEMENT CONTRACTOR SHALL READ AND ACKNOWLEDGE THE FOLLOWING NOTICE. A SIGNED AND DATED COPY OF THIS ACKNOWLEDGMENT SHALL BE SUBMITTED WITH THE ABATEMENT CONTRACTOR'S BID FOR THIS PROJECT. FAILURE TO DO SO MAY, AT THE SOLE DISCRETION OF THE OWNER, RESULT IN THE BID BEING CONSIDERED NON-RESPONSIVE AND RESULT IN DISQUALIFICATION OF THE ABATEMENT CONTRACTOR'S BID ON THIS PROJECT.

*** NOTICE ***

The linear and square footages listed within this specification are approximates. Abatement Contractor is required to visit the work locations prior to bid submittal in order to take actual field measurements within each listed location. The Abatement Contractor shall base their bid on actual quantities determined, by them, at the site walkthrough. Estimates provided in these specifications are for informational purposes only and shall not be considered a basis for Change Orders on this project.

Acknowledgment: I have read and understand the above NOTICE regarding removal quantity estimates and understand that estimates provided in these specifications are for informational purposes only and shall not be considered a basis for Change Orders on this project. The Abatement Contractor's signatory represents to the Owner that he/she has the authority of the entity he/she represents to sign this agreement on its behalf.

Company Name: _____
Type or Print

BY: _____
Signature Title Date

Print Name: _____

RETURN THIS EXECUTED FORM WITH COMPLETED BID SHEET

.....

ASSOCIATED ASBESTOS REMOVAL LOCATION DRAWINGS ATTACHED BELOW
➤ VILLAGE OF MOUNT KISCO DPW GARAGE -ASBESTOS ABATEMENT PROJECT
LOCATED AT 43 COLUMBUS AVENUE, MOUNT KISCO, NY 10549

END OF SECTION 028200

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SECTION 033000 - CAST-IN-PLACE CONCRETE (STRUCTURAL)

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. Section 033020: Concrete Slabs on Grade
- C. Section 033026: Concrete Topping on Precast Concrete Plank.
- D. Waterproofing is specified in Division 7.

1.2 DESCRIPTION OF WORK

- A. This section specifies cast-in-place concrete, including formwork, reinforcing, mix design, placement procedures, and finishes.

1.3 QUALITY ASSURANCE

- A. Reference Standards:
 - 1. ACI 117 "Specification for Tolerances for Concrete Construction and Materials"
 - 2. ACI 211.1 "Standard Practice for Selecting Proportions for Normal, Heavyweight, and Mass Concrete."
 - 3. ACI 301 "Specifications for Structural Concrete for Buildings."
 - 4. ACI 304 "Guide for Measuring, Mixing, Transporting, and Placing Concrete"
 - 5. ACI 305 "Hot-Weather Concreting."
 - 6. ACI 306R "Cold-Weather Concreting."
 - 7. ACI 311 "ACI Manual of Concrete Inspection" and "Guide for Concrete Plant Inspection and Testing of Ready-Mixed Concrete."
 - 8. ACI 315 "Details and Detailing of Concrete Reinforcement."
 - 9. ACI 318 "Building Code Requirements for Structural Concrete."
 - 10. ACI 347 "Guide to Formwork for Concrete."
 - 11. ACI SP-15 "Field Reference Manual." A copy of this publication shall be kept in the field office at all times during concrete construction.
 - 12. AWS D1.4 "Structural Welding Code - Reinforcing Steel."
 - 13. CRSI "Manual of Standard Practice."
 - 14. NYSDOT "Standard Specification for Construction and Materials."
- B. Manufacturer Qualifications: A firm experienced in manufacturing ready-mixed concrete products and that complies with ASTM C94/C 94M requirements for production facilities and equipment.
 - 1. Manufacturer certified according to NRMCA's "Certification of Ready Mixed Concrete Production Facilities."
- C. Source Limitations: To minimize irregularities in appearance or color, obtain cementitious materials of the same brand from the same manufacturer's plant. Obtain aggregates, admixtures, and water for each type of concrete construction exposed to view in completed project from same source for duration of that type of construction.
- D. Pre-installation Conference: Refer to Specification Section 014533 and Schedule of Special Inspections.

- E. Provide protection of newly cast concrete from direct exposure to sun, wind, precipitation, and excessive cold or hot temperatures starting during placement and lasting until end of curing period.
 - 1. Contractor shall be responsible for cost or repairing defects resulting from deficient protection methods.

1.4 SPECIAL INSPECTIONS

- A. Refer to Specification Section 014533 and Schedule of Special Inspections.

1.5 MATERIAL EVALUATION/QUALITY CONTROL

- A. Preconstruction Testing: Contractor shall employ Testing Agency acceptable to Engineer and Architect to perform material evaluation tests and evaluate concrete mixes prior to submitting.
 - 1. Testing Agency shall be qualified according to ASTM C 1077 and ASTM E329.
- B. Submit concrete testing service qualifications demonstrating experience with similar projects.
- C. Require concrete supplier to provide delivery tickets for each truckload of concrete. Tickets shall be presented to and reviewed by Contractor and Special Inspector or Testing Agency prior to discharging concrete into structure.
 - 1. Tickets shall contain project identification name, name of Contractor, name of concrete supplier, location of batch plant, date and time of concrete batching, truck number, delivery ticket number, concrete type and class, concrete mix number, design compressive strength at 28 days, concrete mix proportions and materials, and amount of total mix design water that can be added at site prior to discharging into structure if total mix design water was not used when batched. See Part 3 of this section for maximum water amount that can be added at site.
- D. The Registered Design Professionals (RDPs) for Structural Engineering and Architecture and the Special Inspector will visit construction site at appropriate intervals to determine if work is in general conformance with Contract Documents and specifications. Notify RDPs 48 hours before anticipated time of completion of reinforcement for a given section of work so they may determine if site observations are required. If site observations are required, do not place concrete until RDPs have had opportunity to observe reinforcement.
- E. Concrete strength will be evaluated by compression testing in accordance with ASTM C39 as part of the Special Inspections. Test results shall be provided to the Contractor, Special Inspector, and Registered Design Professional (RDP) responsible for Structural Engineering. Evaluation and acceptance will be in accordance with the provisions of ACI 318, Section 26.12. Should evidence of low-strength concrete exist, or if test results indicate non-conformance with these specifications, additional investigation as outlined in ACI 318 Section 26.12.4 may be directed by the project Registered Design Professionals (RDP). All such investigation, including the cost of the Architect's and Engineer's time, shall be at the Contractor's expense.
- F. If, after additional investigation, evidence of low-strength concrete still exists, load tests in accordance with Chapter 27 of ACI 318 may be ordered by the project Registered Design Professionals (RDP). In the event the concrete is determined to be inadequate by the project Registered Design Professionals (RDP), the Contractor shall remove it from the Project and replace it with concrete conforming to these specifications, subject to project Special Inspections and testing requirements herein. All such remedial work shall be at the Contractor's expense.
- G. The Contractor shall be fully responsible for ensuring that all concrete and concrete placement are in accordance with the Project Specifications. Failure of project Registered Design Professionals (RDP) or Testing Laboratory to detect defective work, workmanship, or materials shall in no way prevent rejection and the Contractor taking accepted corrective action when such defects are discovered.

1.6 SUBMITTALS

A. Shop Drawings:

1. Submit shop drawings for fabrication, bending, and placement of concrete reinforcement. Show bar sizes, lengths, material grade, schedules, spacing, diagrams of bent bars, arrangements of reinforcement, splices and laps, mechanical connections, and supports for reinforcement. Include special reinforcement required for openings through concrete.
 - a. Show elevations of reinforcement for all members at minimum 1/4 inch = 1 foot scale.
 - b. Show locations of construction and control joints.
 - c. Reference Contract Drawing number and addendum number in each shop drawing.
 - d. Do not place reinforcing information from more than one design discipline (structural, civil, landscape) in each drawing.
2. Submit for information only formwork, shoring, and reshoring drawings including details and sequencing of installation, removal, and reinstallation (if applicable) for structural concrete slab and beams. Design and construction of formwork, shoring, and reshoring remains sole responsibility of Contractor. Formwork drawings shall be prepared and stamped by New York State Professional Engineer.

- B. Mix Designs: Submit proposed mix designs for concrete 15 days minimum before start of concreting. Submittal must be in the Concrete Mix Design Submittal Form at end of this section for each class of concrete.
- C. Submit to Special Inspector and Engineer material certificates signed by manufacturers certifying each material complies with specifications. Submit proposed admixtures including chloride ion content prior to submitting mix design.
- D. Submit data and installation instructions for proprietary materials.
- E. Maintain copies of approved submittals on site and make available to Special Inspector and Authority having Jurisdiction for use in inspection of construction.

1.7 DELIVERY, STORAGE, AND HANDLING

A. Store materials so as to preserve their quality and fitness for work.

1. Store reinforcement and formwork in manner to prevent bending, damage (including damage to coatings) and accumulation of dirt.
2. Store waterstops in a manner to prevent exposure to moisture, sunlight, dirt, oil, and other contaminants.

1.8 WORKMANSHIP

- A. Contractor shall be responsible for correction of concrete work not conforming to specified requirements, including strength, tolerances, and finishes. Correct deficient concrete as directed by Architect.
- B. Remove work found to be defective. Replace with new acceptable work.

PART 2 - PRODUCTS

2.1 FORM MATERIALS

- A. Forms for Exposed Finish Concrete: Plywood, metal, metal-framed/plywood faced, or other acceptable panel-type materials, to provide continuous, straight, smooth, exposed surfaces. Furnish in largest practicable sizes to minimize number of joints and to conform to joint system shown in drawings. Plywood

materials shall be one of the following:

1. Overlaid plywood complying with U.S. Product Standards PS 1 "A-C or B-B High Density Overlaid (HDO) Concrete Form," Class 1, exterior grade or better.
 2. Plywood complying with U.S. Product Standard PS 1 "B-B (Concrete Form) Plywood," Class 1, exterior grade or better, mill-oiled and edge-sealed, with each piece bearing legible inspection trademark.
- B. Forms for Unexposed Finish Concrete: Plywood, lumber, metal, or other acceptable material. Provide lumber dressed on at least two edges and one side for tight fit.
- C. Chamfer Strips: Wood, metal, PVC, or rubber strips, 3/4 by 3/4 inch minimum.
- D. Form Release Agent: Provide commercial formulation form-coating compounds with maximum VOC of 450 g/l that will not bond with, stain, or adversely affect concrete surfaces or impair subsequent treatments of concrete surfaces requiring bond or adhesion or impede wetting of surfaces to be cured with water or curing compound.
1. Formulate form release agent with rust inhibitor for steel form-facing materials.
- E. Form Ties: Factory-fabricated, adjustable-length, removable or snap-off, metal form ties, designed to prevent form deflection and spalling concrete upon removal. Provide units that will leave no metal closer than 1 inch to exposed surface.
1. Provide ties that will leave holes no larger than 1-inch diameter in concrete surface when removed.
 2. Furnish ties with integral water-barrier plates or washers to walls indicated to receive dampproofing or waterproofing.
 3. Unexposed concrete: "Type A-3 Snap Tie Standard" by Dayton Superior or accepted equivalent.
 4. Exposed concrete: "Type A-3 Snap Tie Heavy" by Dayton Superior or accepted equivalent.
 5. Provide galvanized or stainless steel ties for concrete elements that are reinforced with epoxy-coated or galvanized reinforcing.
 6. Internal wood spreaders are prohibited.
- F. Shores and Reshores: Wood (minimum 4 by 4) or steel with integral screw-type jacks. Members shall be straight and without twist or warp.

2.2 REINFORCING MATERIALS

- A. Deformed bars: ASTM A 615, Grade 60.
- B. Deformed Epoxy-Coated Reinforcing Bars: ASTM A 775.
- C. Steel Wire: ASTM A 82, plain, cold-drawn steel.
- D. Epoxy-coated Wire: ASTM A 884.
- E. Epoxy Repair Coating: Liquid, two-part, epoxy repair coating; compatible with epoxy coating on reinforcement and complying with ASTM A 775.
- F. Supports for Reinforcement: Bolsters, chairs, spacers, and other devices for spacing, supporting, and fastening reinforcing bars in place. Use wire bar-type or all plastic-type supports complying with CRSI specifications. Use chairs with sand plates or horizontal runners where base material will not support chair legs.
1. Concrete bricks may be used to support footing reinforcing. Stagger brick locations on subgrade.
 - a. Do not use clay bricks.
 - b. Do not use bricks to support epoxy-coated reinforcing.
 2. Supports for epoxy-coated reinforcing shall be either wire bar-type coated with epoxy, plastic, or vinyl compatible with concrete for a minimum distance of 2 inches from the point of contact with

reinforcing or all plastic-type.

4. Finish (epoxy-coated) for supports formed from reinforcing bars shall match the finish of the supported reinforcing.
5. For exposed-to-view concrete surfaces where legs of supports are in contact with forms, provide supports with legs that are plastic-protected (CRSI, Class 1) or stainless-steel protected (CRSI, Class 2).

G. Minimum 16-gauge annealed tie wire, ASTM A 82.

1. Provide coated tie wire for use with epoxy-coated bars. Acceptable coatings include epoxy, nylon, or vinyl. Do not use plain tie wire.

2.3 CONCRETE MATERIALS

A. Portland Cement: ASTM C 150, Type I or II.

B. Aggregates: NYSDOT-approved, Section 703 (normal weight), one source and as specified.

1. Fine Aggregate: Clean, sharp, natural sand free from loam, clay, lumps, or other deleterious substances.
2. Coarse Aggregate: Clean, uncoated, processed aggregate free from clay, mud, loam, or foreign matter.
 - a. For footings, foundation walls, piers, retaining walls, and interior walls, blend of NYSDOT size 1 and 2 (25 percent size 1 and 75 percent size 2) or gradation conforming to ASTM C 33, size 467:

Sieve Size	Percent Passing
2 inch	100
1 1/2 inch	95 to 100
3/4 inch	35 to 70
3/8 inch	10 to 30
No. 4	0 to 5

- b. For elevated slabs, uniformly graded, clean, processed, crushed stone obtained from quarried bedrock with low absorption and free of flat/elongated particles. Gradation similar to blended NYSDOT Type CA 2 and size 1A or gradation conforming to ASTM C 33, size 57 and size 8, blended and modified as follows:

Sieve Size	Percent Passing
1 1/2 inch	100
1 inch	95 to 100
3/4 inch	82 to 94
1/2 inch	40 to 68
3/8 inch	20 to 44
No. 4	0 to 10

- c. For other applications, blend of NYSDOT size 1 and 2 (40 percent size 1 and 60 percent size 2) or gradation conforming to ASTM C 33, size 57:

Sieve Size	Percent Passing
1 1/2 inch	100
1 inch	95 to 100
1/2 inch	25 to 60
No. 4	0 to 10
No. 8	0 to 5

- c. No size requirement for stair-pan fill and lean concrete.

C. Water: ASTM C 94, clean, fresh, drinkable.

- D. Fly Ash: ASTM C 618, Type F, with a loss on ignition of less than 6 percent.
- E. Ground-Granulated, Blast-Furnace Slag: ASTM C 989, Grade 100 or 120.
- F. Silica Fume: ASTM C1240

2.4 ADMIXTURES

- A. Air Entraining: ASTM C 260.
- B. Water-Reducing Admixture: "Eucon MR", "Eucon WR-75", or "Eucon WR-91" by Euclid Chemical Co.; "MasterPozzolith 200" by Master Builders; or "Plastocrete 161" by Sika Chemical Corp. Admixture shall conform to ASTM C 494, Type A, and not contain more chloride ions than in municipal drinking water.
- C. Water-Reducing and Retarding Admixture: "Eucon Retarder-75" by Euclid Chemical Co; "MasterSet R100" by Master Builders; or "Plastiment" by Sika Chemical Corp. Admixture shall conform to ASTM C 494, Type D, and not contain more chloride ions than in municipal drinking water.
- D. Noncorrosive, Nonchloride Accelerator: ASTM C 494, Type C or E, and not contain more chloride ions than in municipal drinking water.
- E. High-Range, Water-Reducing Admixture (Superplasticizer): "Eucon 37" by Euclid Chemical Co. or "Sikament SPMN" by Sika Chemical Corp. Admixture shall conform to ASTM C 494, Type F or G, and not contain more chloride ions than in municipal drinking water.
- F. Polycarboxylate Polymer Superplasticizer for Self-Consolidating Concrete: "Eucon Plastol 341" by Euclid Chemical Co. or "Sika Viscocrete 2100" by Sika Chemical Corp., "MasterGlenium 7500" by Master Builders.
- G. Viscosity Modifier for Self-Consolidating Concrete: "Viscrol" by Euclid Chemical Co. or "MasterMatrix VMA 358 or 362" by Master Builders.
- H. Prohibited Admixtures: Calcium chloride, thiocyanates, and admixtures containing more than 0.05 percent water-soluble chloride ions by weight of cement or more than 0.3 percent thiocyanates by weight of cement shall not be permitted.
- I. Certification: Written conformance to the above-mentioned requirements and the chloride ion content of the admixture will be required from the admixture manufacturer prior to mix design review by the Registered Design Professional responsible for Structural Engineering.

2.5 RELATED MATERIALS

- A. Absorptive Cover: Burlap cloth made from jute or kenaf, weighing approximately 9 ounces a square yard when dry and complying with AASHTO M 182, Class 2.
- B. Curing-Sheet Materials: One of the following moisture-retaining covers, complying with ASTM C 171. Waterproof paper, polyethylene film, or polyethylene-coated burlap.
- C. Clear Curing and Sealing Compound (VOC compliant): ASTM C 309, Type 1, Class B with minimum 25 percent solids content. Provide test data from an Independent Testing Laboratory indicating a maximum moisture loss of 0.030 grams per square centimeter in 72 hours when applied at a coverage rate of 300 square feet per gallon. Sodium silicate compounds are not permitted. Use "Super Diamond Clear VOX" by Euclid Chemical Co. or accepted equivalent.
- D. Horizontal Joint Sealants: "MasterSeal SL2" by Master Builders; "Sikaflex-2c SL" by Sika Corp.; "Eucolastic 1 SL" by Euclid Chemical Co.; or accepted equivalent.
- E. Vertical Joint Sealants: "Eucolastic 1 NS" by Euclid Chemical Co.; "MasterSeal NP2" by Master Builders; "Sikaflex-2c NS" by Sika Corporation; or accepted equivalent.

- F. Joint Filler: ASTM D 1751, ½-inch-thick, premolded, expansion and isolation joint filler strips.
- G. Backer Rod: Polyethylene closed-cell foam. "MasterSeal 920 or 921" by Master Builders or accepted equivalent.
- H. Self-Expanding Butyl Strip Waterstops: "Waterstop-RX," 1 inch by ¾ inch, by CETCO or accepted equivalent at below-grade wall construction joint locations and at locations shown in drawings.
- I. Chamfer Strips: Provide wood, metal, PVC, or rubber chamfer strips fabricated to provide ¾-inch chamfer on exposed edges.
- J. Sleeves:
 - 1. Schedule 40, PVC for 12-inch diameter or smaller.
 - 2. ASTM A 53, hot-dip galvanized for larger than 12-inch diameter
- K. Non-shrink Grout: Corp of Engineers CRD-C 621. "Sure-Grip High Performance Grout" by Dayton Superior; "NS Grout" by Euclid Chemical Co.; "SikaGrout 212" by Sika Corp.; "Masterflow 928" by Master Builders, Inc.; or accepted equivalent.
- L. Bonding Agent: ASTM C 1059, Type II "Acrylic Bonding Agent J40" by Dayton Superior; "SBR Latex" by Euclid Chemical Co.; "Everbond" by L&M Construction Chemicals, Inc.; "SikaLatex" by Sika Corp.; or accepted equivalent.
- M. Chemical Adhesive for Doweled Reinforcement:
 - 1. Anchors to solid concrete or grouted CMU:
 - a. Anchors for use when base material temperature is 0°F or greater: "HIT-Ice" by Hilti; "Epcon A7" by ITW Ramset/Red Head; "AC 100 + Gold" by Powers Fasteners; "AT-XP" by Simpson/Strong-Tie; or accepted equivalent.
 - b. Anchors for use when base material temperature is 40°F or greater; "HIT HY 200" by Hilti; "Epcon C6+" by ITW Ramset/Red Head; "PE 1000+" by Powers Fasteners; "ET-HP" by Simpson/Strong-Tie; or accepted equivalent.

2.6 PROPORTIONING AND MIX DESIGN

- A. Prepare design mixtures for type and strength of concrete in accordance with ACI 301, section 4.2.2 and these specifications. Use independent testing facility acceptable to Architect for preparing and reporting proposed mix designs.
- B. Where concrete production facility can establish uniformity of its production for concrete of similar strength and materials based on recent test data, the average strength used as a basis for determining mix design proportions shall exceed specified design strength by requirements of ACI 301, Section 4.2.3.3(a).
- C. When a concrete production facility does not have field-test records for calculation of standard deviation, the required average strength shall be determined in accordance with ACI 301, Section 4.2.3.3(b).
- D. Documentation of average compressive strength shall comply with ACI 301, Section 4.2.3.4(a), 4.2.3.4(b), or 4.2.3.4(c). Submit sample standard deviation calculation and/or results of trial mixtures used as basis for determination of f'_{cr} . See Specification Section 1.6.B.

E. Concrete Quality:

Location	Exposure Category†	Maximum Aggregate Size	Required 28-day Compressive Strength psi	Maximum Water/Cement Ratio	Percent Entrained Air
Structural Slabs	F0, S0, W0, C0	1"	4,000	0.45	N/A
Footings, interior stair pans, misc. concrete.	F0, S0, W0, C1	1 ½"	3,000	0.55	N/A
Ext. retaining walls, frost walls, piers, (subject to deicing chemicals).	F3, S0, W0, C2	1 ½"	5,000	0.40	6*
Ext. retaining walls, frost walls, piers (not subject to deicing chemicals).	F2, S0, W0, C1	1 ½"	4,500	0.45	5.5*
Int. retaining walls, foundation walls, piers.	F0, S0, W0, C0	1 ½"	3,000	0.55	4.5*
Lean concrete.	F0, S0, W0, C0	N/A	1,500	0.65	N/A

* Plus or minus 1.5 percent.

† ACI 318 Section 19.3.1

F. Quantity of coarse aggregate in pounds must be in the range of 1.25 to 1.5 times quantity of fine aggregate in pounds.

G. Admixtures: Structural concrete for slabs shall contain the specified water-reducing admixture and/or high range water-reducing admixture (superplasticizer.) At the Contractor's option, both water-reducing admixtures may be included in the concrete mix. Concrete required to be air-entrained shall contain the accepted air entraining admixture. Pumped concrete, architectural concrete, and concrete with a water-cement ratio less than 0.5 shall contain the specified high range water-reducing admixture (superplasticizer.)

H. Slump:

1. Footings, frost/foundation walls, piers, misc. concrete: 3 inches to 5 inches.
2. Retaining walls, interior walls: 4 inches maximum.
3. Concrete containing high-range, water-reducing admixture (superplasticizer) shall have a maximum slump of 9 inches unless otherwise accepted by Engineer.
4. Type G superplasticizer may be added at plant if adequate quality control measures are implemented to verify slump and admixture quantities at plant before addition of superplasticizer. Concrete shall maintain required slump during transportation and placement. Quality control testing at plant shall be performed by an independent testing laboratory employed by Contractor and acceptable to Architect.
5. Ready-Mix Concrete: ASTM C 94.
6. Provide batch ticket for each batch discharged and used in work indicating project identification name and number, date, mix type, mix time, quantity, and amount of water introduced.

I. Pozzolans:

1. Pozzolans may be substituted for cement in normal-weight concrete, including fly ash, ground-granulated blast-furnace slag, and/or silica fume.
 - a. Substitution rate of Pozzolans for Portland Cement in concrete classified as Exposure

Category F3 shall be limited to: fly ash, at a maximum rate of 25 percent by weight, ground-granulated blast-furnace slag at a maximum rate of 50 percent by weight, or silica fume at a maximum rate of 10 percent by weight.

- b. Proposed concrete mix designs containing a combination of fly ash, ground-granulated blast-furnace slag, or silica fume shall comply with the substitution limitations indicated in Table 26.4.2.2(b) of ACI 318.
- 2. Submittals shall include actual mix design, including percentage of pozzolans and test results showing mix meets specified 7-day compressive strength where indicated, 28-day compressive strength, and air content.
- 3. Protect and heat concrete containing pozzolans during cold-weather conditions. Maintain protection and heat until 70 percent of specified design strength is achieved.
- J. Pumped concrete: Submit mix designs specifically prepared and used previously for pumping. Mix designs not previously used for anticipated pump line lengths shall be tested by Contractor to verify suitability for Project before use at site.

2.7 REINFORCING FABRICATION

- A. Fabricate steel reinforcement according to CRSI's "Manual of Standard Practice." Fabricate bars to required lengths, shapes, and bends. Do not rebend or straighten reinforcement in manner that could weaken material.

PART 3 - EXECUTION

3.1 JOB CONDITIONS

- A. Examine conditions under which concrete shall be placed. Do not proceed with work until unsatisfactory conditions are corrected.

3.2 FORMWORK INSTALLATION

- A. General: Design, erect, shore, brace, and maintain formwork to support vertical, lateral, static, and dynamic loads, and construction loads that might be applied until concrete structure can support such loads. Construct formwork so concrete members and structures are of correct size, shape, alignment, elevation, and position. Maintain formwork construction tolerances complying with ACI 347 and ACI 117.
- B. Construct forms to sizes, shapes, lines, and dimensions shown and to obtain accurate alignment, location, grades, level, and plumb work in finished structures. Provide for openings, offsets, sinkages, keyways, recesses, moldings, rustications, reglets, chamfers, blocking, screeds, bulkheads, anchorages, inserts, sleeves, and other features required in work. Use selected materials to obtain required finishes. Solidly butt joints and provide backup at joints to prevent concrete mortar leakage.
- C. Fabricate forms for easy removal without hammering or prying against concrete surfaces. Provide crush plates or wrecking plates where stripping may damage cast concrete surfaces. Provide top forms for inclined surfaces where slope is too steep to place concrete with bottom forms only. Kerf wood inserts for forming keyways, reglets, recesses, etc., for easy removal.
- D. Erect forms in logical sequence to allow placement and inspection of reinforcement and other embedded items.
- E. Provide temporary openings where interior area of formwork is inaccessible for cleanout, for inspection before concrete placement, and for concrete placement. Securely brace temporary openings, and set tightly to forms to prevent loss of concrete mortar. Locate temporary openings in forms at inconspicuous locations.
- F. Chamfer exposed corners and edges as indicated using wood, metal, PVC, or rubber chamfer strips fabricated to produce uniform smooth lines and tight edge joints.

- G. Fit corners and joints with gaskets or tape to prevent leakage.
- H. Provisions for Other Trades: Provide openings in concrete formwork to accommodate work of other trades. Determine size and location of openings, recesses, and chases from trades providing such items. Accurately place and securely support items built into forms.
- I. Sleeves: Provide sleeves in concrete formwork for plumbing, electrical, and mechanical penetrations. Coordinate size and location of sleeves with Contractors and mechanical, electrical, and plumbing drawings.
 - 1. Accurately place and secure in forms.
 - 2. Coordinate sleeve locations with reinforcing bars.
 - 3. Penetrations shall not occur through footings, piers, columns, beams, joists, grade beams, or supported slabs unless shown in structural drawings.
- J. Cleaning and Tightening: Thoroughly clean forms and adjacent surfaces to receive concrete. Remove chips, wood, sawdust, dirt, or other debris just before concrete is placed. Retighten forms and bracing before placing concrete as required to prevent mortar leaks and maintain proper alignment.
- K. Clean and repair surfaces of forms to be reused in work. Split, frayed, delaminated, or otherwise damaged form-facing materials are not acceptable. Apply new form-release agent. When forms are reused for successive concrete placement, thoroughly clean surfaces, remove fins and laitance, and tighten forms to close joints. Align and secure joints to avoid offsets. Do not use patch forms for exposed concrete surfaces unless approved by Architect.
- L. Clean and coat forms before erection. Do not coat forms in place.
- M. Place concrete plugs in exposed holes left by form-tie cones.

3.3 SHORES AND SUPPORTS

- A. General: Comply with ACI 347 for shoring and reshoring in multistory construction and as herein specified.
- B. Provide thermometers adjacent to formwork to record curing temperatures.
- C. Design formwork to support vertical and lateral loads that might be applied until such loads can be supported by concrete structure.
- D. Formwork for structural slabs and other parts that support weight of concrete shall remain in place at least 7 days and until concrete has reached 75 percent of the 28-day design strength as indicated by field-cured cylinders. Shoring shall not be removed and no additional loads of any sort shall be permitted on the structure until it has reached its 28-day design strength or has been properly reshored. Forms shall be removed at risk of the Contractor, and no pointing or patching shall be done until Engineer has observed the concrete and permitted such work.
- E. Remove shores and reshore in a planned sequence to avoid damage to partially cured concrete. Locate and provide adequate reshoring to support work without excessive stress or deflection.
- F. Reshore removal shall be based on compressive test results of field-cured cylinders and shall not occur until concrete has reached the 28-day design strength.
- G. Formwork not supporting weight of concrete, such as sides of walls and similar parts of the work, may be removed after cumulatively curing at not less than 50 degrees F (10 degrees C) for 24 hours after placing concrete, provided concrete is sufficiently hard to not be damaged by form-removal operations and provided curing and protection operations are maintained.
- H. Form-facing material may be removed 4 days after placement only if shores and other vertical supports have been arranged to permit removal of form-facing material without loosening or disturbing shores and supports.

3.4 STEEL REINFORCEMENT PLACEMENT

- A. General: Comply with CRSI's "Manual of Standard Practice" for placing reinforcement.
- B. Clean reinforcement of loose rust, mill scale, earth, ice, and other materials that reduce or destroy bond with concrete.
- C. Accurately position, support, and secure reinforcement against displacement by formwork, construction, or concrete placement operations. Locate and support reinforcement by metal chairs, runners, bolsters, spacers, hangers, or concrete brick as required.
 - 1. Wire-tie intersections as required to prevent displacement of reinforcement.
 - 2. Do not wet set reinforcing bars. Wet setting is not permitted.
- D. Place reinforcement to obtain at least minimum concrete coverages for protection of bars. Minimum required concrete cover is noted in drawings.
- E. Arrange, space, and securely tie bars and bar supports to hold reinforcement in position during concrete placement. Set wire ties so ends are directed into concrete, not toward exposed concrete surfaces.
- F. Use of nails in forms and use of clay brick to support reinforcement is prohibited.
- G. Lap bar splices as indicated. Stagger splices in adjacent bars. Wire-tie splices.
- H. At points where bars lap-splice, including distribution steel, provide wire-tied minimum lap of 30-bar diameters unless otherwise required.
- I. Coordinate placement of reinforcement with openings, including sleeves and other embedded items. Where one or more bars are interrupted, provide additional reinforcement at openings. Additional reinforcement is noted in drawings.
- J. Place concrete in manner to ensure alignment of elements remains unchanged.
- K. Epoxy-Coated Reinforcement: Repair cut and damaged epoxy coatings with epoxy repair coating according to ASTM D 3963. Use epoxy-coated steel wire ties to fasten epoxy-coated steel reinforcement.
- L. Comply with manufacturer-recommended procedures for installing and anchoring of doweled reinforcement using chemical adhesives, including drilling and cleaning of holes and mixing and applying of adhesives.

3.5 INSTALLATION OF EMBEDDED ITEMS

- A. General: Set and build into work anchorage devices and other embedded items including anchor rods, leveling plates, embedded plates, and angles required for other work attached to or supported by cast-in-place concrete. Use setting drawings, diagrams, instructions, and directions provided by suppliers of items to be attached thereto.
- B. Do not wet set embedded items. Accurately position, support, and secure embedded items against displacing by formwork, construction, or concrete placement operations.
 - 1. Provide No. 3 rebar ties at top and bottom of anchor rods to maintain position or other accepted method.
- C. Anchor rods and embedded structural supports incorrectly located or damaged after installation shall be field modified, including repair or replacement, by Contractor.
 - 1. Notify Engineer of defective work. Submit proposed field modifications to Engineer for review and acceptance prior to making corrections.
 - 2. Proposed field modifications shall include design details and calculations, signed and sealed by a licensed Professional Engineer hired by Contractor.

3. Field modifications shall be tested in accordance with Section 051200. Perform pull-out tests and other appropriate tests on each repair.
4. Cost of field modifications shall be borne entirely by Contractor at no additional cost to Owner. Contractor shall reimburse Owner for cost of additional testing required.

3.6 INSTALLATION OF NON-STRUCTURAL EMBEDDED ITEMS

- A. General: Notify other trades to permit installation of their work, including reglets, conduit, and piping and to coordinate requirements of this section. Cooperate with other trades in setting work as required.
- B. ACI 318, Section 20.7, and guidelines listed below apply to conduit and piping.
 1. Do not embed aluminum items unless coated or covered to prevent aluminum-concrete reaction or electrolytic action between aluminum and steel.
 2. Other than those passing through concrete elements, do not embed items that are larger than one-third of thickness of concrete element in which they are embedded.
 3. Pipes and fittings embedded in concrete shall be designed to resist effects of the material, pressure, and temperature to which they will be subjected without transferring force to the surrounding concrete.
 4. No liquid, gas, or vapor, except water not exceeding 90° F nor 50 psi pressure, shall be placed in the pipes until the concrete has attained its design strength.
 5. Unless shown otherwise in structural drawings, install items as follows:
 - a. Space at least 12 inches apart and not less than three diameters or widths on center.
 - b. Place so they do not cross over each other within concrete elements.
 - c. Place so they do not displace reinforcing bars from their proper location.
 - d. Provide at least 3/4-inch concrete cover between items and reinforcing bars or concrete surfaces not exposed to weather or in contact with ground. Do not lay items on reinforcing bars. Provide at least 1½-inches concrete cover between items and concrete surfaces exposed to weather or earth.
 - e. Securely position items by wire tying to support chairs or supports formed from reinforcing bars.
 - f. Install sleeves at penetrations for nonstructural items passing through concrete elements.
 - g. Provide additional supplementary reinforcement with an area not less than 0.002 times the area of concrete section normal (perpendicular) to piping.

3.7 PREPARATION OF FORM SURFACES

- A. General: Coat contact surfaces of forms with an accepted form-coating compound before placing reinforcement.
- B. Do not allow excess form-coating material to accumulate in forms or to come in contact with in-place concrete surfaces against which fresh concrete will be placed. Apply in compliance with manufacturer's instructions.
- C. Coat steel forms with a nonstaining, rust-preventive material. Rust-stained steel formwork is not acceptable.

3.8 CONSTRUCTION JOINTS

- A. Construct joints true to line with faces perpendicular to surface plane of concrete. Locate and install construction joints so strength and appearance of concrete are not impaired, at locations indicated or acceptable to Architect.
 1. Provide keyways at least 1-1/2 inches deep in construction joints in walls. Roughen joints between reinforced concrete walls and footings to a minimum 1/4-inch amplitude and remove dirt and concrete laitance prior to casting concrete walls.
 2. Space vertical joints in walls as indicated in drawings. If not indicated, space joints a maximum of 60 feet and locate beside piers integral with walls, near corners, and in concealed locations where

- possible.
3. Place construction joints perpendicular to main reinforcement. Continue reinforcement across construction joints except as otherwise indicated. Do not continue reinforcement through sides of strip placements.
 4. Use bonding agent at locations where fresh concrete is placed against hardened or partially hardened concrete surfaces.
 5. Provide water stops in construction joints below grade and where indicated. Install water stops to form continuous diaphragm in each joint. Make provisions to support and protect exposed water stops during progress of work. Field-fabricate joints in water stops in accordance with manufacturer's printed instructions.

3.9 CONCRETE PLACEMENT

- A. Before placing concrete, verify that installation of formwork, reinforcement, and embedded items is complete and in compliance with construction documents and approved shop drawings, and required inspections have been performed.
 1. Notify other trades to permit installation of their work. Cooperate with other trades in setting work as required.
- B. General: Comply with ACI 304, "Recommended Practice for Measuring, Mixing, Transporting, and Placing Concrete" and as specified.
- C. Deposit concrete within 1-1/2 hour after water is added to dry batching, or use retarding admixture if accepted by the registered design professional responsible for structural engineering.
 1. For footings, foundation walls, and miscellaneous concrete only: A maximum of 2 1/2 gallons for each cubic yard of total mix design water can be added in field. Water must be added prior to discharging and testing concrete. At no time shall total water exceed amount listed in accepted mix design.
 2. For structural slabs: Do not add water to concrete at job site without written consent of the Registered Design Professional responsible for Structural Engineering. Superplasticizer may be utilized, in approved quantities, to bring concrete to the required slump at the jobsite. Additions must be made prior to discharging and testing concrete.
- D. Deposit concrete continuously in one layer or in layers of such thickness that no new concrete will be placed on concrete that has hardened sufficiently to cause formation of seams or planes of weakness within section. Provide construction joints if section cannot be placed continuously.
- E. Deposit concrete as nearly as practicable to its final location to avoid segregation caused by rehandling or flowing.
- F. Deposit concrete in forms in horizontal layers not deeper than 24 inches and in manner to avoid inclined construction joints.
- G. Keep excavations free of water. Do not deposit concrete in water, mud, snow, or on frozen ground.
- H. Maximum drop of concrete shall not exceed 5 feet. Use hopper and trunk for greater drops.
- I. Maintain reinforcing in proper position during concrete placement.
- J. Contractor shall be responsible for controlling the proper placing of embedded pipe, conduit, and other embedded items. See section "Installation of Non-Structural Embedded Items" for additional information.
- K. Pumping concrete is permitted only if mix designs specifically prepared and used previously for pumping are submitted. Pump line shall have 5-inch-minimum inside diameter and be used with 5-inch pumps.
- L. After placing concrete, screed to levels and slopes indicated. Do not use tamping tools to force aggregate away from surface. When the water sheen has disappeared, finish surface as indicated.

3.10 CONSOLIDATION

- A. Consolidate placed concrete by mechanical vibrating equipment supplemented by hand spading, rodding, or tamping. Use equipment and procedures for consolidation of concrete in accordance with ACI 309.
- B. Do not use vibrators to transport concrete inside formwork.
- C. Insert and withdraw vibrators vertically at uniformly spaced locations not farther than visible effectiveness of machine. Vibrators shall penetrate placed layer of concrete at least 6 inches into preceding layer. Do not insert vibrators into lower layers of concrete that have begun to set.
- D. At each insertion, limit duration of vibration to time necessary to consolidate concrete and complete embedment of reinforcement and other embedded items without causing segregation of mix.
- E. Do not allow vibrator to come in contact with form.
- F. Consolidation is typically not required for self-consolidating concrete mixes. However, provide internal vibration as required to prevent cold joints between pour lifts.

3.11 SURFACE FINISHES

- A. See drawings for required formed concrete surface finish where applicable. Special requirements for materials and workmanship may be required. Acceptability of finish surface with respect to surface void ratio, color uniformity, surface irregularities, and construction and facing joint shall be in accordance with ACI 347.3R-13. The following categories are applicable:

Formed Concrete Surface Category†	Description†
CSC 1*	For foundation walls and walls covered with subsequent finish materials.
CSC 2	For exposed walls in mechanical and storage rooms.
CSC 3	For exposed walls in other locations.

†ACI 347.3R-13 Table 3.1a

*Note: Remove fins greater than 1/4" where CSC 1 walls are to be covered with a membrane.

- B. Rough-Form Finish: Provide as-cast, rough-form finish to formed concrete surfaces that shall be concealed in finished work or by other construction. Standard rough-form finish is concrete surface having texture imparted by form-facing material used, with tie holes and other defective areas repaired and patched, and fins or other projections exceeding 1/4 inch in height rubbed down or chipped off.
- C. Smooth-Form Finish: Provide smooth-form finish for formed concrete surfaces that shall be exposed to view or covered with material applied directly to concrete such as waterproofing, dampproofing, painting, or other similar systems. Produce smooth-form finish by selecting form material to impart a smooth, hard, uniform texture and arranging them orderly and symmetrically with minimum of seams. Repair and patch defective areas with fins and other projections completely removed and smoothed.
- D. Related Unformed Surfaces: At tops of walls, horizontal offsets, and similar unformed surfaces occurring adjacent to formed surfaces, strike off smooth and finish with texture matching adjacent formed surfaces. Continue final surface treatment of formed surfaces uniformly across adjacent unformed surfaces unless otherwise indicated. G. Slab Float Finish: Apply power-float finish to slab surfaces that will subsequently be trowel-finished or covered with waterproofing membrane. After screeding, consolidating, and leveling concrete slabs, do not work surface until ready for floating. Using float blade or float shoes only, begin floating when surface water has disappeared, when concrete has stiffened sufficiently to permit operation of power-driven floats, or both. Consolidate surface with power-driven floats or by hand-floating if area is small or inaccessible to power units. Check surface plane to overall tolerance of F_F 18 and minimum local tolerance of F_F 13. Cut down high spots, and fill low spots. Uniformly slope surface to drains. Immediately after leveling, refloat surface to uniform, smooth, granular texture.
- E. Do not use dry materials, such as sand and cement, on surfaces during finishing. Do not sprinkle water on plastic surface. Do not disturb slab surfaces before beginning final finishing operations.

- F. Slab Float Finish: Apply power float finish to slab surfaces that will subsequently be trowel finished or covered with waterproofing membrane. After screeding, consolidating, and leveling concrete slabs, do not work surface until ready for floating. Begin floating using float blade or float shoes when surface water has disappeared, when concrete has stiffened sufficiently to permit operation of power-driven floats, or both. Consolidate surface with power-driven floats or by hand-floating if area is small or inaccessible to power units. Check and level surface plane to overall tolerances of F_F 18 and F_L 13, and minimum local tolerances of F_F 13 and F_L 10. Cut down high spots and fill low spots. Uniformly slope surface to drains. Immediately after leveling, refloat surface to a uniform, smooth, granular texture.
- G. Slab Trowel Finish: Apply trowel finish to monolithic slab surfaces to be exposed to view and slab surfaces to be covered with resilient flooring, carpet, ceramic or quarry tile, paint, or other thin-film finish-coating system. After floating, begin first trowel-finish operation using a power-driven trowel. Begin final troweling when surface produces a ringing sound as trowel is moved over surface. Consolidate concrete surface by final hand-troweling operation. Surface shall be free of trowel marks, uniform in texture and appearance, and leveled to an overall tolerance of F_F 25 and F_L 20 and minimum local tolerance of F_F 17 and F_L 13 for carpet and ceramic or quarry tile finishes and overall tolerance of F_F 35 and F_L 25 and minimum local tolerance of F_F 25 and F_L 17 for exposed slabs and other finishes. Grind smooth surface defects that would telegraph through applied floor-covering system. Exposed surfaces are to be overtrowelled to "burn" surface to a dense, hard, dark finish.
 - 1. Where test sample area includes multiple floor finishes, more stringent tolerances shall apply to entire test sample area.
- H. Delay slab finishing as long as possible. Allow bleed water to evaporate before finishing.
- I. Do not use dry materials, such as sand and cement, on slab surfaces during finishing. Do not sprinkle water on plastic surface. Do not disturb slab surfaces before beginning final finishing operations
- J. Finish slabs to specified tolerances given. Patching low spots shall not be permitted. Perform grinding as soon as possible, preferably within 3 days, but not until concrete is sufficiently strong to prevent dislodging coarse aggregate particles.

3.12 CONCRETE PROTECTING AND CURING

- A. Protect freshly placed concrete from premature drying, excessive hot or cold temperature, and damage in accordance with provisions of ACI 306R for cold-weather protection and ACI 305, for hot-weather protection.
- B. Curing Methods: Perform concrete curing in accordance with ACI 308 by wet-curing or moisture-retaining cover curing or combinations thereof as specified.
- C. Provide wet-curing by following methods:
 - 1. Keep concrete surface continuously wet by covering with water.
 - 2. Use continuous water-fog spray.
 - 3. Cover concrete surface with specified absorptive cover, thoroughly saturate cover with water, and keep continuously wet. Place absorptive cover to provide coverage of concrete surfaces and edges with 4-inch lap over adjacent absorptive covers.
- D. Provide moisture-retaining-cover curing as follows:
 - 1. Cover concrete surfaces with moisture-retaining cover for curing concrete, placed in widest practicable width, with sides and ends lapped at least 12 inches and sealed by waterproof tape or adhesive. Cure for not less than seven days. Immediately repair holes or tears during curing period using cover material and waterproof tape.
- E. Curing Vertical-Formed Surfaces:
 - 1. Keep forms in place for minimum of 7 days, 14 days in cold weather or until concrete has achieved 70 percent of its design strength.
 - 2. If forms are removed before minimum time period, alternate methods of curing, wet-curing,

moisture-retaining-cover curing, or liquid-membrane curing, are required.

- a. Contractor shall submit procedures to Architect for review.
 - b. Forms shall remain in place for a minimum of 24 hours when alternating methods of curing are used. For placement during cold weather, the minimum time to form removal shall be extended based on expected weather conditions and Contractor's submitted procedures.
- F. Cure concrete placed under cold-weather conditions completely covering exposed surface of concrete with moisture-retaining cover completely sealed around edges. Cure concrete 14 days minimum with concrete temperature at or above 40 degrees F or 7 days minimum with concrete temperature at or above 70 degrees F.
- G. During hot weather after concrete has hardened, loosen form ties, keeping forms in place, and apply water to inside face of form to keep concrete continuously moist.

3.13 COLD-WEATHER CONCRETING

- A. Place concrete in accordance with ACI 306R.
- B. For cold-weather concreting (defined as when air temperature has fallen to or is expected to fall below 40 degrees F (4 degrees C) during the protection period), maintain concrete temperature in accordance with Table 5.1, and maintain concrete protection in accordance with Table 7.1 in "Cold-Weather Concreting" reported by ACI Committee 306.
- C. When air temperature has fallen to or is expected to fall below 40 degrees F (4 degrees C), uniformly heat water and aggregates before mixing to obtain concrete mixture temperature recommended in Table 5.1 of ACI 306R.
1. Do not use frozen materials or materials containing ice or snow. Do not place concrete on frozen subgrade or on subgrade containing frozen materials.
 2. Do not use calcium chloride, salt, or other materials containing antifreeze agents or chemical accelerators.

3.14 HOT-WEATHER CONCRETING

- A. Place concrete in accordance with ACI 305.
- B. Cool ingredients before mixing to maintain concrete temperature below 85 degrees F at time of placement.
- C. Mixing water may be chilled or chopped ice may be used to control temperature provided water equivalent of ice is calculated to total amount of mixing water.
- D. Cover reinforcing steel with water-soaked burlap if temperature of reinforcing steel exceeds ambient air temperature.
- E. Wet forms thoroughly before placing concrete.
- F. Fog-spray forms and reinforcing steel just before placing concrete.
- G. Use water-reducing, retarding admixture when required by high temperature, low humidity, or other adverse placing conditions when acceptable to Architect.

3.15 CONCRETE SURFACE REPAIRS

- A. Patching Defective Areas: Repair and patch defective areas with cement mortar immediately after form removal when acceptable to Architect.
1. Cut out honeycombs, rock pockets, voids over 1/2 inch in any dimension, and holes left by tie rods and bolts, down to solid concrete but not to a depth of less than 1 inch. Make edges of cuts

- perpendicular to concrete surface. Thoroughly clean, dampen with water, and brush-coat area to be patched with bonding agent. Place patching mortar before bonding compound has dried.
2. For exposed-to-view surfaces, blend white portland cement and standard portland cement so patching mortar will match surrounding color when dry. Provide test areas at inconspicuous locations to verify mixture and color match before proceeding with patching. Compact mortar in place and strike off slightly higher than surrounding surface.
- B. Repair of Formed Surfaces: Remove and replace concrete having defective surfaces if defects cannot be repaired to satisfaction of Architect. These include surface defects such as color, texture irregularities, cracks, spalls, air bubbles, honeycombs, rock pockets, fins and other projections on surface, and stains and other discolorations that cannot be removed by cleaning. Flush out form-tie holes, and fill with dry-pack mortar or precast-cement cone plugs secured in place with bonding agent.
1. Where possible, repair concealed formed surfaces containing defects affecting concrete durability. If defects cannot be repaired, remove and replace concrete.
- C. Repair of Unformed Surfaces: Test unformed surfaces for smoothness, and verify surface plane to tolerances specified for each surface and finish. Correct low and high areas. Test unformed surfaces sloped to drain for trueness of slope and smoothness by using template having required slope.
1. Repair finished unformed surfaces containing defects affecting concrete durability. These include surface defects such as crazing, cracks, spalling, popouts, honeycombs, rock pockets, and other objectionable conditions.
- D. Repair methods not specified above may be used subject to acceptance of Architect.
- 3.16 MISCELLANEOUS CONCRETE ITEMS
- A. Filling In: Fill in holes and openings left in concrete structures for passage of work by other trades unless otherwise shown or directed after work of other trades is in place. Mix, place, and cure concrete as specified to blend with in-place construction. Provide other miscellaneous concrete filling required to complete work.
 - B. Steel-Pan Stairs: Provide concrete fill for steel-pan stair treads, landings, and associated items. Cast-in safety inserts and accessories as shown in drawings. Screed, tamp, and finish concrete surfaces as scheduled.
- 3.17 TOLERANCES
- A. Concrete Section/Placement/Formwork
1. Dimensions of Walls, Footings
 - a. 12 inches or less: + 3/8 inch or - 1/4 inch
 - b. 12 inches to 36 inches: + 1/2 inch or - 3/8 inch
 - c. thicker than 36 inches: + 1 inch or - 3/4 inch
 2. Dimension of Footing in plan: +2 inch or -1/2 inch.
 3. Thickness of walls: + 1/2 inch or - 1/4 inch
 4. Deviation from elevation of top surface from lines parallel to specified grade lines:
 - a. of bearing surface from specified elevation: +/- 1/2 inch.
 - d. Not to exceed 1/4 inch for adjacent members less than 20 feet apart or any wall length less than 20 feet; 1/2 inch for adjacent members 20 feet or more apart or any wall length of 20 feet and greater.
 5. Distance between adjacent elements sectioned by a vertical plane:
 - a. where specified 2 inches or less: +/- 1/8 inch
 - b. where specified 2 inches < x < 12 inches: +/- 1/4 inch
 - c. all other elements: +/- 1 inch
 6. Horizontal deviation from location (center) specified in plan from straight lines parallel to specified linear building lines:
 - a. +/- 1/4 inch for adjacent members less than 20 feet apart or any wall length less than 20 feet; 1/2 inch for adjacent members 20 feet or more apart or any wall length of 20 feet and greater.

- b. other elements: +/- 1 inch
 - c. edge location of all openings: +/- 1 inch
- 7. Deviation from plumb: 1/4 inch for any 10 feet of height; 1 inch maximum for entire height.

B. Reinforcing

- 1. Vertical or horizontal variation from specified in plan
 - a. member depth 4 inch or less: +/- 1/4 inch
 - b. member depth (or thickness) over 4 inch but not over 12 inch: +/- 3/8 inch
 - c. member depth (or thickness) over 12 inches: +/- 1/2 inch
- 2. Spacing, measured long a line parallel to the specified spacing:
 - a. in slabs or walls: +/- 3 inch
 - b. stirrups: lesser of +/- 3 inches or +/- 1 inch per foot of beam depth
 - c. ties: lesser of +/- 3 inches or +/- 1 inch per foot of least column width. In all cases the total number of bars shall not be less than that specified.
- 3. Longitudinal location of bends in bars and ends of bars:
 - a. at discontinuous ends of elements: +/- 1 inch
 - b. at other locations: +/- 2 inch
- 4. Length of bar lap for #3 to #11: -1 inch

C. Anchor Rods and Sleeves:

- 1. Variation from specified location in plan: plus or minus 1/4 inch.
- 2. Variation from specified elevation: plus or minus 1/2 inch.

D. Embedded Items (plates, angles, etc.) other than anchor rods and sleeves:

- 1. Variation from specified location in plan: plus or minus 1/4 inch.
- 2. Variation from specified elevation: plus or minus 1/4 inch.

CONCRETE MIX DESIGN SUBMITTAL FORM
Submit separate form for each mix design

Project:	Location:
General Contractor:	Concrete Supplier:
Mix Design No:	Concrete Grade:
Use (Describe):	
Methods of Placement (chute, pump, chute and buggy, etc.):	
If placing by pumping, verify concrete mix can be pumped distances required in project:	

A. DESIGN MIX INFORMATION:

Based on Standard Deviation Analysis:_____ or Trial Mix Design Data:_____

Design Characteristics - Density:_____ pcf; Strength:_____ psi (28-day);

Slump:_____ in. required BEFORE adding superplasticizer (if used)

Slump:_____ in. required AFTER adding superplasticizer (if used)

Entrained Air Content:_____ % specified

Materials:

Aggregates: (size; type; source; gradation; specification)

Coarse:_____

Fine:_____

<u>Other Materials:</u>	Type	<u>Product-Manufacturer (Source)</u>
Cement:	_____	_____
Fly Ash:	_____	_____
Slag:	_____	_____

Admixtures:

Water Reducer:_____

Air-Entraining Agent:_____

High-Range, Water-Reducing Admixtures (superplasticizer):_____

Non-Corrosive Accelerator:_____

Other:_____

B. FINAL MIX DESIGN DATA:

RATIOS

Water _____ lb
Cementitious _____ lb = _____
Materials

Course Agg. _____ lb
Fine Agg. _____ lb = _____

SPECIFIC GRAVITIES

Fine Agg. _____

Coarse Agg. _____

Other: _____

ADMIXTURES

W.R.: _____ oz. per 100 # Cement

HRWR: _____ oz. per 100 #Cement

Non-Corrosive Accelerator: _____ oz.
Per 100# Cement

A.E.A.: _____ oz. per 100 # Cement

Other: _____ oz. per 100# Cement

PLASTIC CONCRETE

Initial Slump	=	_____ in.	Air Content	=	_____ %
Final Slump	=	_____ in.	Unit Dry Wt.	=	_____ pcf
Unit Wet Wt.	=	_____ pcf			

STANDARD DEVIATION ANALYSIS (from experience records):

Number of Test Cylinders Evaluated: _____ Standard Deviation: _____

$f_{cr} = f_c + 1.34s$ or $f_{cr} = f_c + 2.33s - 500$

(Refer to ACI for increased deviation factor when fewer than 30 tests are available.)

Mix # _____ Job Name _____

C. LABORATORY TEST DATA (HARDENED CONCRETE):

COMPRESSIVE STRENGTH

Age (days)	Mix #1	Mix #2	Mix #3
7	_____	_____	_____
14	_____	_____	_____
28	_____	_____	_____
Other	_____	_____	_____

28-day average compressive strength: _____psi

Mix design proportioned to achieve $f_{cr} = f_c + 1200$ psi (1400 psi for strength higher than 5000 psi at 28 days)

CHLORIDE ION CONTENT: _____

Remarks: _____

NOTE: Fill in all blank spaces. Use 0- (Zero) or N.A. (Not Applicable) where appropriate. See "Design and Control of Concrete Mixtures," 13th Edition by Portland Cement Association, for assistance in completing this form.

D. REQUIRED ATTACHMENTS:

_____ Coarse aggregate gradation report and DOT certification
_____ Fine aggregate gradation report and DOT certification
_____ Concrete compressive strength data used for standard deviation calculations
_____ Chloride ion data and related calculations
_____ Rapid chloride permeability test report
_____ Admixture compatibility certification letter

Submitted by

Ready-Mix

Supplier: Name _____

Address _____

Phone Number _____ Date _____

Main Plant Location _____ Miles from Project _____

Secondary Plant Location _____ Miles from Project _____

END OF SECTION 033000 (1/2020)

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SECTION 033020 - CONCRETE SLABS ON GRADE

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. Section 033000: Cast-In-Place Concrete.

1.2 DESCRIPTION OF WORK

- A. This section supplements Section 033000: Cast-In-Place Concrete, with specific emphasis on concrete slabs supported on grade. The general requirements of Section 033000 pertain to this section unless otherwise specified in this section.

1.3 QUALITY ASSURANCE

- A. Reference Standards:
 - 1. ACI 302 "Guide for Concrete Floor and Slab Construction."
- B. Hold a slab preconstruction meeting at least 14 days prior to initial planned date of slab placement. Discussion shall include subbase preparation, reinforcing and dowel placement, slab joints, concrete mix designs, and procedures for concrete placement, finishing, curing, and protection. Attendees shall include Contractor, Placement Subcontractor, Concrete Supplier, Special Inspector, Testing Agency, Engineer, and Architect.
 - 1. If embedments such as conduit and pipe are to be embedded in slabs on metal deck, the installing Contractor shall also attend the slab preconstruction meeting.
- C. Provide protection from precipitation for vapor retarder and slab subbase prior to slab-on-grade placement. Provide curing and protection of concrete slabs in accordance with Section 3.15.

1.4 SPECIAL INSPECTIONS

- A. Refer to Specification Section 014533 and Schedule of Special Inspections.

1.5 MATERIAL EVALUATION/QUALITY CONTROL

- A. Contractor shall secure services of company field advisor from manufacturer of water vapor-reducing admixtures (WVRA) and concrete surface treatment products, including sealers, hardeners, sealants, and finishes. Field advisor shall be certified in writing by manufacturer to be technically qualified in product installation. Personnel involved solely in sales do not qualify. Field advisor shall be present at beginning of installation of product and as required during duration of project for the purpose of:
 - 1. Render technical assistance to Contractor regarding installation procedures of product to satisfy warrantee or guarantee requirements.
 - 2. Provide specialized training in use of product to Contractor's personnel.
 - 3. Verify surface preparation procedures and suitable substrates for material application.
 - 4. Verify proper mixing proportions and procedures for product.

5. Verify proper temperature and other environmental controls.
 6. Verify proper tools and application procedures.
 7. Verify proper curing and protection of installed product.
 8. Familiarize Contractor/Owner/Architect/Engineer with entire system, including inspection techniques.
 9. Answer questions that arise.
- B. Field advisor shall prepare a written report summarizing information listed above. Submit report to Special Inspector, Contractor, Owner, Architect, and Engineer.
- C. Contractor shall be responsible for expenses of field advisor and verifying credentials of advisor.
- D. Contractor shall be responsible for the cost of any special procedures required by the manufacturer of WVRA to allow for the placement of slab finishes in advance of the specified minimum time period.
- 1.6 SUBMITTALS
- A. Comply with Section 033000.
- B. Submit option for slab placement (see Part 3 of this section) and layout of slab joints.
- C. Prior to slab placement, submit to Special Inspector and Engineer for information only, a written protection program for vapor retarder, slab subbase and slab on grade.

PART 2 - PRODUCTS

2.1 STEEL REINFORCEMENT AND ACCESSORIES

- A. Reinforcement: ASTM A 615, Grade 60 for uncoated deformed bars.
1. ASTM A 775 for epoxy-coated, deformed bars.
 2. Coatings (epoxy) applied after fabrication and bending.
- B. Epoxy Repair Coating: Liquid, two-part, epoxy repair coating; compatible with epoxy coating on reinforcement and complying with ASTM A 775.
- C. Supports for Reinforcement: Use wire bar-type supports complying with CRSI specifications. For slabs on grade, use chairs with sand plates or horizontal runners where base material will not support chair legs.
1. Concrete bricks may be used to support reinforcing for slabs on grade. Stagger brick locations.
 - a. Do not use clay bricks.
 - b. Do not use bricks to support epoxy-coated or galvanized reinforcing.
 2. Supports for epoxy-coated reinforcing shall be either wire bar-type coated with epoxy, plastic, or vinyl compatible with concrete for minimum distance of 2 inches from point of contact with reinforcing or all plastic-type.
 3. Finish (epoxy-coated) for supports formed from reinforcing bars shall match finish of supported reinforcing.
- D. Minimum 16-gauge annealed tie wire, ASTM A 82.
- E. Deformed-Steel Wire: ASTM A 496/A 496M.
- F. Epoxy-Coated Wire: ASTM A 884/A 884M, Class A, Type 1 coated, plain steel wire, with less than 2 percent damaged coating in each 12-inch wire length.

1. Provide coated wire ties for use with epoxy-coated bars. Acceptable coatings include epoxy, nylon, or vinyl. Do not use plain wire ties.

G. Dowel Bars for Slabs on Grade:

1. Construction Joints.
 - a. 1-inch-square steel bars with 1/4-inch-compressible foam on vertical faces.
 - b. 3/8-inch by 4.5-inch-square "Diamond Dowel" plate and sleeve by PNA Construction Technologies or accepted equivalent.
2. Contraction Joints.
 - a. 1-inch-diameter steel bars, greased and supported by dowel baskets.
 - b. 3/8-inch by 2-inch by 8-inch-long alternating tapered plate dowels "PD3 Basket Assembly" by PNA Construction Technologies or accepted equivalent.

2.2 CONCRETE MATERIALS

- A. Portland Cement: ASTM C 150. Type II or Type I/II only.
- B. Fly Ash: ASTM C 618, Type F, with loss on ignition of less than 6 percent.
- C. Ground-Granulated, Blast-Furnace Slag: ASTM C 989, Grade 100 or 120.
- D. Water: ASTM C 94, clean, fresh, drinkable.
- E. Aggregates: NYSDOT-approved, Section 703-02 (normal weight), one source and as herein specified.
 1. Fine Aggregate: Coarse, clean, sharp, uniformly graded natural sand free of loam, clay, lumps or other deleterious substances. Less than 10 percent passing No. 100 sieve and less than 3 percent passing No. 200 sieve.
 2. Coarse Aggregate for Slabs on Grade: Uniformly graded to 1 1/2 inches, clean, processed, crushed stone with low absorption and free of flat/elongated particles. NYSDOT-approved, size 3A gravel can be used to meet large diameter requirement. Gradation similar to blended NYSDOT Type CA 2 and size 1A or ASTM C 33 Type 57 and Type 8, blended and modified as follows:

Sieve Size	Percent Passing
1 inch	95 to 98.5
3/4 inch	75 to 94
1/2 inch	25 to 50
3/8 inch	10 to 25
No. 4	0 to 10

2.3 ADMIXTURES

- A. Air Entraining: ASTM C 260.
- B. Set-Control Admixtures: Not permitted.
- C. Calcium Chloride: Not permitted.
- D. Water-Reducing Admixture: "Eucon WR-75" or "Eucon WR-91" by Euclid Chemical Co.; "MasterPozzolith 200" by Master Builders; or "Plastocrete 161" by Sika Chemical Corp. Admixture shall conform to ASTM C 494, Type A, and not contain more chloride ions than in municipal drinking water.
- E. Mid to High Range Water Reducer/Finish Enhancer: "MasterPolyheed 997" by Master Builders; "Sikament 686" by Sika Chemical Corp; or accepted equivalent. Admixture shall conform to ASTM C 494 Type A and F and not contain more chloride ions than in municipal drinking water.

2.4 RELATED MATERIALS

- A. Premolded Joint Filler for Slabs on Grade: Provide resilient and nonextruding, premolded, bituminous fiberboard units complying with ASTM D 1751; 1/2-inch-thick, full slab depth.
- B. Construction Joint Form: Square edge form only. Keyed joint not permitted.
- C. Semi-Rigid Epoxy Joint Filler for Interior Exposed Slabs: At exposed slabs, seal joints with "Sikadur 51SL" by Sika; "Sure Fil J52" by Dayton Superior; "MM-80P" by Metzger/McGuire; "Euco 700" by Euclid Chemical Co.
- D. Semi-Rigid Polyurea Joint Filler for Interior Slabs: At interior slabs to receive broadloom carpet, hardwood, or VCT, seal joints with "Euco QWIKjoint 200" by Euclid Chemical Co.; "Spal-Pro RS 65" by Metzger/McGuire; "Sika Loadflex" by Sika; or accepted equivalent.
- E. Polyurethane Joint Sealant for Exterior Slabs: "Sikaflex-2c SL" by Sika; "MasterSeal SL2" by Master Builders; "Eucolastic 2 SL" by Euclid Chemical Co.; "Urexpan NR-200" by Pecora Corporation; or accepted equivalent.
- F. Absorptive Cover: Burlap cloth made from jute or kenaf, weighing approximately 9 ounces a square yard and complying with AASHTO M 182, Class 2.
- G. Curing-Sheet Materials: ASTM C 171; waterproof paper, polyethylene film, or polyethylene-coated burlap.
 - 1. For slabs exposed to view, provide one of the following or accepted equivalent:
 - a. "HydraCure S16" by PNA Construction Technologies.
 - b. "UltraCure NCF/SUN" by McTech Group.
- H. Penetrating Exterior Anti-Spalling Sealer: "Euco-Guard 100" by Euclid Chemical Co. (mixed to 17.5 percent concentration); "MasterProtect H400" by Master Builders; "Aquapel Plus" by L&M Construction Chemicals; or accepted equivalent.
- I. Evaporation Retarder: Monomolecular, film-forming compound applied to exposed concrete slab surfaces for temporary protection from rapid moisture loss. "Aquafilm J74RTU" by Dayton Superior; "Eucobar" by Euclid Chemical Co.; "MasterKure ER 50" by Master Builders, Inc.; or accepted equivalent.
- J. Crack Repair Material: For cracks smaller than 1/8 inch, use "Sika Pronto 19" methacrylate by Sika; "Rapid Refloor" polyurea by Metzger McGuire; or accepted equivalent. For cracks greater than 1/8 inch, use specified joint filler material.
- K. Hardener: "MasterKure HD 300WB" by Master Builders, Inc.; or accepted equivalent for exposed slabs.
- L. Vapor Retarder: See Section 312301.

2.5 PROPORTIONING AND MIX DESIGN

A. Concrete Quality:

Location	Required 28-Day Compressive Strength (psi)	Approximate Cementitious Materials Content (pounds)	Maximum Water/Cement Ratio	Percent Entrained Air
Interior slabs on grade	3,500	530	0.50 (265 pounds maximum total water)	2*
Exterior slabs on grade (subject to deicing chemicals)	5,000	658****	0.40	6**

* Do not add air-entraining admixtures. Air entrapment occurs as result of mixing.

** Plus or minus 1.5 percent.

**** Maximum cement content 563 pounds plus 20 percent pozzolans by weight. Minimum cement content 488 pounds plus 20 percent pozzolans by weight.

- B. Slump: 5-inch maximum for normal and mid-range, water-reduced mixes.
- C. Concrete containing a high-range, water-reducing admixture (superplasticizer) shall have maximum slump of 6 inches unless otherwise accepted by Engineer.
- D. Use 564 pounds (6 sacks) maximum of cement for each cubic yard for interior slabs and minimum sand content.
- E. For normal-weight concrete, quantity of coarse aggregate in pounds must be in range of 1.25 to 1.5 times quantity of fine aggregate in pounds. Provide minimum of 1,800 pounds of coarse aggregate for each cubic yard of concrete.
- F. Pozzolans:
- Pozzolans may be substituted for cement in normal-weight concrete for interior slabs, including fly ash at a maximum rate of 20 percent by weight or ground-granulated, blast-furnace slag at a maximum rate of 35 percent by weight.
 - Pozzolans shall be used at a rate of 20 percent by weight of total cementitious materials for exterior slabs.
 - Submittals shall include actual mix design, including percentage of pozzolans and test results showing mix meets specified 7-day compressive strength where indicated, 28-day compressive strength, and air content.
 - Protect and heat concrete containing pozzolans during cold-weather conditions. Maintain protection and heat until 70 percent of specified design strength is achieved.
- G. Pumping concrete is permitted only if mix designs specifically prepared and used previously for pumping are submitted. Mix designs not previously used for anticipated pump line lengths shall be tested by Contractor to verify suitability for project before use at site. Pump line shall have 5-inch-minimum inside diameter and be used with 5-inch pumps.

PART 3 - EXECUTION

3.1 GENERAL

- A. Examine conditions under which work shall be performed. Do not proceed with work until unsatisfactory conditions are corrected.

- B. Whenever possible, air temperature should be rising after concrete placement. Attempt to schedule slab placements according to favorable weather reports.

3.2 OPTION FOR SLAB PLACEMENT

- A. For placement of slabs that will be exposed in final structure, place construction and contraction joints as shown in drawings or as recommended by ACI 302 if not shown.
- B. For placement of slabs that will be subsequently concealed with an architectural finish material, Contractor has two options. Option 1 is to place slabs with few joints or construction joints only. Option 2 is to place slabs with construction and contraction joint spacings as recommended by ACI 302, "Guide for Concrete Floor and Slab Construction." Contractor shall submit option to be used and joint layout to Architect and Engineer for review.
- C. If Option 1 is selected, shrinkage cracking will likely occur but potential for curling will be reduced. Contractor shall be responsible for repairing cracks and curled areas. If Option 2 is selected, probability of shrinkage cracking will be less but probability of curling will increase. Contractor shall be responsible for repairing cracks and curled areas.

3.3 PRECONCRETE PLACEMENT

- A. Just before concrete placement on grade, slab subbase shall be dry.
- B. Whenever possible, air temperature should be rising after concrete placement. Attempt to schedule slab placements according to favorable weather reports.
- C. Subgrade shall be frost-free.

3.4 EDGE FORMS AND SCREED STRIPS FOR SLABS ON GRADE

- A. Set edge forms, bulkheads, and intermediate screed strips for slabs to obtain required elevations and contours in finished slab surfaces. Provide secure edge forms or screed strips to support strike-off templates or compacting vibrating-type screeds. Wet screeding is not permitted.

3.5 VAPOR RETARDER INSTALLATION

- A. Following placement and compaction of subbase, place vapor retarder sheeting with longest dimension parallel with the direction of slab placement.
- B. Install vapor retarder in accordance with ASTM E 1643, manufacturer's instructions, and as follows:
 - 1. Lap joints 6 inches, and seal vapor retarder joints with manufacturer- recommended seam tape.
 - 2. Extend vapor retarder up walls and penetrations 4 inches minimum.
 - 3. Seal vapor retarder to walls and penetrations with manufacturer-recommended mastic to form continuous barrier.
 - 4. Repair damaged areas by cutting patches of vapor retarder material and placing to overlap damaged areas by 6 inches each side. Seal each side of patch with seam tape.
- C. Remove debris and standing water from vapor retarder prior to slab placement.

3.6 REINFORCEMENT PLACEMENT

- A. Place slab reinforcing one-third of slab thickness below top surface of slabs on grade. Support reinforcement by metal chairs, runners, bolsters, or concrete brick (slabs on grade only) as required.

- B. Dedicate workers to placement of reinforcement to continuously monitor and adjust reinforcement location during concrete placement.
- C. Touch up damaged epoxy-coated reinforcement in field after placement with epoxy patching material provided by coating manufacturer.

3.7 INSTALLATION OF NON-STRUCTURAL EMBEDDED ITEMS

- A. General: Notify other trades to permit installation of their work and coordinate with requirements of this section. Cooperate with other trades in setting work as required.
- B. Do not embed aluminum items unless coated to prevent galvanic reaction with concrete and steel.
- C. Do not embed conduit or other nonstructural items that are larger than the lesser of the following unless otherwise detailed:
 - 1. One-inch diameter.
 - 2. One-third the thickness of concrete slab above metal deck.
- D. Avoid embedding conduit or other nonstructural items wherever possible. If unavoidable, limit size as noted above and install embedded item following the guidelines below.
 - 1. Space at least 18 inches apart.
 - 2. Place so nonstructural items do not cross each other.
 - 3. Provide at least 1-inch concrete cover between items and slab surface. Provide minimum 3/4-inch concrete cover between items and deck, screed angles, edge forms, or reinforcing bars. Do not lay items on deck or reinforcing bars. In exterior slabs, provide at least 1½-inches concrete cover between items and exposed surfaces.
 - 4. Provide at least 1-inch concrete cover between embedded items and shear connectors in composite beam construction.
 - 5. Securely position items by wire tying to support chairs.
- E. Items such as trench ducts and electrical floor boxes require special consideration. Known conditions are detailed in drawings. Notify Architect and Engineer of discrepancies or locations not detailed.
- F. Install PVC sleeves at plumbing penetrations. Do not core-drill unless accepted by Engineer. Cut deck after slab has cured 28 days or after slab reaches its design strength.

3.8 ISOLATION JOINTS

- A. Construct isolation joints in slabs at points of contact with vertical surface and elsewhere as indicated.
- B. Use two layers of polyethylene film as bond breaker for slabs on metal deck.

3.9 CONSTRUCTION JOINTS

- A. Locate and install construction joints not shown in drawings so as not to impair strength and appearance of structure as acceptable to Engineer.
- B. Construction joints in exposed slabs on grade shall be doweled joints.
- C. Continue half of bar reinforcement through construction joints in concealed slabs.
 - 1. If Contractor chooses to cut reinforcement for slabs on grade after placement, protect the vapor retarder and use cutting method which will not result in damage to the vapor retarder. Thermal cutting of reinforcement after placement is not permitted.

2. Contractor shall repair damage to vapor retarder prior to slab on grade placement.

3.10 CONTRACTION JOINTS

- A. Saw cut contraction joints as soon as possible after finishing, generally within 4 to 16 hours. Make sample cut to determine if concrete surface is firm enough so it is not torn or damaged by blade.
- B. Use soft-cut contraction joints.
 1. For slabs on grade, depth of cut shall be one-fifth of slab thickness with minimum of 1 inch.
 2. For slabs on metal deck, depth of cut shall be one-fifth of slab cover over metal deck, with maximum depth of $\frac{3}{4}$ inch.
- C. Obtain permission from Engineer if diamond blade cutting is to be used.
- D. Contraction joints in exposed slabs on grade shall be doweled joints.
- E. Continue half of bar reinforcement through contraction joints in concealed slabs.
 1. If Contractor chooses to cut reinforcement for slabs on grade after placement, protect the vapor retarder and use cutting method which will not result in damage to the vapor retarder. Thermal cutting of reinforcement after placement is not permitted.
 2. Contractor shall repair damage to vapor retarder prior to slab placement.

3.11 DOWELED JOINTS FOR SLABS ON GRADE

- A. Install dowel bars parallel to slab surface and perpendicular to joints. Support dowel bars by use of parallel construction supports.
- B. Use square cushioned dowels or Diamond Dowel plates and sleeves in construction joints.
- C. Use round greased dowels in contraction joints.

3.12 PLACING CONCRETE SLABS

- A. Maximum of 2 1/2 gallons for each cubic yard of total mix design water can be added in field. Water must be added prior to discharging and testing concrete. At no time shall total water exceed amount listed in accepted mix design.
- B. Slabs on Grade:
 1. Use strip pour methods and mechanical vibratory screed whenever possible.
 2. Deposit and consolidate concrete in continuous operation within limits of construction joints until placing of panel or section is complete.
 3. Consolidate concrete during placing operations so concrete is thoroughly worked around reinforcement and other embedded items and into corners.
 4. Maximum placement width shall not exceed 20 feet for very-flat and super-flat slabs.
 5. Bring slab surfaces to correct level with a straightedge and strike off. Uniformly slope to drains. Use darbies to smooth surface, leaving it free of humps or hollows. Do not sprinkle water or portland cement on plastic surface. Do not disturb slab surfaces before beginning finishing operations.
 6. Maintain reinforcement in proper position during concrete placement operations. See requirements for reinforcement placement.
 7. Slab thicknesses shown in drawings are minimum allowable. Maximum allowable thickness shall be 1 inch greater than specified thickness.
 8. For floor areas with drains, Contractor shall be responsible for finishing concrete slabs to proper elevations to ensure surface moisture will drain freely to floor drains and no puddle areas exist. Reference elevations shown in drawings.

9. Cost of corrections to provide for positive drainage shall be the responsibility of Contractor.

3.13 SLAB FINISHES

- A. Float Finish: Apply power float finish to slab surfaces that will subsequently be trowel finished or covered with waterproofing membrane. After screeding, consolidating, and leveling concrete slabs, do not work surface until ready for floating. Begin floating using float blade or float shoes when surface water has disappeared, when concrete has stiffened sufficiently to permit operation of power-driven floats, or both. Consolidate surface with power-driven floats or by hand-floating if area is small or inaccessible to power units. Check and level surface plane to overall tolerances of F_F 18 and F_L 13, and minimum local tolerances of F_F 13 and F_L 10. Cut down high spots and fill low spots. Uniformly slope surface to drains. Immediately after leveling, refloat surface to a uniform, smooth, granular texture.
- B. Trowel Finish: Apply trowel finish to monolithic slab surfaces to be exposed to view and slab surfaces to be covered with resilient flooring, carpet, ceramic or quarry tile, paint, or other thin-film finish-coating system. After floating, begin first trowel-finish operation using a power-driven trowel. Begin final troweling when surface produces a ringing sound as trowel is moved over surface. Consolidate concrete surface by final hand-troweling operation. Surface shall be free of trowel marks, uniform in texture and appearance, and leveled to an overall tolerance of F_F 25 and F_L 20 and minimum local tolerance of F_F 17 and F_L 13 for carpet and ceramic or quarry tile finishes and overall tolerance of F_F 35 and F_L 25 and minimum local tolerance of F_F 25 and F_L 17 for exposed slabs and other finishes. Grind smooth surface defects that would telegraph through applied floor-covering system. Exposed surfaces are to be overtrowelled to "burn" surface to a dense, hard, dark finish.
1. Where test sample area includes multiple floor finishes, more stringent tolerances shall apply to entire test sample area.
- C. Nonslip Broom Finish for Slabs on Grade: Apply nonslip, heavy broom finish to exterior concrete slab surfaces. Immediately after trowel finishing, roughen concrete surface by brooming with fiber bristle broom perpendicular to main traffic route. Coordinate required final finish with Architect before application.
- D. Delay finishing as long as possible. Allow bleed water to evaporate before finishing.
- E. Do not use dry materials, such as sand and cement, on surfaces during finishing. Do not sprinkle water on plastic surface. Do not disturb slab surfaces before beginning final finishing operations
- F. Finish slabs to specified tolerances given. Patching low spots shall not be permitted. Perform grinding as soon as possible, preferably within 3 days, but not until concrete is sufficiently strong to prevent dislodging coarse aggregate particles.

3.14 COLD-WEATHER CONCRETING

- A. Comply with Section 033000.
- B. Provide temporary heat with vented heaters only.
- C. Use foggers to maintain humidity at 50 percent minimum.

3.15 HOT-WEATHER CONCRETING

- A. Comply with Section 033000.

3.16 CURING AND PROTECTION

- A. Protect freshly placed slabs from premature drying and excessive cold or hot temperature. Maintain without drying at a relatively constant temperature for time period necessary for cement hydration and proper hardening.
- B. Cure exterior slabs completely by moist-curing using burlap absorptive cover, soaker hoses, and ponding for at least 7 days. Place absorptive cover to provide coverage of concrete surfaces and edges, with 4-inch lap over adjacent absorptive covers. Avoid rapid drying at end of curing period. Allow absorptive cover to remain an additional 3 days.
- C. Cure interior slabs by sheet-curing by covering slabs with curing sheet material for 7 days minimum. Avoiding rapid drying at end of curing period. Place curing cover in widest practicable width with sides and ends lapped at least 3 inches and sealed with waterproof tape or adhesive. Immediately repair holes or tears in cover during curing period.
- D. Do not allow foot or other traffic over slabs during 7-day curing period.
- E. Cure slabs or pads 14 days minimum before placing equipment.
- F. Provide protection for concrete slabs from direct exposure to sun, wind, precipitation, and excessive cold or hot temperatures lasting from concrete placement until the building is enclosed and conditioned.
 - 2. Protect the slab surface and slab openings from exposure to water; this includes water from construction activities and precipitation.
 - 3. Contractor shall be responsible for cost of repairing slab defects and moisture issues resulting from deficient protection methods.
 - 4. One method of protection is installing exterior walls, roof membrane and roof drains prior to installing vapor retarder, slab subbase and slab on grade.
- G. Interior Nonexposed Slabs:
 - 1. Place finish toppings, coatings, tile, and other materials to be bonded to slabs when the following have been satisfied:
 - a. Slabs have cured minimum of 90 days.
 - b. Acceptable moisture vapor emission and alkalinity test results have been achieved.
 - c. Acceptable 72-hour Bond Test results have been achieved. Bond test by floor finish installer.
- H. Interior Exposed Slabs:
 - 1. Apply two coats of hardener after slabs have cured 28 days minimum at rate of 100 square feet/gallon in accordance with manufacturer's recommendations.
- I. Exterior Slabs:
 - 1. Apply penetrating exterior anti-spalling sealer to exterior concrete slabs, walks, platforms, steps, ramps, and curbs according to manufacturer's directions.

3.17 JOINT SEALANT

- A. Install joint sealant in exposed construction, isolation, and contraction joints in accordance with manufacturer's recommendations.
- B. Clean joints thoroughly before applying sealant.
- C. Apply sealant after slabs have cured 90 days minimum.

3.18 REPAIR OF SURFACES

- A. Contractor shall be responsible for cost of repairing slab defects.
- B. Test surfaces for flatness and level tolerances. Test uniform surfaces sloped to drain for trueness of slope.
- C. Correct flatness and levelness defects by grinding or removing and replacing slab. Patching low spots not permitted. Repair areas shall be remeasured and accepted by Owner.
- D. Repair cracks only when slab is more than 90 days old. Use crack repair material. For cracks over 1/8 inch, fill crack with oven-dried sand prior to application of crack repair material as recommended by manufacturer. Contractor has option to remove and rebuild areas of cracking. Mask cracks to limit crack repair material to crack only.
- E. Repair curling only when slab is more than 90 days old.
- F. Curling at slab edges exceeding 1/8 inch when measured with a 10-foot straightedge shall be made level by grinding or planing. Locate straightedge with its end at the slab edge, and measure space between straightedge and slab.
- G. If curling exceeds 1/4 inch, level slab by grinding or planing as stated above. In addition, core-drill slab 10 inches from joint at 2 foot intervals, alternating on each side of joint, and inject nonshrink grout to fill void beneath slab.
- H. Repair edge spalls occurring from shrinkage cracking or from Contractor's operations with methods acceptable to Engineer.

END OF SECTION 033020 (02/21)

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SECTION 042200 - CONCRETE UNIT MASONRY

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Special Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. Section Includes:
 - 1. Concrete masonry units.
 - 2. Mortar and grout.
 - 3. Steel reinforcing bars.
 - 4. Masonry-joint reinforcement.
 - 5. Embedded flashing.
 - 6. Miscellaneous masonry accessories.
- B. Products Installed but not Furnished under This Section:
 - 1. Cast-stone trim in concrete unit masonry.
- C. Related Requirements:
 - 1. Section 076200 "Sheet Metal Flashing and Trim" for sheet metal flashing.

1.3 DEFINITIONS

- A. CMU(s): Concrete masonry unit(s).
- B. Reinforced Masonry: Masonry containing reinforcing steel in grouted cells.

1.4 PREINSTALLATION MEETINGS

- A. Preinstallation Conference: Conduct conference at Project site.

1.5 ACTION SUBMITTALS

- A. Product Data: For each type of product.
- B. Shop Drawings: For the following:
 - 1. Masonry Units: Show sizes, profiles, coursing, and locations of special shapes.
 - 2. Reinforcing Steel: Detail bending, lap lengths, and placement of unit masonry reinforcing bars. Comply with ACI 315. Show elevations of reinforced walls.
 - 3. Fabricated Flashing: Detail corner units, end-dam units, and other special applications.

1.6 INFORMATIONAL SUBMITTALS

- A. Material Certificates: For each type and size of the following:
1. Masonry units.
 - a. Include material test reports substantiating compliance with requirements.
 - b. For masonry units, include data and calculations establishing average net-area compressive strength of units.
 2. Integral water repellant used in CMUs.
 3. Cementitious materials. Include name of manufacturer, brand name, and type.
 4. Mortar admixtures.
 5. Preblended, dry mortar mixes. Include description of type and proportions of ingredients.
 6. Grout mixes. Include description of type and proportions of ingredients.
 7. Reinforcing bars.
 8. Joint reinforcement.
 9. Anchors, ties, and metal accessories.
- B. Mix Designs: For each type of mortar and grout. Include description of type and proportions of ingredients.
1. Include test reports for mortar mixes required to comply with property specification. Test according to ASTM C 109/C 109M for compressive strength, ASTM C 1506 for water retention, and ASTM C 91/C 91M for air content.
 2. Include test reports, according to ASTM C 1019, for grout mixes required to comply with compressive strength requirement.
- C. Statement of Compressive Strength of Masonry: For each combination of masonry unit type and mortar type, provide statement of average net-area compressive strength of masonry units, mortar type, and resulting net-area compressive strength of masonry determined according to TMS 602/ACI 530.1/ASCE 6.
- D. Cold-Weather and Hot-Weather Procedures: Detailed description of methods, materials, and equipment to be used to comply with requirements.

1.7 QUALITY ASSURANCE

- A. Manufacturer Qualifications: Company specializing in manufacturing products specified in this section with a minimum ten years documented experience and a current member in good standing of the National Concrete Masonry Association.
- B. Installer Qualifications: Company specializing in performing Work of this section with minimum five years documented experience with projects of similar scope and complexity.
- C. Installer's Field Supervision: Maintain a full-time Supervisor/Foreman on job site during all phases of masonry work while it is in progress.
- D. Source Limitations: Provide each type of masonry unit from a single manufacturing source to ensure uniform texture and color for continuous and visually related items.
- E. Mockups: Build mockups to demonstrate aesthetic effects, and to set quality standards for materials and execution.
1. Build mockups for typical exterior and interior walls in sizes approximately 72 inches (1800 mm) long by 72 inches (1800 mm) high by full thickness, including face and backup wythes and accessories.
 - a. Include a sealant-filled joint at least 16 inches (400 mm) long in exterior wall mockup.
 - b. Include lower corner of window opening at upper corner of exterior wall mockup. Make opening approximately 12 inches (300 mm) wide by 16 inches (400 mm) high.

- c. Include through-wall flashing installed for a 24-inch (600-mm) length in corner of exterior wall mockup approximately 16 inches (400 mm) down from top of mockup, with a 12-inch (300-mm) length of flashing left exposed to view (omit masonry above half of flashing).
2. Protect accepted mockups from the elements with weather-resistant membrane.
3. Approval of mockups is for color, texture, and blending of masonry units; relationship of mortar and sealant colors to masonry unit colors; tooling of joints; and aesthetic qualities of workmanship.
 - a. Approval of mockups is also for other material and construction qualities specifically approved by Architect in writing.
 - b. Approval of mockups does not constitute approval of deviations from the Contract Documents contained in mockups unless Architect specifically approves such deviations in writing.

1.8 DELIVERY, STORAGE, AND HANDLING

- A. Store masonry units on elevated platforms in a dry location. If units are not stored in an enclosed location, cover tops and sides of stacks with waterproof sheeting, securely tied. If units become wet, do not install until they are dry.
- B. Deliver preblended, dry mortar mix in moisture-resistant containers. Store preblended, dry mortar mix in delivery containers on elevated platforms in a dry location or in covered weatherproof dispensing silos.
- C. Store masonry accessories, including metal items, to prevent corrosion and accumulation of dirt and oil.

1.9 FIELD CONDITIONS

- A. Protection of Masonry: During construction, cover tops of walls, projections, and sills with waterproof sheeting at end of each day's work. Cover partially completed masonry when construction is not in progress.
 1. Extend cover a minimum of 24 inches (600 mm) down both sides of walls, and hold cover securely in place.
- B. Do not apply uniform floor or roof loads for at least 12 hours and concentrated loads for at least three days after building masonry walls or columns.
- C. Stain Prevention: Prevent grout, mortar, and soil from staining the face of masonry to be left exposed or painted. Immediately remove grout, mortar, and soil that come in contact with such masonry.
 1. Protect base of walls from rain-splashed mud and from mortar splatter by spreading coverings on ground and over wall surface.
 2. Protect sills, ledges, and projections from mortar droppings.
 3. Protect surfaces of window and door frames, as well as similar products with painted and integral finishes, from mortar droppings.
 4. Turn scaffold boards near the wall on edge at the end of each day to prevent rain from splashing mortar and dirt onto completed masonry.
- D. Cold-Weather Requirements: Do not use frozen materials or materials mixed or coated with ice or frost. Do not build on frozen substrates. Remove and replace unit masonry damaged by frost or by freezing conditions. Comply with cold-weather construction requirements contained in TMS 602/ACI 530.1/ASCE 6.
 1. Cold-Weather Cleaning: Use liquid cleaning methods only when air temperature is 40 deg F (4 deg C) and higher and will remain so until masonry has dried, but not less than seven days after completing cleaning.
- E. Hot-Weather Requirements: Comply with hot-weather construction requirements contained in TMS 602/ACI 530.1/ASCE 6.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

- A. Source Limitations for Masonry Units: Obtain exposed masonry units of a uniform texture and color, or a uniform blend within the ranges accepted for these characteristics, from single source from single manufacturer for each product required.
- B. Source Limitations for Mortar Materials: Obtain mortar ingredients of a uniform quality, including color for exposed masonry, from single manufacturer for each cementitious component and from single source or producer for each aggregate.

2.2 UNIT MASONRY, GENERAL

- A. Masonry Standard: Comply with TMS 602/ACI 530.1/ASCE 6 except as modified by requirements in the Contract Documents.
- B. Defective Units: Referenced masonry unit standards may allow a certain percentage of units to contain chips, cracks, or other defects exceeding limits stated. Do not use units where such defects are exposed in the completed Work and will be within 10 feet (3 m) vertically and horizontally of a walking surface.

2.3 CONCRETE MASONRY UNITS

- A. Shapes: Provide shapes indicated and as follows, with exposed surfaces matching exposed faces of adjacent units unless otherwise indicated.
 - 1. Provide special shapes for lintels, corners, jambs, sashes, movement joints, headers, bonding, and other special conditions.
 - 2. Provide square-edged units for outside corners unless otherwise indicated.
- B. Integral Water Repellent: Provide units made with integral water repellent for exposed units.
 - 1. Integral Water Repellent: Liquid polymeric, integral water-repellent admixture that does not reduce flexural bond strength. Units made with integral water repellent, when tested according to ASTM E 514/E 514M as a wall assembly made with mortar containing integral water-repellent manufacturer's mortar additive, with test period extended to 24 hours, shall show no visible water or leaks on the back of test specimen.
 - a. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
 - 1) ACM Chemistries.
 - 2) BASF Corporation; Construction Systems.
 - 3) Grace Construction Products; W.R. Grace & Co. -- Conn.
- C. Insulated CMUs: Where indicated, units shall contain rigid, specially shaped, cellular thermal insulation units complying with ASTM C 578, Type I, designed for installing in cores of masonry units.
 - 1. Basis-of-Design Product: Subject to compliance with requirements, provide Concrete Block Insulating Systems; 'Spec Surface™ HI-R-H' or comparable product by one of the following
 - a. NRG Block.
 - 2. Special shapes:
 - a. Provide closures, jamb units, headers, lintels, bond beams and other special shapes as indicated.

- b. Provide standard manufactured sizes or cut full size units for fractional course height and lengths.

D. CMUs: ASTM C 90.

- 1. Unit Compressive Strength: Provide units with minimum average net-area compressive strength of 2150 psi (14.8 MPa).
- 2. Density Classification: Normal weight.
- 3. Size (Width): Manufactured to dimensions 3/8 inch (10 mm) less-than-nominal dimensions.

E. Concrete Building Brick: ASTM C 55.

- 1. Unit Compressive Strength: Provide units with minimum average net-area compressive strength of 3750 psi (25.86 MPa).
- 2. Density Classification: Normal weight.
- 3. Size (Actual Dimensions): 3-5/8 inches (92 mm) wide by 3-5/8 inches (92 mm) high by 7-5/8 inches (194 mm) long.

2.4 LINTELS

- A. Masonry Lintels: Prefabricated or built-in-place masonry lintels made from bond beam CMUs matching adjacent CMUs in color, texture, and density classification, with reinforcing bars placed as indicated and filled with coarse grout. Cure precast lintels before handling and installing. Temporarily support built-in-place lintels until cured.

2.5 MORTAR AND GROUT MATERIALS

- A. Portland Cement: ASTM C 150/C 150M, Type I or II, except Type III may be used for cold-weather construction. Provide natural color or white cement as required to produce mortar color indicated.

- 1. Alkali content shall not be more than 0.1 percent when tested according to ASTM C 114.

- B. Hydrated Lime: ASTM C 207, Type S.

- C. Portland Cement-Lime Mix: Packaged blend of portland cement and hydrated lime containing no other ingredients.

- D. Masonry Cement: Not Permitted.

- E. Mortar Cement: ASTM C 1329/C 1329M.

- 1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
 - a. Lafarge North America Inc.

- F. Aggregate for Mortar: ASTM C 144.

- 1. For mortar that is exposed to view, use washed aggregate consisting of natural sand or crushed stone.
- 2. For joints less than 1/4 inch (6 mm) thick, use aggregate graded with 100 percent passing the No. 16 (1.18-mm) sieve.

- G. Aggregate for Grout: ASTM C 404.

- H. Cold-Weather Admixture: Nonchloride, noncorrosive, accelerating admixture complying with ASTM C 494/C 494M, Type C, and recommended by manufacturer for use in masonry mortar of composition indicated.

1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
 - a. BASF Corporation; Construction Systems.
 - b. Euclid Chemical Company (The); an RPM company.
 - c. Grace Construction Products; W.R. Grace & Co. -- Conn.
- I. Water-Repellent Admixture: Liquid water-repellent mortar admixture intended for use with CMUs containing integral water repellent from same manufacturer.
 1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
 - a. ACM Chemistries.
 - b. BASF Corporation - Admixture Systems.
 - c. Grace Construction Products; W.R. Grace & Co. -- Conn.
- J. Water: Potable.

2.6 REINFORCEMENT

- A. Uncoated Steel Reinforcing Bars: ASTM A 615/A 615M or ASTM A 996/A 996M, Grade 60 (Grade 420).
- B. Reinforcing Bar Positioners: Wire units designed to fit into mortar bed joints spanning masonry unit cells and to hold reinforcing bars in center of cells. Units are formed from 0.148-inch (3.77-mm) steel wire, hot-dip galvanized after fabrication. Provide units designed for number of bars indicated.
 1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
 - a. Heckmann Building Products, Inc.
 - b. Wire-Bond.
- C. Masonry-Joint Reinforcement, General: Ladder type complying with ASTM A 951/A 951M.
 1. Interior Walls: Hot-dip galvanized carbon steel.
 2. Exterior Walls: Hot-dip galvanized carbon steel.
 3. Wire Size for Side Rods: 0.148-inch (3.77-mm) diameter.
 4. Wire Size for Cross Rods: 0.148-inch (3.77-mm) diameter.
 5. Spacing of Cross Rods: Not more than 16 inches (407 mm) o.c.
 6. Provide in lengths of not less than 10 feet (3 m), with prefabricated corner and tee units.

2.7 TIES AND ANCHORS

- A. General: Ties and anchors shall extend at least 1-1/2 inches (38 mm) into masonry but with at least a 5/8-inch (16-mm) cover on outside face.
- B. Materials: Provide ties and anchors specified in this article that are made from materials that comply with the following unless otherwise indicated:
 1. Hot-Dip Galvanized, Carbon-Steel Wire: ASTM A 82/A 82M, with ASTM A 153/A 153M, Class B-2 coating.
 2. Galvanized-Steel Sheet: ASTM A 653/A 653M, Commercial Steel, G60 (Z180) zinc coating.
 3. Steel Sheet, Galvanized after Fabrication: ASTM A 1008/A 1008M, Commercial Steel, with ASTM A 153/A 153M, Class B coating.
 4. Steel Plates, Shapes, and Bars: ASTM A 36/A 36M.
- C. Partition Top Anchors: 0.105-inch- (2.66-mm-) thick metal plate with a 3/8-inch- (9.5-mm-) diameter metal rod 6 inches (152 mm) long welded to plate and with closed-end plastic tube fitted over rod that allows rod to move in and out of tube. Fabricate from steel, hot-dip galvanized after fabrication.
- D. Rigid Anchors: Fabricate from steel bars 1-1/2 inches (38 mm) wide by 1/4 inch (6.35 mm) thick by 24 inches (610 mm) long, with ends turned up 2 inches (51 mm) or with cross pins unless otherwise indicated.

1. Corrosion Protection: Hot-dip galvanized to comply with ASTM A 153/A 153M.

2.8 EMBEDDED FLASHING MATERIALS

- A. Single-Wythe CMU Flashing System: System of CMU cell flashing pans and interlocking CMU web covers made from UV-resistant, high-density Polypropylene. Cell flashing pans have integral weep spouts designed to be built into mortar bed joints and that extend into the cell to prevent clogging with mortar. Attached web covers will span from pan to pan providing protection over the web and the joints of the CMU
 1. Basis-of-Design Product: Mortar Net Solutions; 'BlockFlash'.
- B. Formed Sheet Metal:
 1. Stainless Steel Sheet: ASTM A240/A240M, Type 304, dead soft, fully annealed; with smooth, flat surface.
 - a. Finish: ASTM A480/A480M, No. 2B (bright, cold rolled).
- C. Adhesives, Primers, and Seam Tapes for Flashings: Flashing manufacturer's standard products or products recommended by flashing manufacturer for bonding flashing sheets to each other and to substrates.

2.9 MISCELLANEOUS MASONRY ACCESSORIES

- A. Preformed Control-Joint Gaskets: Made from PVC, complying with ASTM D 2287, Type PVC-65406 and designed to fit standard sash block and to maintain lateral stability in masonry wall; size and configuration as indicated.
- B. Bond-Breaker Strips: Asphalt-saturated felt complying with ASTM D 226/D 226M, Type I (No. 15 asphalt felt).

2.10 MORTAR AND GROUT MIXES

- A. General: Do not use admixtures, including pigments, air-entraining agents, accelerators, retarders, water-repellent agents, antifreeze compounds, or other admixtures unless otherwise indicated.
 1. Do not use calcium chloride in mortar or grout.
 2. Use portland cement-lime mortar unless otherwise indicated.
 3. Add cold-weather admixture (if used) at same rate for all mortar that will be exposed to view, regardless of weather conditions, to ensure that mortar color is consistent.
- B. Preblended, Dry Mortar Mix: Furnish dry mortar ingredients in form of a preblended mix. Measure quantities by weight to ensure accurate proportions, and thoroughly blend ingredients before delivering to Project site.
- C. Mortar for Unit Masonry: Comply with ASTM C 270, Proportion Specification. Provide the following types of mortar for applications stated unless another type is indicated.
 1. For reinforced masonry, use Type S.
 2. For interior load-bearing walls; for interior nonload-bearing partitions; and for other applications where another type is not indicated, use Type N.
- D. Grout for Unit Masonry: Comply with ASTM C 476.
 1. Use grout of type indicated or, if not otherwise indicated, of type (fine or coarse) that will comply with TMS 602/ACI 530.1/ASCE 6 for dimensions of grout spaces and pour height.
 2. Proportion grout in accordance with ASTM C 476, Table 1 or paragraph 4.2.2 for specified 28-day compressive strength indicated, but not less than 2000 psi (14 MPa).

3. Provide grout with a slump of 8 to 11 inches (200 to 280 mm) as measured according to ASTM C 143/C 143M.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine conditions, with Installer present, for compliance with requirements for installation tolerances and other conditions affecting performance of the Work.
 1. For the record, prepare written report, endorsed by Installer, listing conditions detrimental to performance of the Work.
 2. Verify that foundations are within tolerances specified.
 3. Verify that reinforcing dowels are properly placed.
 4. Verify that substrates are free of substances that would impair mortar bond.
- B. Before installation, examine rough-in and built-in construction for piping systems to verify actual locations of piping.
- C. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 INSTALLATION, GENERAL

- A. Build chases and recesses to accommodate items specified in this and other Sections.
- B. Leave openings for equipment to be installed before completing masonry. After installing equipment, complete masonry to match construction immediately adjacent to opening.
- C. Use full-size units without cutting if possible. If cutting is required to provide a continuous pattern or to fit adjoining construction, cut units with motor-driven saws; provide clean, sharp, unchipped edges. Allow units to dry before laying unless wetting of units is specified. Install cut units with cut surfaces and, where possible, cut edges concealed.
- D. Pre-installed two-piece, interlocking Concrete Masonry Unit Insulating Inserts:
 1. General: Inserts shall be pre-installed by CMU manufacturer prior to delivery to jobsite.
 2. Unless otherwise indicated on Construction Documents, inserts shall be left in place when grouting.

3.3 TOLERANCES

- A. Dimensions and Locations of Elements:
 1. For dimensions in cross section or elevation, do not vary by more than plus 1/2 inch (12 mm) or minus 1/4 inch (6 mm).
 2. For location of elements in plan, do not vary from that indicated by more than plus or minus 1/2 inch (12 mm).
 3. For location of elements in elevation, do not vary from that indicated by more than plus or minus 1/4 inch (6 mm) in a story height or 1/2 inch (12 mm) total.
- B. Lines and Levels:
 1. For bed joints and top surfaces of bearing walls, do not vary from level by more than 1/4 inch in 10 feet (6 mm in 3 m), or 1/2-inch (12-mm) maximum.

2. For conspicuous horizontal lines, such as lintels, sills, parapets, and reveals, do not vary from level by more than 1/8 inch in 10 feet (3 mm in 3 m), 1/4 inch in 20 feet (6 mm in 6 m), or 1/2-inch (12-mm) maximum.
3. For vertical lines and surfaces do not vary from plumb by more than 1/4 inch in 10 feet (6 mm in 3 m), 3/8 inch in 20 feet (9 mm in 6 m), or 1/2-inch (12-mm) maximum.
4. For conspicuous vertical lines, such as external corners, door jambs, reveals, and expansion and control joints, do not vary from plumb by more than 1/8 inch in 10 feet (3 mm in 3 m), 1/4 inch in 20 feet (6 mm in 6 m), or 1/2-inch (12-mm) maximum.
5. For lines and surfaces, do not vary from straight by more than 1/4 inch in 10 feet (6 mm in 3 m), 3/8 inch in 20 feet (9 mm in 6 m), or 1/2-inch (12-mm) maximum.
6. For vertical alignment of exposed head joints, do not vary from plumb by more than 1/4 inch in 10 feet (6 mm in 3 m), or 1/2-inch (12-mm) maximum.
7. For faces of adjacent exposed masonry units, do not vary from flush alignment by more than 1/16 inch (1.5 mm).

C. Joints:

1. For bed joints, do not vary from thickness indicated by more than plus or minus 1/8 inch (3 mm), with a maximum thickness limited to 1/2 inch (12 mm).
2. For exposed bed joints, do not vary from bed-joint thickness of adjacent courses by more than 1/8 inch (3 mm).
3. For head and collar joints, do not vary from thickness indicated by more than plus 3/8 inch (9 mm) or minus 1/4 inch (6 mm).
4. For exposed head joints, do not vary from thickness indicated by more than plus or minus 1/8 inch (3 mm).

3.4 LAYING MASONRY WALLS

- A. Lay out walls in advance for accurate spacing of surface bond patterns with uniform joint thicknesses and for accurate location of openings, movement-type joints, returns, and offsets. Avoid using less-than-half-size units, particularly at corners, jambs, and, where possible, at other locations.
- B. Bond Pattern for Exposed Masonry: Unless otherwise indicated, lay exposed masonry in running bond; do not use units with less-than-nominal 4-inch (100-mm) horizontal face dimensions at corners or jambs.
- C. Stopping and Resuming Work: Stop work by stepping back units in each course from those in course below; do not tooth. When resuming work, clean masonry surfaces that are to receive mortar, remove loose masonry units and mortar, and wet brick if required before laying fresh masonry.
- D. Built-in Work: As construction progresses, build in items specified in this and other Sections. Fill in solidly with masonry around built-in items.
- E. Where built-in items are to be embedded in cores of hollow masonry units, place a layer of metal lath, wire mesh, or plastic mesh in the joint below, and rod mortar or grout into core.
- F. Fill cores in hollow CMUs with grout 24 inches (600 mm) under bearing plates, beams, lintels, posts, and similar items unless otherwise indicated.
- G. Build nonload-bearing interior partitions full height of story to underside of solid floor or roof structure above unless otherwise indicated.
 1. Install compressible filler in joint between top of partition and underside of structure above.
 2. Fasten partition top anchors to structure above and build into top of partition. Grout cells of CMUs solidly around plastic tubes of anchors and push tubes down into grout to provide 1/2-inch (13-mm) clearance between end of anchor rod and end of tube. Space anchors 48 inches (1200 mm) o.c. unless otherwise indicated.
 3. Wedge nonload-bearing partitions against structure above with small pieces of tile, slate, or metal. Fill joint with mortar after dead-load deflection of structure above approaches final position.

4. At fire-rated partitions, treat joint between top of partition and underside of structure above to comply with Section 078443 "Joint Firestopping."

3.5 MORTAR BEDDING AND JOINTING

- A. Lay hollow CMUs as follows:
 1. Bed face shells in mortar and make head joints of depth equal to bed joints.
 2. Bed webs in mortar in all courses of piers, columns, and pilasters.
 3. Bed webs in mortar in grouted masonry, including starting course on footings.
 4. Fully bed entire units, including areas under cells, at starting course on footings where cells are not grouted.
- B. Lay solid CMUs with completely filled bed and head joints; butter ends with sufficient mortar to fill head joints and shove into place. Do not deeply furrow bed joints or slush head joints.
- C. Set cast-stone trim units in full bed of mortar with full vertical joints. Fill dowel, anchor, and similar holes.
 1. Clean soiled surfaces with fiber brush and soap powder and rinse thoroughly with clear water.
 2. Wet joint surfaces thoroughly before applying mortar.
 3. Rake out mortar joints for pointing with sealant.
- D. Rake out mortar joints at pre-faced CMUs to a uniform depth of 1/4 inch (6 mm) and point with epoxy mortar to comply with epoxy-mortar manufacturer's written instructions.
- E. Tool exposed joints slightly concave when thumbprint hard, using a jointer larger than joint thickness unless otherwise indicated.
- F. Cut joints flush for masonry walls to receive plaster or other direct-applied finishes (other than paint) unless otherwise indicated.
- G. Cut joints flush where indicated to receive waterproofing unless otherwise indicated.

3.6 MASONRY-JOINT REINFORCEMENT

- A. General: Install entire length of longitudinal side rods in mortar with a minimum cover of 5/8 inch (16 mm) on exterior side of walls, 1/2 inch (13 mm) elsewhere. Lap reinforcement a minimum of 6 inches (150 mm).
 1. Space reinforcement not more than 16 inches (406 mm) o.c.
 2. Space reinforcement not more than 8 inches (203 mm) o.c. in foundation walls and parapet walls.
- B. Interrupt joint reinforcement at control and expansion joints unless otherwise indicated.
- C. Provide continuity at corners by using prefabricated L-shaped units.

3.7 CONTROL AND EXPANSION JOINTS

- A. General: Install control- and expansion-joint materials in unit masonry as masonry progresses. Do not allow materials to span control and expansion joints without provision to allow for in-plane wall or partition movement.
- B. Form control joints in concrete masonry as follows:
 1. Install preformed control-joint gaskets designed to fit standard sash block.

3.8 LINTELS

- A. Provide masonry lintels where shown and where openings of more than 12 inches (305 mm) for brick-size units and 24 inches (610 mm) for block-size units are shown without structural steel or other supporting lintels.

3.9 FLASHING

- A. General: Install embedded flashing at ledges and other obstructions to downward flow of water in wall where indicated.
- B. Install flashing as follows unless otherwise indicated:
 - 1. Prepare masonry surfaces so they are smooth and free from projections that could puncture flashing. Where flashing is within mortar joint, place through-wall flashing on sloping bed of mortar and cover with mortar. Before covering with mortar, seal penetrations in flashing with adhesive, sealant, or tape as recommended by flashing manufacturer.
- C. Install single-wythe CMU flashing system in bed joints of CMU walls where indicated to comply with manufacturer's written instructions. Install CMU cell pans with upturned edges located below face shells and webs of CMUs above and with weep spouts aligned with face of wall. Attached web covers will span from pan to pan providing protection over the web and the joints of the CMU.

3.10 REINFORCED UNIT MASONRY INSTALLATION

- A. Placing Reinforcement: Comply with requirements in TMS 602/ACI 530.1/ASCE 6.
- B. Grouting: Do not place grout until entire height of masonry to be grouted has attained enough strength to resist grout pressure.
 - 1. Comply with requirements in TMS 602/ACI 530.1/ASCE 6 for cleanouts and for grout placement, including minimum grout space and maximum pour height.
 - 2. Limit height of vertical grout pours to not more than 60 inches (1520 mm).

3.11 FIELD QUALITY CONTROL

- A. Testing and Inspecting: Owner will engage special inspectors to perform tests and inspections and prepare reports. Allow inspectors access to scaffolding and work areas as needed to perform tests and inspections. Retesting of materials that fail to comply with specified requirements shall be done at Contractor's expense.
- B. Inspections: Refer to Specification Section 014533.

3.12 REPAIRING, POINTING, AND CLEANING

- A. Remove and replace masonry units that are loose, chipped, broken, stained, or otherwise damaged or that do not match adjoining units. Install new units to match adjoining units; install in fresh mortar, pointed to eliminate evidence of replacement.
- B. Pointing: During the tooling of joints, enlarge voids and holes, except weep holes, and completely fill with mortar. Point up joints, including corners, openings, and adjacent construction, to provide a neat, uniform appearance. Prepare joints for sealant application, where indicated.

- C. In-Progress Cleaning: Clean unit masonry as work progresses by dry brushing to remove mortar fins and smears before tooling joints.
- D. Final Cleaning: After mortar is thoroughly set and cured, clean exposed masonry as follows:
 - 1. Remove large mortar particles by hand with wooden paddles and nonmetallic scrape hoes or chisels.
 - 2. Test cleaning methods on sample wall panel; leave one-half of panel uncleaned for comparison purposes. Obtain Architect's approval of sample cleaning before proceeding with cleaning of masonry.
 - 3. Protect adjacent stone and nonmasonry surfaces from contact with cleaner by covering them with liquid strippable masking agent or polyethylene film and waterproof masking tape.
 - 4. Wet wall surfaces with water before applying cleaners; remove cleaners promptly by rinsing surfaces thoroughly with clear water.
 - 5. Clean concrete masonry by applicable cleaning methods indicated in NCMA TEK 8-4A.

3.13 MASONRY WASTE DISPOSAL

- A. Salvageable Materials: Unless otherwise indicated, excess masonry materials are Contractor's property. At completion of unit masonry work, remove from Project site.
- B. Masonry Waste Recycling: Return broken CMUs to manufacturer for recycling.

END OF SECTION 042200

SECTION 047200 - CAST STONE MASONRY

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Special Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. Section Includes:
 - 1. Cast-stone trim including the following:
 - a. Window sills.
- B. Related Sections:
 - 1. Section 042000 "Unit Masonry" for installing cast-stone units in unit masonry.

1.3 PERFORMANCE REQUIREMENTS

- A. General Performance: Design cast stone anchors and anchoring systems according to ASTM C 1242.

1.4 ACTION SUBMITTALS

- A. Product Data: For each type of product.
 - 1. For cast-stone units, include construction details, material descriptions, dimensions of individual components and profiles, and finishes.
- B. Shop Drawings: Show fabrication and installation details for cast-stone units. Include dimensions, details of reinforcement and anchorages if any, and indication of finished faces.
- C. Samples for Initial Selection: For colored mortar.
- D. Samples for Verification:
 - 1. For each color and texture of cast stone required, 10 inches (250 mm) square in size.
 - 2. For colored mortar, make Samples using same sand and mortar ingredients to be used on Project.

1.5 INFORMATIONAL SUBMITTALS

- A. Qualification Data: For manufacturer and testing agency.

1. Include copies of material test reports for completed projects, indicating compliance of cast stone with ASTM C 1364.

- B. Material Test Reports: For each mix required to produce cast stone, based on testing according to ASTM C 1364, including test for resistance to freezing and thawing.

1. Provide test reports based on testing within previous two years.

1.6 QUALITY ASSURANCE

- A. Manufacturer Qualifications: A qualified manufacturer of cast-stone units similar to those indicated for this Project, that has sufficient production capacity to manufacture required units, and is a plant certified by the Cast Stone Institute.
- B. Installer's Qualifications: All cast stone work shall be installed by a firm normally in business of installing work of the type indicated for a minimum of ten (10) years.
- C. Testing Agency Qualifications: Qualified according to ASTM E 329 for testing indicated.

1.7 DELIVERY, STORAGE, AND HANDLING

- A. Coordinate delivery of cast stone with unit masonry work to avoid delaying the Work.
- B. Pack, handle, and ship cast-stone units in suitable packs or pallets.
 1. Lift with wide-belt slings; do not use wire rope or ropes that might cause staining. Move cast-stone units if required, using dollies with wood supports.
 2. Store cast-stone units on wood skids or pallets with nonstaining, waterproof covers, securely tied. Arrange to distribute weight evenly and to prevent damage to units. Ventilate under covers to prevent condensation.
- C. Store cementitious materials on elevated platforms, under cover, and in a dry location. Do not use cementitious materials that have become damp.
- D. Store mortar aggregates where grading and other required characteristics can be maintained and contamination can be avoided.

1.8 PROJECT CONDITIONS

- A. Cold-Weather Requirements: Do not use frozen materials or materials mixed or coated with ice or frost. Do not build on frozen substrates. Comply with cold-weather construction requirements in TMS 602/ACI 530.1/ASCE 6.
 1. Cold-Weather Cleaning: Use liquid cleaning methods only when air temperature is 40 deg F (4 deg C) and above and will remain so until cast stone has dried, but no fewer than seven days after completing cleaning.
- B. Hot-Weather Requirements: Comply with hot-weather construction requirements in TMS 602/ACI 530.1/ASCE 6.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

- A. Source Limitations for Cast Stone: Obtain cast-stone units from single source from single manufacturer.
- B. Source Limitations for Mortar Materials: Obtain mortar ingredients of a uniform quality, including color, from one manufacturer for each cementitious component and from one source or producer for each aggregate.

2.2 CAST-STONE MATERIALS

- A. General: Comply with ASTM C 1364.
- B. Portland Cement: ASTM C 150/C 150M, Type I or Type III, containing not more than 0.60 percent total alkali when tested according to ASTM C 114. Provide natural color or white cement as required to produce cast-stone color indicated.
- C. Coarse Aggregates: Granite, quartz, or limestone complying with ASTM C 33/C 33M; gradation and colors as needed to produce required cast-stone textures and colors.
- D. Fine Aggregates: Natural sand or crushed stone complying with ASTM C 33/C 33M, gradation and colors as needed to produce required cast-stone textures and colors.
- E. Color Pigment: ASTM C 979/C 979M, synthetic mineral-oxide pigments or colored water-reducing admixtures; color stable, free of carbon black, nonfading, and resistant to lime and other alkalis.
- F. Admixtures: Use only admixtures specified or approved in writing by Architect.
 - 1. Do not use admixtures that contain more than 0.1 percent water-soluble chloride ions by mass of cementitious materials. Do not use admixtures containing calcium chloride.
 - 2. Use only admixtures that are certified by manufacturer to be compatible with cement and other admixtures used.
 - 3. Air-Entraining Admixture: ASTM C 260/C 260M. Add to mixes for units exposed to the exterior at manufacturer's prescribed rate to result in an air content of 4 to 6 percent, except do not add to zero-slump concrete mixes.
 - 4. Water-Reducing Admixture: ASTM C 494/C 494M, Type A.
 - 5. Water-Reducing, Retarding Admixture: ASTM C 494/C 494M, Type D.
 - 6. Water-Reducing, Accelerating Admixture: ASTM C 494/C 494M, Type E.
- G. Reinforcement: Deformed steel bars complying with ASTM A 615/A 615M, Grade 60 (Grade 420). Use galvanized or epoxy-coated reinforcement when covered with less than 1-1/2 inches (38 mm) of cast-stone material.
 - 1. Epoxy Coating: ASTM A 775/A 775M.
 - 2. Galvanized Coating: ASTM A 767/A 767M.

2.3 CAST-STONE UNITS

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

1. Any current producer member of the Cast Stone Institute.
 - B. Cast-Stone Units: Comply with ASTM C 1364.
 1. Units shall be manufactured using the wet-cast method.
 2. Units shall be resistant to freezing and thawing as determined by laboratory testing according to ASTM C 666/C 666M, Procedure A, as modified by ASTM C 1364.
 - C. Fabricate units with sharp arris and accurately reproduced details, with indicated texture on all exposed surfaces unless otherwise indicated.
 1. Slope exposed horizontal surfaces 1:12 to drain unless otherwise indicated.
 2. Provide raised fillets at backs of sills and at ends indicated to be built into jambs.
 3. Provide drips on projecting elements unless otherwise indicated.
 - D. Fabrication Tolerances:
 1. Variation in Cross Section: Do not vary from indicated dimensions by more than 1/8 inch (3 mm).
 2. Variation in Length: Do not vary from indicated dimensions by more than 1/360 of the length of unit or 1/8 inch (3 mm), whichever is greater, but in no case by more than 1/4 inch (6 mm).
 - a. Warp, Bow, and Twist: Not to exceed 1/360 of the length of unit or 1/8 inch (3 mm), whichever is greater.
 - b. Location of Grooves, False Joints, Holes, Anchorages, and Similar Features: Do not vary from indicated position by more than 1/8 inch (3 mm) on formed surfaces of units and 3/8 inch (10 mm) on unformed surfaces.
 - E. Cure Units as Follows:
 1. Cure units in enclosed, moist curing room at 95 to 100 percent relative humidity and temperature of 100 deg F (38 deg C) for 12 hours or 70 deg F (21 deg C) for 16 hours.
 2. Keep units damp and continue curing to comply with one of the following:
 - a. No fewer than five days at mean daily temperature of 70 deg F (21 deg C) or above.
 - b. No fewer than six days at mean daily temperature of 60 deg F (16 deg C) or above.
 - F. Acid etch units after curing to remove cement film from surfaces to be exposed to view.
 - G. Colors and Textures: As selected by Architect from manufacturer's full range.
- 2.4 MORTAR MATERIALS
- A. Provide mortar materials that comply with Section 042000 "Unit Masonry."
 - B. Portland Cement: ASTM C 150/C 150M, Type I or II, except Type III may be used for cold- weather construction. Provide natural color or white cement as required to produce mortar color indicated.
 - C. Hydrated Lime: ASTM C 207, Type S.
 - D. Portland Cement-Lime Mix: Packaged blend of portland cement and hydrated lime containing no other ingredients.
 - E. Aggregate for Mortar: ASTM C 144.

1. For mortar that is exposed to view, use washed aggregate consisting of natural sand or crushed stone.
2. For joints less than 1/4 inch (6 mm) thick, use aggregate graded with 100 percent passing the No. 16 (1.18-mm) sieve.

F. Water: Potable.

2.5 ACCESSORIES

- A. Anchors: Type and size indicated, fabricated from Type 304 stainless steel complying with ASTM A 240/A 240M, ASTM A 276, or ASTM A 666.
- B. Dowels: 1/2-inch- (12-mm-) diameter round bars, fabricated from Type 304 stainless steel complying with ASTM A 240/A 240M, ASTM A 276, or ASTM A 666.
- C. Proprietary Acidic Cleaner: Manufacturer's standard-strength cleaner designed for removing mortar/grout stains, efflorescence, and other new construction stains from new masonry without discoloring or damaging masonry surfaces. Use product expressly approved for intended use by cast-stone manufacturer and expressly approved by cleaner manufacturer for use on cast stone and adjacent masonry materials.

2.6 MORTAR MIXES

- A. Comply with requirements in Section 042000 "Unit Masonry" for mortar mixes.
- B. Do not use admixtures including pigments, air-entraining agents, accelerators, retarders, water- repellent agents, antifreeze compounds, or other admixtures unless otherwise indicated.
 1. Do not use calcium chloride in mortar or grout.
 2. Use portland cement-lime mortar unless otherwise indicated.
- C. Comply with ASTM C 270, Proportion Specification.
 1. For setting mortar, use Type N.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine substrates and conditions, with Installer present, for compliance with requirements for installation tolerances and other conditions affecting performance of the Work.
- B. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 SETTING CAST STONE IN MORTAR

- A. Set cast stone as indicated on Drawings. Set units accurately in locations indicated, with edges and faces aligned according to established relationships and indicated tolerances.

1. Install anchors, supports, fasteners, and other attachments indicated or necessary to secure units in place.
 2. Coordinate installation of cast stone with installation of flashing specified in other Sections.
- B. Wet joint surfaces thoroughly before applying mortar or setting in mortar.
- C. Set units in full bed of mortar with full head joints unless otherwise indicated.
1. Build anchors and ties into mortar joints as units are set.
 2. Fill dowel holes and anchor slots with mortar.
 3. Fill collar joints solid as units are set.
 4. Build concealed flashing into mortar joints as units are set.
 5. Keep head joints in copings and between other units with exposed horizontal surfaces open to receive sealant.
- D. Tool exposed joints slightly concave when thumbprint hard. Use a smooth plastic jointer larger than joint thickness.
- E. Provide sealant joints at head joints of copings and other horizontal surfaces; at expansion, control, and pressure-relieving joints; and at locations indicated.
1. Keep joints free of mortar and other rigid materials.
 2. Build in compressible foam-plastic joint fillers where indicated.
 3. Form joint of width to match existing, but not less than 3/8 inch (10 mm).
 4. Prime cast-stone surfaces to receive sealant and install compressible backer rod in joints before applying sealant unless otherwise indicated.
 5. Prepare and apply sealant of type and at locations indicated to comply with applicable requirements in Section 079200 "Joint Sealants."

3.3 INSTALLATION TOLERANCES

- A. Variation from Plumb: Do not exceed 1/8 inch in 10 feet (3 mm in 3 m), 1/4 inch in 20 feet (6 mm in 6 m), or 1/2 inch (12 mm) maximum.
- B. Variation from Level: Do not exceed 1/8 inch in 10 feet (3 mm in 3 m), 1/4 inch in 20 feet (6 mm in 6 m), or 1/2 inch (12 mm) maximum.
- C. Variation in Joint Width: Do not vary joint thickness more than 1/8 inch in 36 inches (3 mm in 900 mm) or one-fourth of nominal joint width, whichever is less.
- D. Variation in Plane between Adjacent Surfaces (Lipping): Do not vary from flush alignment with adjacent units or adjacent surfaces indicated to be flush with units by more than 1/16 inch (1.5 mm), except where variation is due to warpage of units within tolerances specified.

3.4 ADJUSTING AND CLEANING

- A. Remove and replace stained and otherwise damaged units and units not matching approved Samples. Cast stone may be repaired if methods and results are approved by Architect.
- B. Replace units in a manner that results in cast stone matching approved Samples, complying with other requirements, and showing no evidence of replacement.
- C. In-Progress Cleaning: Clean cast stone as work progresses.

1. Remove mortar fins and smears before tooling joints.
2. Remove excess sealant immediately, including spills, smears, and spatter.

D. Final Cleaning: After mortar is thoroughly set and cured, clean exposed cast stone as follows:

1. Remove large mortar particles by hand with wooden paddles and nonmetallic scrape hoes or chisels.
2. Test cleaning methods on sample; leave one sample uncleaned for comparison purposes. Obtain Architect's approval of sample cleaning before proceeding with cleaning of cast stone.
3. Wet surfaces with water before applying cleaners; remove cleaners promptly by rinsing thoroughly with clear water.
4. Clean cast stone with proprietary acidic cleaner applied according to manufacturer's written instructions.

END OF SECTION 047200

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SECTION 051200 - STRUCTURAL STEEL

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. Section 052100: Steel Joist Framing.
- C. Section 053000: Metal Deck

1.2 DESCRIPTION OF WORK

- A. This section includes structural steel, embedded plates, loose lintels and miscellaneous framing supports.

1.3 QUALITY ASSURANCE

- A. Comply with latest editions of:
 - 1. American Institute of Steel Construction (AISC), "Manual of Steel Construction," including:
 - ANSI/AISC 360, "Specification for Structural Steel Buildings."
 - AISC 303, "Code of Standard Practice for Steel Buildings and Bridges."
 - 2. American Welding Society, Inc. (AWS)
 - a. AWS D1.1 "Structural Welding Code - Steel."
 - b. AWS C5.4 "Recommended Practices for Stud Welding."
 - 3. American Hot-Dip Galvanizers Association, Inc.; Zinc Institute Inc.
 - a. "Inspection Manual for Hot-Dip Galvanized Products."
 - 4. Steel Structures Painting Council (SSPC)
 - a. "Surface Preparation Specifications."
- B. Qualifications for Welding Work:
 - 1. Qualify welding processes and welding operators in accordance with AWS standards.
 - 2. Provide one of the following certifications for welders to be employed in work.
 - a. Certification of satisfactorily passing AWS qualification tests within previous 12 months to perform type of welding in work.
 - b. Work record signed by supervisor showing regular employment within previous 12 months to perform type of welding in work.
- C. Qualifications for Fabricator, Detailer, and Erector:
 - 1. Fabricator, Detailer, and Erector of structural steel shall have minimum 3 years experience in fabricating, detailing, and erecting structural steel.
 - a. Erector Qualifications: Erector shall be AISC Certified Erector, Category CSE.
 - b. Fabricator Qualifications: Fabricator shall be AISC Certified Fabricator, Category STD.
 - c. AISC Certification for Fabricators and Erectors may be waived at the discretion of Owner, Architect, and Engineer provided acceptable written quality assurance and quality control plan is submitted.

2. Submit written description of ability.
3. At completion of fabrication, Fabricator shall submit Certificate of Compliance to Special Inspector and Code Enforcement Official stating work was performed in accordance with approved Construction Documents in accordance with Chapter 17 of the *International Building Code (IBC)* as referenced by the *New York State Uniform Code*.

1.4 SPECIAL INSPECTIONS

- A. Refer to Specification Section 014533 and Schedule of Special Inspections.

1.5 MATERIAL EVALUATION/QUALITY CONTROL

- A. Contractor shall employ testing laboratory acceptable to Engineer and Architect to perform material evaluation tests.
- B. Submit testing service qualifications demonstrating experience with similar types of projects.
- C. The Registered Design Professionals (RDPs) for Structural Engineering and Architecture will visit construction site at appropriate intervals to determine if work is in general conformance with Contract Documents and specifications. Notify RDPs 48 hours before anticipated time of completion for a given section of work so they may determine if site observations are required. If site observations are required, do not conceal framing until RDPs have had opportunity to make observations.

1.6 SUBMITTALS

- A. General: Review of submittals will be for general conformance only. Compliance with requirements for materials, fabrication, erection, and dimensioning of structural steel shall be Contractor's responsibility. Resubmitted shop drawings shall have revisions identified and dated.
- B. Shop Drawings: Submit detailed drawings showing:
 1. Submit Shop Drawings showing details of each individual steel shipping piece.
 2. Submit Erection Drawings showing location and attachment of individual steel shipping pieces. Including field installation details in Erection Drawings.
 3. Reference Contract Drawing number and addendum number in each shop and Erection drawing.
 4. Shop and Erection drawings shall show:
 - a. Details including cuts, copes, camber, connections, holes, bolts, and other pertinent information.
 - b. Connection design loads.
 - c. Material, including ASTM designations and grades or manufacturer's data as appropriate.
 - d. Welds with size, length, and type.
 - e. Anchor rod locations.
 - f. Location of shop-welded masonry anchors and weldable reinforcement. Coordinate with Division 4 and Masonry Contractor.
 5. Shop and Erection drawings shall be checked by detailer and noted as checked in drawings before submitting. Failure to submit checked Shop and Erection drawings will be cause for their return without review. If drawings are not prepared by detailer under direct control of Fabricator, Fabricator shall stamp each drawing and initial or sign stamp to certify review and approval of drawings and conformance with Fabricator's shop practice and capability.
- C. Material Data: Submit to Special Inspector and Engineer laboratory test reports and other data as required to show compliance with specifications. Submit producer's or manufacturer's specifications and installation instructions for the following products:
 1. Structural steel, including certified copies of mill reports covering chemical and physical properties.
 2. High-strength bolts, including nuts and washers.

3. Unfinished bolts and nuts.
 4. Structural steel primer paint.
 5. Welding electrodes.
 6. Post-installed anchors (expansion, sleeve, or chemical adhesive) if used.
- D. Bolt Certification: Submit to Special Inspector and Engineer certifications that bolts, nuts, and washers furnished comply with specifications. Submit manufacturer's inspection certificates for mill tests. For fasteners to be accepted, lot numbers on kegs, boxes, or bags must correlate with lot numbers shown in accepted test certificates and identification numbers in mill test reports. Manufacturer's symbol and grade markings must appear on bolts and nuts.
- E. Field Modifications: Submit drawings showing field modifications required to conform to actual field conditions or as required to correct errors in shop drawings, fabrication, or erection.
- F. Erector's Welding Procedure Specifications: Submit welding procedure specifications for joint types detailed for field welding.

1.7 PRODUCT HANDLING

- A. Store material in horizontal position on supports above ground.
- B. Protect from weather, and keep free of dirt and debris.
- C. Handle material carefully so it is not bent or marred.
- D. Store bolted fastener components in closed containers protected from moisture and contamination. Remove from protective storage containers only number of fasteners required for one shift. Return fasteners not installed at end of work day to protective storage.
- E. Repair or replace damaged materials. Do not incorporate in work fastener components that accumulate rust or dirt.

1.8 WORKMANSHIP

- A. Contractor shall be responsible for correction of work not conforming to specified requirements. Correct deficient work as directed by Engineer.
- B. Remove work found to be defective. Replace with new acceptable work.

PART 2 - PRODUCTS

2.1 MATERIALS

- A. Materials shall be new and free from rust.
- B. Rolled-Steel Plates and Bars: ASTM A 36 or ASTM A 572, Grade 50. Provide ASTM A 572, Grade 50 where indicated in the drawings.
- C. Rolled-Steel Angles, C, and MC Shapes: ASTM A 36 or ASTM A 572, Grade 50. Provide ASTM A 572, Grade 50 where indicated in the drawings.
- D. Hollow Structural Sections (HSS): ASTM A 500, Grade B or C.
- E. Unfinished Bolts, Nuts, and Washers: ASTM A 307, Grade A.
- F. High-Strength Bolts: ASTM F 3125, Grade A325 or Grade A490, Type 1, plain.

- G. Anchor Rods: ASTM F 1554, Grade 36 or Grade 55 with Supplement S1, unless otherwise indicated in Drawings.
- H. Threaded Rods: ASTM A 36 unless otherwise indicated in Drawings.
- I. Nuts: ASTM A 563. Grade and finish to match bolt or rod type.
- J. Washers: ASTM F 436 (ASTM F 844 for ASTM A 307 bolts, A 36 rods and F 1554 Grade 36 anchor rods). Finish to match bolt or rod type.
- K. Electrodes: E70 and in accordance with AWS.
- L. Headed Stud Anchors: ASTM A 108, AWS Type B, minimum tensile strength 65 ksi, solid-fluxed and in accordance with AWS. Use arc shield (ferrule) with each anchor. Size as indicated in drawings.
- M. Steel Primer Paint: For steel scheduled to receive finish paint, use primer compatible with finish paint specified in Division 9.
- N. Hot-Dip Galvanizing: Hot-dip galvanize after fabricating in accordance with ASTM A 123. Restraighten members after galvanizing if necessary to be square and true. Items to be hot-dip galvanized are identified in drawings.
- O. Cold-Galvanizing Compound: Zinc-rich, anti-corrosion paint complying with ASTM A780. "ZRC Cold Galvanizing Compound" by ZRC Worldwide; "Roval Cold Galvanizing Compound" by Roval Corporation; or accepted equivalent. Items to be cold galvanized are identified on the drawings.
- P. Galvanizing Touch-up Compound: Zinc-rich, anti-corrosion paint complying with ASTM A780. "ZRC Galviline" by ZRC Worldwide; "Roval ZC Galvanizing Repair" by Roval Corporation; or accepted equivalent. Use for field touch-up of hot-dip galvanized surfaces.
- Q. Weldable reinforcement couplers: "S/CA – Series Bar Lock Structural Steel Connectors (Weldable Half Couplers)" by Dayton Superior; "Lenton Weldable Half Coupler C2 and C3J Mechanical Rebar Splice" by Erico.
- R. Expansion Anchors: "Kwik-Bolt 3" or "Kwik-Bolt-TZ" by Hilti; "Trubolt Wedge Anchors" by ITW Ramset/Red Head; "Power-Stud" by Powers Fasteners; "Wedge-All" by Simpson/Strong-Tie; or accepted equivalent.
- S. Sleeve Anchors: "HLC Sleeve Anchor" by Hilti; "Dynabolt Sleeve Anchor" by ITW Ramset/Red Head; "Power-Bolt" by Powers Fasteners; "Sleeve-All" by Simpson/Strong-Tie; or accepted equivalent.
- T. Screw Anchors: "Kwik HUS-EZ Screw Anchor" by Hilti; "Large Diameter Tapcon (LDT) Anchor" by ITW Ramset/Red Head; "Wedge-Bolt +" by Powers Fasteners; "Titen HD" by Simpson/Strong-Tie; or accepted equivalent.
- U. Chemical Adhesive Anchors:
 - 1. Anchors to solid concrete:
 - a. Anchors for use when base material temperature is 0°F or greater: "HIT-Ice" by Hilti; "Epcon A7" by ITW Ramset/Red Head; "AC 100 Plus" by Powers Fasteners; "AT Acrylic-Tie" by Simpson/Strong-Tie; or accepted equivalent.
 - b. Anchors for use when base material temperature is 40°F or greater; "HIT-HY 200 Safe Set System with HIT-Z Rod or Hollow Drill Bit System" or "HIT-RE 500-SD" by Hilti; "Epcon C6" by ITW Ramset/Red Head; "T308 Plus" by Powers Fasteners; "ET Epoxy-Tie" by Simpson/Strong-Tie; or accepted equivalent.
 - 2. Anchors to hollow masonry (brick or hollow CMU), grouted CMU, solid brick, or stone:
 - a. Anchors for use when base material temperature is 0°F or greater: "Epcon A7" by ITW Ramset/Red Head; "AC 100 Plus" by Powers Fasteners; "AT Acrylic-Tie" by Simpson/Strong-Tie; or accepted equivalent.

- b. Anchors for use when base material temperature is 40°F or greater: "HIT-HY 270" by Hilti; "Epcon C6" by ITW Ramset/Red Head; "T308 Plus" by Powers Fasteners; "ET Epoxy-Tie" by Simpson/Strong-Tie; or accepted equivalent.
- c. Provide manufacturer's standard screen tubes for use with anchors.

2.2 FABRICATION

- A. Fabricate structural steel in strict accordance with reviewed shop drawings and referenced standards.
- B. Fabricate and assemble structural material in shop to greatest extent possible.
- C. Fit stiffeners neatly between flanges. Where tight fits are required to transmit bearing, mill or grind ends of stiffeners for even bearing against flange.
- D. Remove extension bars or runoff plates upon completing and cooling groove welds. Grind ends of welds smooth and flush with edges of abutting parts.
- E. Provide holes for securing other work to structural steel framing. Comply with AISC Specification 360, Section M2 for surface roughness for holes.
- F. For members to be hot-dip galvanized, comply with the American Galvanizer's Association Design Guide: The Design of Products to be Hot-Dip Galvanized After Fabrication.
- G. Anchor Rods: Furnish anchor rods, leveling plate, or other devices necessary for setting anchoring rods required for securing structural steel to foundation, concrete, or masonry.
- H. Steel Wall Framing: Select members true and straight for fabrication of steel wall framing and lintels. Straighten as required to provide uniform, square, and true members in completed wall framing. Limit sweep to 1/8 inch for each 10 feet of length.
- I. Weld headed stud anchors with automatically timed, stud-welding equipment in accordance with ASW Specifications. Remove arc shields from studs after welding.

2.3 SHOP PAINTING

- A. Shop-paint structural steel work that will remain exposed to view in final work or where indicated in drawings. Do not paint members or portions of members to be concealed in final work embedded in concrete or mortar or to receive spray-on fireproofing unless noted otherwise in drawings.
 - 1. Paint roof framing, lintels in interior walls, and supports for floor slabs and precast concrete plank.
- B. Do not paint the following surfaces:
 - 1. Surfaces within 2 inches of field welds.
- C. Apply two coats of paint to surfaces that will be inaccessible after assembly or erection. Apply two coats to surfaces indicated to be cold-galvanized.
- D. For steel to be cold-galvanized or primed and finish-painted, clean steel to remove dirt, grease, rust, and loose mill scale in accordance with SSPC-SP6 "Commercial Blast Cleaning" unless recommended otherwise by paint manufacturer.
- E. For steel to be hot-dip galvanized, prepare steel by successive immersion in chemical baths of caustic cleaning, pickling, and flux.
- F. After surface preparation, immediately apply structural steel primer paint in accordance with manufacturer's instructions at rate to provide uniform dry-film thickness of 2 mils. Use painting methods that will result in full coverage of joints, corners, edges, and exposed surfaces.

CONNECTIONS

- A. Provide welded and bolted connections as indicated in drawings. Comply with AISC and AWS requirements.

PART 3 - EXECUTION

3.1 JOB CONDITIONS

- A. Examine conditions under which work shall be erected. Do not proceed until unsatisfactory conditions are corrected.

3.2 ERECTION

- A. Set structural members accurately to lines and elevations indicated. Align and adjust members before permanently fastening.
- B. Fit up connections to be field welded in compliance with AWS standard tolerances for review by the Special Inspector or Testing Agency prior to field welding.
- C. Before assembly, clean bearing surfaces and other surfaces that will be in permanent contact after assembly.
- D. Perform necessary adjustments to compensate for discrepancies in elevations and alignment. Level and plumb individual members of structure within specified tolerances.
- E. Contractor may field modify anchor rods and embedded structural supports incorrectly located or damaged after installation as indicated in Section 033000 and tested by Testing Agency. Submit documentation showing proposed field modification for review and acceptance by Engineer before beginning.
- F. Splice members only where shown or specified.
- G. Maintain work in stable condition during erection.
- H. Where weldable reinforcing bars and couplers are to be welded to structural steel members, coordinate installation of weldable reinforcement with Masonry Contractor.
- I. Install snug-tightened, pretensioned, and slip-critical bolted joints to comply with RCSC "Specification for Structural Joints Using High-Strength Bolts" and to comply with RCSC Educational Bulletin No. 4, "Recommended Erection and Field Inspection Procedures for High-Strength Bolts in Structural Steel Assemblies." Compliance with RCSC Specifications and Bulletins is mandatory for installation of all high-strength bolted connections including pretensioned or slip-critical joints.
- J. Install field connections and framing as detailed in Contract Documents and accepted shop drawings. If Contractor finds field modifications are necessary, submit documentation of proposed field modifications to Architect and Engineer for review and acceptance before beginning.
 - 1. Use of thermal cutting for field modifications is prohibited unless documented and accepted by Engineer before beginning.
 - 2. Use of thermal cutting for enlarging or cutting bolt holes in field is prohibited.

3.3 TOLERANCES

- A. Tolerances shall be within limits in AISC "Code of Standard Practice."
- B. Fabrication and mill tolerance shall be within limits in AISC "Standard Mill Practice."

3.4 TOUCH-UP PAINTING

- A. After erection is complete, touch up paint-damaged shop coats and welded areas with shop primer paint applied in accordance with manufacturer's instructions.
- B. Touch up paint damaged galvanized surfaces and welded areas with galvanizing touch-up compound or cold-galvanizing compound applied in accordance with manufacturer's instructions.
- C. Prepare surfaces of hot-dip galvanized members where the galvanization was omitted, or damaged in accordance with SSPC-SP3 "Power Tool Cleaning." Prepare field-welded galvanized members similarly.
- D. Remove weld slag before applying touch-up paint.

3.5 TEMPORARY SHORING AND BRACING

- A. Provide temporary shoring and bracing members as required with connections of sufficient strength to bear imposed loads.
- B. Remove temporary members and connections when permanent members are in place and final connections are made.
- C. Provide temporary guy lines to achieve proper alignment of structures as erection proceeds.

3.6 PROTECTION

- A. Do not use members for storage or work platforms until permanently secured.
- B. Do not exceed load capacity of members with construction loads.

3.7 WELDING TO EXISTING STEEL

- A. Clean area to be welded using mechanical grinders and solvents to remove paint, rust, and other materials.
- B. Use E7018, low-hydrogen electrodes stored in ovens as prescribed by AWS. Preheat steel to be welded and maintain temperatures as prescribed by AWS.

END OF SECTION 051200 (03/20)

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SECTION 052100 - STEEL JOIST FRAMING

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 work of this section.
- B. Section 051200: Structural Steel.
- C. Section 053000: Metal Deck.

1.2 DESCRIPTION OF WORK

- A. Extent of steel joists is shown in drawings, including basic layout and type of joists required.
- B. Special Joists where indicated in drawings consist of steel joists requiring modification by manufacturer to support non-uniform, unequal, or special loading conditions that invalidate load tables in SJI's Standard Specifications.

1.3 QUALITY ASSURANCE

- A. Codes and Standards: Comply with latest editions of:
 - 1. American Institute of Steel Construction (AISC) "Specification for Structural Steel Buildings." ("Allowable Stress Design or "Load and Resistance Factor Design".)
 - 2. Steel Joist Institute (SJI) "Standard Specifications Load Tables and Weight Tables for Steel Joists and Joist Girders."
 - 3. Steel Structures Painting Council (SSPC) "Steel Joist Shop Primer Paint."
- B. Qualifications of Manufacturer: Qualify detailing and fabrication in accordance with SJI Standards:
 - 1. Detailer and Fabricator shall have not less than 3-years of experience in detailing and fabrication of steel joists and joist girders.
 - 2. Design special joists to comply with performance requirements. Provide calculations stamped by a New York State Professional Engineer.
 - 3. Submit written description of ability.
 - 4. At completion of fabrication, Manufacturer shall submit a Certificate of Compliance to the Special Inspector and to the Code Enforcement Official stating that the work was performed in accordance with the approved Construction Documents.
- C. Qualifications for Welding Work: Qualify welding processes and welding operators in accordance with SJI Standards.
- D. Qualifications for Erector of Steel Joists: Erector shall have not less than 3-years of experience in erection of steel joists and joist girders.

1.4 SPECIAL INSPECTIONS

- A. Refer to Specification Section 014533 and Schedule of Special Inspections.

1.5 MATERIAL EVALUATION/QUALITY CONTROL

- A. Preconstruction Testing: Contractor shall employ Testing Agency acceptable to Engineer and Architect to perform material evaluation tests.
- B. Submit testing service qualifications demonstrating experience with similar projects.
- C. The Registered Design Professionals (RDPs) for Structural Engineering and Architecture will visit the construction site at appropriate intervals to determine if work is in general conformance with the Contract Documents and specifications. Notify the RDPs 48 hours before the anticipated time of completion for a given section of work so that they may determine if site observations are required. If site observations are required, do not conceal the framing until the RDPs have had an opportunity to make observations.

1.6 SUBMITTALS

- A. General: Review of submittals will be for general conformance only. Compliance with requirements for materials, fabrication, erection, and dimensions shall be Contractor's responsibility.
- B. Shop Drawings:
 - 1. Reference Contract Drawing number including addendum number in each shop drawing.
 - 2. Include layout of members, connections, jointing, accessories, type, location, spacing, bridging, paint, installation instructions, and special details.
 - 3. Provide templates or location drawings for installation of anchor bolts and metal bearing plates.
- C. Manufacturer's Data: Submit to Special Inspector and Engineer laboratory test reports and other data as required to show compliance with specifications. Submit producer's or manufacturer's specifications and installation instructions.
- D. Comprehensive engineering analysis of special joists showing superimposed loading, web configuration, calculated member stresses, and allowable member stresses. Provide calculations signed and sealed by a New York State Professional Engineer.

1.7 PERFORMANCE REQUIREMENTS

- A. Deflection: Allowable deflections 1/240 of clear span for total load; 1/360 of clear span for live load.
- B. Uplift: Anchor joists to resist uplift loading of 30 pounds per square foot. Design joists for net wind uplift as noted in drawings or minimum of 5 psf if not noted. Provide additional bottom chord bridging as required by manufacturer.

1.8 DELIVERY, STORAGE, AND HANDLING

- A. Deliver, store, and handle joists in accordance with SJI's recommendations.
- B. Protect joists from corrosion, deformation, and other damage during delivery, storage, and handling.
- C. Store members in vertical position above ground. Support from bearing points only. Do not support on bottom chord.
- D. Protect from elements and keep free from dirt and other debris.
- E. Repair or replace damaged materials.
- F. Store packaged materials in their original unbroken container.

- G. Do not store materials on structure in manner that could cause distortion or damage to supporting structure.

1.9 WORKMANSHIP

- A. Contractor shall be responsible for correction of work not conforming to specified requirements. Correct deficient work as directed by Architect.
- B. Remove work found to be defective. Replace with new acceptable work.

PART 2 - PRODUCTS

2.1 STEEL JOISTS

- A. General: Materials shall be new and free from rust.
- B. K-Series Joists: Provide joists with steel angle top and bottom chords members.
 - 1. Size: As indicated in Drawings.
 - 2. Camber: In accordance with SJI unless noted otherwise.

2.2 JOIST ACCESSORIES

- A. Steel Shapes, Plates, and Bars: ASTM A 36.
- B. Unfinished Bolts, Nuts, and Washers: ASTM A 307, Grade A.
- C. High-Strength Threaded Fasteners: ASTM A 325 or A 490, heavy hexagon structural bolts with nuts and hardened washers.
- D. Electrodes: In accordance with AWS.
- E. Bridging:
 - 1. Provide number of rows of diagonal and horizontal bridging for joists and joist girders as required for type of joist, chord size, spacing, and span required by SJI and manufacturer unless otherwise shown in drawings. Furnish additional erection bridging if required for stability.
 - 2. Bridging for roof joists shall be horizontal type except for the bays adjacent to the exterior bays which shall have diagonal bridging unless otherwise shown.
 - 3. Provide bridging anchors for runs terminating at beams, columns, or walls.
- F. Steel Primer Paint: Fabricator's standard rust-inhibitive primer.

2.3 FABRICATION

- A. General: Fabricate steel joists in accordance with SJI. Properly mark materials for field assembly.
- B. Holes in Chord Members: Provide holes in chord members where shown for securing other work to steel joists; however, deduct area of holes from area of chord when calculating strength of member.
- C. Anchorages: Furnish anchor bolts, weld plates, or other connectors required for securing members to other in-place work.

2.4 SHOP PAINTING

- A. After inspecting and before shipping, prepare surfaces by removing loose scale, rust, and other foreign materials. Preparation shall be equivalent to SSPC-SP3 "Power Tool Cleaning."
- B. Immediately after surface preparation, apply one shop coat of primer paint to steel joists and accessories by spraying, dipping, or other methods to provide continuous dry paint film thickness of not less than 1.0 mils.

PART 3 - EXECUTION

3.1 JOB CONDITIONS

- A. Examine conditions under which work shall be erected. Do not proceed until unsatisfactory conditions are corrected.

3.2 ERECTION

- A. Do not install joists until supporting construction is in place and secured.
- B. Install joists and accessories plumb, square, and true to line; securely fasten to supporting construction in accordance with SJI and joist manufacturer's written recommendations, and requirements in this Section.
 - 1. Before installation, splice joists delivered to Project site in more than one piece.
 - 2. Space, adjust, and align joists accurately in location before permanently fastening.
 - 3. Install temporary bracing and erection bridging, connections, and anchors to ensure that joists are stabilized during construction.
- C. Field weld joists to supporting steel. Coordinate welding sequence and procedure with placement of joists. Comply with AWS requirements and procedures for welding, appearance and quality of welds, and methods used in correcting welding work.
- D. Bridging: Install bridging simultaneously with joist erection before construction loads are applied. Anchor ends of bridging lines at top and bottom chords where terminating at walls or beams.
 - 1. If span of joist exceeds erection stability span indicated by SJI, install required rows of bolted diagonal bridging prior to releasing hoisting cables.
 - 2. Weld joist bridging except bridging for erection stability which shall be bolted.
- E. Secure joists resting on masonry or concrete bearing surfaces by bedding in mortar and anchoring to masonry or concrete construction as specified in SJI for type of steel joist used unless otherwise shown in drawings.
- F. Maximum sweep tolerance in inches equals length of joist in feet divided by 40.

3.3 TOUCH-UP PAINTING

- A. After installation, promptly clean, prepare, and prime or reprime field connections, rust spots, and abraded surfaces of prime-painted joists and accessories.
 - 1. Clean and prepare surfaces by hand-tool cleaning according to SSPC-SP 2, or power-tool cleaning according to SSPC-SP 3.
 - 2. Apply a compatible primer of same type as primer used on adjacent surfaces.
 - 3. Remove weld slag before applying touch-up paint.

3.4 TOLERANCES

- A. Tolerances shall be within limits of AISC "Code of Standard Practice."

3.5 PROTECTION

- A. Do not use members for storage or work platforms until permanently secured.
- B. Do not exceed load capacity of joists with construction loads.
- C. Repair or replace members damaged by shipping and handling. Fabricator's representative shall inspect damaged members and provide alternative methods of corrections.

END OF SECTION 052100

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SECTION 053000 - METAL DECK

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. Section 051200: Structural Steel.
- C. Section 052100: Steel Joist Framing.

1.2 DESCRIPTION OF WORK

- A. This section includes steel deck units for roof applications.

1.3 QUALITY ASSURANCE

- A. Codes and Standards: Comply with latest edition of:
 - 1. American Iron and Steel Institute (AISI) "Specification for the Design of Cold Formed Steel Structural Members."
 - 2. Steel Deck Institute (SDI).
 - a. "Design Manual for Composite Decks, Form Decks, and Roof Decks."
 - b. "Diaphragm Design Manual."
 - 3. American Welding Society Inc. (AWS).
 - a. AWS D1.1 "Structural Welding Code - Steel."
 - b. AWS D1.3 "Structural Welding Code - Sheet Steel."
- B. Qualifications for Welding Work
 - 1. Use qualified welding processes and welding operators in accordance with AWS standards.
 - 2. Provide one of the following certifications for welders to be employed in work.
 - a. Certification of satisfactorily passing AWS qualification tests within previous 12 months to perform type of welding in work.
 - b. Work record signed by supervisor showing regular employment within previous 12 months to perform type of welding in work.
- C. Underwriters' Label: Provide metal floor deck units listed in Underwriters' Laboratories "Fire Resistance Directory," with each deck unit bearing the UL label and marking for specific system detailed.
- D. FM Listing: Provide steel roof deck units that have been evaluated by Factory Mutual System and are listed in "Factory Mutual Approval Guide" for Class 1, fire-rated construction.

1.4 SPECIAL INSPECTIONS

- A. Refer to Specification Section 014533 and Schedule of Special Inspections.

1.5 MATERIAL EVALUATION/QUALITY CONTROL

- A. Preconstruction Testing: Contractor shall employ testing laboratory acceptable to Engineer and Architect to perform material evaluation tests.
- B. Submit testing service qualifications demonstrating experience with similar types of projects.
- C. Contractor shall secure services of company field advisor from manufacturer of powder-actuated or pneumatically driven fasteners used to anchor metal deck. Field advisor shall be certified in writing by manufacturer to be technically qualified in product installation. Personnel involved solely in sales do not qualify. Field advisor shall be present at beginning of installation of product and as required during duration of project to:
 - 1. Render technical assistance to Contractor regarding installation procedures of product to satisfy warrantee or guarantee requirements.
 - 2. Provide specialized training in use of product to Contractor's personnel.
 - 3. Verify correct fastener is being used for each structural substrate type and thickness.
 - 4. Verify proper tools and application procedures.
 - 5. Familiarize Contractor/Owner/Architect/Engineer with entire system, including inspection techniques.
 - 6. Answer questions that arise.
- D. Field advisor shall prepare a written report summarizing information listed above. Submit report to Special Inspector, Contractor, Owner, Architect, and Engineer.
- E. Contractor shall be responsible for expenses of field advisor and verifying credentials of advisor.
- F. The Registered Design Professionals (RDPs) for Structural Engineering and Architecture will visit construction site at appropriate intervals to determine if work is in general conformance with Contract Documents and specifications. Notify the RDPs 48 hours before anticipated time of completion for given section of work so that they may determine if site observations are required. If site observations are required, do not conceal metal deck or place concrete slabs until the RDPs have had opportunity to make observations.

1.6 SUBMITTALS

- A. General: Review of submittals is for general conformance only. Compliance with requirements for materials, fabricating, erection, and dimensions is Contractor's responsibility.
- B. Shop Drawings: Submit detailed drawings showing:
 - 1. Reference Contract Drawing number including addendum number in each shop drawing.
 - 2. Panel layout.
 - 3. Anchorage details showing locations and size of welds or mechanical fasteners if used.
 - 4. Each condition requiring closure panels.
 - 5. Location and attachment of accessories.
 - 6. Supplementary framing furnished and required.
 - 7. Special conditions; opening locations.
 - 8. Side-lap fastening.
 - 9. Material thickness.
 - 10. Deck finish.
 - 11. Cross-section of panel with dimensions.
 - 12. Powder-actuated corrosion resistant fasteners.
- C. Calculations: Submit calculations for powder-actuated fasteners indicating required diaphragm capacity has been provided in accordance with the Performance Requirements section of this Specification and the Drawings.

- D. Manufacturer's Data: Submit to Special Inspector and Engineer laboratory test reports and other data as required to show compliance with specifications. Submit producer's or manufacturer's specifications and installation instructions for the following products:

1. Sheet steel deck, including certified copies of mill reports covering chemical and physical properties.
2. Welding electrodes.
3. Mechanical and side-lap fasteners.

1.7 PERFORMANCE REQUIREMENTS

- A. Limit construction deflection from concentrated live load of 300 pounds distributed over 1 foot to 1/240 of the span or 3/4 inch, whichever is smaller.
- B. Limit deflection of roof deck to 1/240 of span under total dead and live load.
- C. Anchor roof deck to resist uplift loading:
1. Eave Overhangs: 45 pounds per square foot.
 2. Other Roof Areas: 30 pounds per square foot.
- D. Install and anchor deck to develop 240 pounds per linear foot of diaphragm shear resistance unless noted otherwise.

1.8 PRODUCT HANDLING

- A. Store materials in approximately horizontal position on supports above ground with one end elevated for drainage.
- B. Protect from weather, and keep free of dirt and debris.
- C. Ventilate to avoid condensation.
- D. Handle material carefully so it is not bent or marred.
- E. Replace damaged materials at no cost to Owner.

1.9 WORKMANSHIP

- A. Contractor shall be responsible for correction of work not conforming to specified requirements. Correct deficient work as directed by Architect.
- B. Remove work found to be defective. Replace with new acceptable work.

PART 2 - PRODUCTS

2.1 DECK MATERIALS

- A. Materials shall be new and free from rust.
- B. Galvanized and Painted (Shop-primed) Steel Deck: ASTM A 653, with galvanized coating Designation G 60, extra smooth, with no oil preservatives. Cleaned and phosphatized, with one coat of shop primer. Areas of metal deck to be galvanized and shop primed are indicated in the drawings. Minimum 40,000 psi yield strength.

C. Roof Deck Units:

1. Type: "B or N" by Canam, Vulcraft, Consolidated System, Inc., New Millennium, or accepted equivalent.
2. Size: As shown in drawings.
3. Finish: Galvanized unless noted otherwise in drawings.

2.2 ACCESSORIES

- A. General: Provide manufacturer's standard accessory materials for deck that comply with requirements indicated.
- B. Structural Shapes, Bars, and Plates: ASTM A 36. Refer to Section 051200.
- C. Electrodes: In accordance with AWS.
- D. Welding Washers: As required by deck manufacturer.
- E. Mechanical Fasteners: Corrosion-resistant, low-velocity, powder-actuated, or pneumatically driven carbon steel fasteners or self-tapping screws.
1. "X-ENP-19 L15" or "X-HSN-24" powder-actuated fasteners by Hilti, or accepted equivalent.
- F. Sidelap Fasteners: Corrosion-resistance, hexagonal washer head: self-tapping, carbon steel screws. No. 10 minimum diameter.
- G. Sheet Metal Accessories: ASTM A 653, SS Grade 33, commercial-quality steel sheets with G 60 galvanized coating.
1. Metal Cover Plates: Not less than thickness of deck.
 2. Roof Sump Pans: Provide 14-gauge-minimum (0.0747) thickness.
 3. Provide 20-gauge-minimum thickness for other accessories unless noted otherwise.
- H. Shop Primer Paint: For application to metal surfaces chemically cleaned and phosphate chemical treated.
1. "Valspar Low Cure Epoxy 88107-7197", "Akzo Noble 9X4444", or accepted equivalent.
 2. Comply with the adhesion performance requirements of ASTM D 3359, Methods A and B with a 5A rating.
- I. Touch-up Material:
1. Galvanizing Touch-up Compound: "ZRC Galviline" by ZRC Worldwide; "Roval ZC Galvanizing Repair" by Roval Corporation; or accepted equivalent. Use for field touch-up of galvanized sheet metal.
 2. Steel Primer Paint: Use primer compatible with finish paint specified in Division 9 for repair of painted surfaces.

2.3 FABRICATION

- A. General: Form deck units in lengths to span three or more supports.
1. Provide flush or 2-inch nested end laps for roof deck, except at joists provide 4-inch nested end laps.
 2. Use nested side laps.
 3. Prior to shipping decking to job site, manufacturer shall wire-brush, grind, clean, and paint scarred areas (weld marks on cellular deck, scratches, rust spots, etc.) on top and bottom surfaces of decking units.
 - a. Galvanized and painted steel deck shall be first touched up with galvanizing repair paint. After

- paint has cured, touch up with shop primer paint.
- b. Unrepaired scarred areas will be evaluated by Architect and may be cause for rejection of deck units.

- B. Metal Cell Closures: Fabricate metal closure strips for cell raceways and openings between decking and other construction. Form to provide tight-fitting closures at open ends of cells or flutes and sides of decking.
- C. Roof Sump Pans: Fabricate from single piece of sheet steel with level bottoms and sloping sides to direct water flow to drain. Provide sump pans of adequate size to receive roof drains and with bearing flanges not less than 3 inches wide. Recess pans not less than 1½ inches below roof deck surface unless otherwise shown or required by deck configuration. Holes for drain will be field cut by others.

PART 3 - EXECUTION

3.1 JOB CONDITIONS

- A. Examine conditions under which work shall be erected. Do not proceed until unsatisfactory conditions are corrected.

3.2 ERECTION

- A. General: Install deck and accessories in accordance with manufacturer's recommendations, and accepted shop drawings.
- B. Cut and fit units and accessories around projections through decking. Make cuts neat and square.
- C. Do not use cutting torches.
- D. Position deck on supporting steel framework and adjust to final position with ends bearing a minimum of 2 inches on supporting members and accurately aligned end to end before being permanently fastened.
- E. Do not install deck in a single span condition unless noted otherwise in Drawings. Lay out deck to provide a minimum two-span condition. Notify Engineer if single span deck is required.
- F. Do not stretch or contract side-lap interlocks.
- G. Align deck units for entire length of run of cells and with close alignment between cells at ends of abutting units.
- H. Place deck units flat and square, secured to adjacent framing without warp or deflection.
- I. Coordinate and cooperate with structural steel erector in locating deck bundles to prevent overloading of structural members.
- J. Fastening Deck Units:
 - 1. Fasten roof deck units to steel supporting members to resist forces listed in drawings or under performance requirements. Minimum fastening shall be by nominal 5/8-inch-diameter puddle welds or elongated welds of equal strength, spaced not more than 12 inches at every support and closer where indicated. In addition, secure deck to each supporting member in ribs where side laps occur.
 - 2. Comply with AWS requirements and procedures for manual shielded metal arc- welding, appearance and quality of welds, and methods used in correcting welding work.
 - a. Use welding washers where recommended by deck manufacturer.
 - 3. Mechanical fasteners may be used in lieu of welding. Locate fasteners and install in accordance with the manufacturer's accepted submittal.

4. Mechanically fasten side laps of adjacent deck units between supports at intervals not exceeding 36 inches on center using No. 10 or larger self-tapping screws unless otherwise specified by manufacturer. Button punching not permitted.
- K. Roof Sump Pans: Place over openings provided in roof decking and weld to top decking surface. Space welds not more than 12 inches on center with at least one weld at each corner.

3.3 DECK REINFORCEMENT

- A. Unless noted otherwise, reinforce roof deck as follows:
 1. For deck openings less than 15 inches wide and not supported by structural members, fabricate from minimum 18-gauge, galvanized sheet metal. Fusion-weld to bottom surface of deck and extend at least 12 inches wider and longer than opening. Weld at each corner, and provide two welds to each rib crossed. Weld edges parallel with deck at 12 inches on center.
 2. For deck openings from 15 inches to 30 inches wide and not supported by structural members, weld 2-inch x 2-inch x 1/4-inch steel angle to underside of deck at right angles to deck ribs. Extend angles three ribs beyond each side of opening and puddle weld. Reinforce side of opening parallel to ribs with 18-gauge sheet metal 12 inches wide placed on bottom surface of decking. Weld plate at each corner and at 12 inches on center along edges.
 3. For deck openings greater than 30 inches wide, provide structural steel for edge support around entire opening. Frame into adjacent structural members.
 4. For sleeved penetrations smaller than rib width, no reinforcing is required.

3.4 TOUCH-UP PAINTING

- A. After installing decking, wire-brush, clean, and paint scarred areas (scratches, weld burn marks, etc.), welds (shop and field), and rust spots on top and bottom surfaces of decking units and supporting steel members.
 1. Touch-up paint damaged galvanized surfaces and welded areas with galvanizing touch-up compound applied in accordance with manufacturer's instructions.
 2. Galvanized and painted steel deck shall be first touched up with galvanizing touch-up compound. After paint has cured, touch up with shop primer paint.

3.5 CLEANING

- A. Clean debris from metal deck prior to installing roofing materials. Remove dirt, debris, weld flux and other items not meant to remain as part of the final Work. Coordinate cleaning method with site conditions.

3.6 PROTECTION AND LOADING

- A. Do not use units for storage or for work platforms until deck is permanently secured to the supporting structure.
- B. Do not exceed load capacity of deck with construction loads. Limit temporary construction loads to 20 psf.
- C. Do not suspend mechanical, electrical, or plumbing items from roof deck. Suspend loads directly from main framing or from supplemental framing installed between main framing.
 1. Refer to mechanical, electrical, and plumbing specifications for hangers and supplemental framing required to attach these items to main framing.

3.7 TOLERANCES

- A. Maximum variation in deck unit alignment shall be 1/4 inch in 40 feet.

END OF SECTION 053000 (06/20)

SECTION 055000 - METAL FABRICATIONS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. Section Includes:
 - 1. Metal ladders.

1.3 ACTION SUBMITTALS

- A. Product Data: For each type of product.
- B. Shop Drawings: Show fabrication and installation details.

1.4 FIELD CONDITIONS

- A. Field Measurements: Verify actual locations of walls and other construction contiguous with metal fabrications by field measurements before fabrication.

PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

- A. Structural Performance of Aluminum Ladders: Aluminum ladders shall withstand the effects of loads and stresses within limits and under conditions specified in ANSI A14.3.
- B. Thermal Movements: Allow for thermal movements from ambient and surface temperature changes acting on exterior metal fabrications by preventing buckling, opening of joints, overstressing of components, failure of connections, and other detrimental effects.
 - 1. Temperature Change: 120 deg F (67 deg C), ambient; 180 deg F (100 deg C), material surfaces.

2.2 METALS

- A. Metal Surfaces, General: Provide materials with smooth, flat surfaces unless otherwise indicated. For metal fabrications exposed to view in the completed Work, provide materials without seam marks, roller marks, rolled trade names, or blemishes.
- B. Aluminum Plate and Sheet: ASTM B 209 (ASTM B 209M), Alloy 6061-T6.
- C. Aluminum Extrusions: ASTM B 221 (ASTM B 221M), Alloy 6063-T6.

2.3 FASTENERS

- A. General: Unless otherwise indicated, provide Type 304 stainless-steel fasteners for exterior use and zinc-plated fasteners with coating complying with ASTM B 633 or ASTM F 1941 (ASTM F 1941M), Class Fe/Zn 5, at exterior walls. Select fasteners for type, grade, and class required.
- B. Post-Installed Anchors: Torque-controlled expansion anchors.
 - 1. Material for Exterior Locations and Where Stainless Steel Is Indicated: Alloy Group 1 (A1) stainless-steel bolts, ASTM F 593 (ASTM F 738M), and nuts, ASTM F 594 (ASTM F 836M).

2.4 FABRICATION, GENERAL

- A. Shop Assembly: Preassemble items in the shop to greatest extent possible. Disassemble units only as necessary for shipping and handling limitations. Use connections that maintain structural value of joined pieces. Clearly mark units for reassembly and coordinated installation.
- B. Cut, drill, and punch metals cleanly and accurately. Remove burrs and ease edges to a radius of approximately 1/32 inch (1 mm) unless otherwise indicated. Remove sharp or rough areas on exposed surfaces.
- C. Form bent-metal corners to smallest radius possible without causing grain separation or otherwise impairing work.
- D. Form exposed work with accurate angles and surfaces and straight edges.
- E. Weld corners and seams continuously to comply 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. At exposed connections, finish exposed welds and surfaces smooth and blended so no roughness shows after finishing and contour of welded surface matches that of adjacent surface.
- F. Form exposed connections with hairline joints, flush and smooth, using concealed fasteners or welds where possible. Where exposed fasteners are required, use Phillips flat-head (countersunk) fasteners unless otherwise indicated. Locate joints where least conspicuous.
- G. Provide for anchorage of type indicated; coordinate with supporting structure. Space anchoring devices to secure metal fabrications rigidly in place and to support indicated loads.

2.5 METAL LADDERS

- A. General:
 - 1. Comply with ANSI A14.3.
- B. Aluminum Ladders:
 - 1. Basis-of-Design Product: Subject to compliance with requirements, provide O’Keeffe’s Inc.; ‘500 Access Ladder’ or comparable product by one of the following
 - a. Precision Ladders, LLC.

b. UPNOVR, Inc.

2. Siderails: Continuous extruded-aluminum channels or tubes, not less than 2-1/2 inches (64 mm) deep, 3/4 inch (19 mm) wide, and 1/8 inch (3.2 mm) thick.
3. Rungs: Extruded-aluminum channel, not less than 3/4 inch (19 mm) deep and not less than 1/8 inch (3.2 mm) thick, with ribbed tread surfaces.
4. Fit rungs in centerline of siderails; fasten by welding or with stainless-steel fasteners or brackets and aluminum rivets.
5. Provide minimum 72-inch- (1830-mm-) high, hinged security door with padlock hasp at foot of ladder to prevent unauthorized ladder use.

C. Ladder-Assist Post: Roof-hatch manufacturer's standard device for attachment to roof-access ladder.

1. Operation: Post locks in place on full extension; release mechanism returns post to closed position.
2. Height: **42 inches (1060 mm)** above finished roof deck.
3. Material: **Aluminum.**
4. Post: **1-1/2-inch- (38-mm-)** diameter pipe.
5. Finish: **Manufacturer's standard..**

2.6 FINISHES, GENERAL

- A. Finish metal fabrications after assembly.
- B. Finish exposed surfaces to remove tool and die marks and stretch lines, and to blend into surrounding surface.

2.7 ALUMINUM FINISHES

- A. Clear Anodic Finish: AAMA 611, Class I, AA-M12C22A41.

PART 3 - EXECUTION

3.1 INSTALLING LADDERS

- A. A. Install ladders in accordance with shop drawings and manufacturer's instructions.
- B. B. Erect ladders square and level, free from distortion or defects detrimental to performance.

END OF SECTION 055000

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SECTION 055113 - METAL PAN STAIRS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Special Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. Section Includes:
 - 1. Preassembled Service Class steel stairs with concrete-filled treads.
 - 2. Integral steel railings and guards attached to metal stairs.
 - 3. Steel handrails attached to walls and floors adjacent to metal stairs.
 - 4. Railing gates.

1.3 COORDINATION

- A. Coordinate selection of shop primers with topcoats to be applied over them. Comply with paint and coating manufacturers' written instructions to ensure that shop primers and topcoats are compatible with one another.
- B. Schedule installation of wall-mounted railings and guards so wall attachments are made only to completed walls.
 - 1. Do not support railings and guards temporarily by any means that do not satisfy structural performance requirements.

1.4 ACTION SUBMITTALS

- A. Product Data: For metal pan stairs and the following:
 - 1. Integral and wall-mounted railings and guards.
 - 2. Shop primer products.
 - 3. Handrail wall brackets.
 - 4. Metal nosings.
 - 5. Grout.
- B. Shop Drawings:
 - 1. Include plans, elevations, sections, and attachment details.
 - 2. Indicate sizes of metal sections, thickness of metals, profiles, holes, and field joints.
 - 3. Include plan at each level.
 - 4. Indicate locations of anchors, weld plates, and blocking for attachment of integral and wall-mounted handrails.
- C. Delegated Design Submittal: For stairs, integral and wall-mounted railings and guards, including analysis data signed and sealed by the qualified professional engineer responsible for their preparation.

1.5 INFORMATIONAL SUBMITTALS

- A. Qualification Data: For professional engineer's experience with providing delegated design engineering services of the kind indicated, including documentation that engineer is licensed in the state in which Project is located.
- B. Welding certificates.
- C. Paint Compatibility Certificates: From manufacturers of topcoats applied over shop primers, certifying that shop primers are compatible with topcoats.

1.6 QUALITY ASSURANCE

- A. Welding Qualifications: Qualify procedures and personnel in accordance with the following:
 - 1. AWS D1.1/D1.1M, "Structural Welding Code - Steel."
 - 2. AWS D1.3/D1.3M, "Structural Welding Code - Sheet Steel."

1.7 DELIVERY, STORAGE, AND HANDLING

- A. Store materials to permit easy access for inspection and identification.
 - 1. Keep steel members off ground and spaced by using pallets, dunnage, or other supports and spacers.
 - 2. Protect steel members and packaged materials from corrosion and deterioration.
 - 3. Do not store materials on structure in a manner that might cause distortion, damage, or overload to members or supporting structures.
 - a. Repair or replace damaged materials or structures as directed.

PART 2 - PRODUCTS

2.1 MANUFACTURER/FABRICATORS AND PRODUCTS

- A. Steel-Framed Metal Pan Stairs and Landings - Basis-of-Design Product: Subject to compliance with requirements, provide Pacific Stair Corporation; S100 Series Concrete Filled System or comparable product by one of the following:
 - 1. Alfab, Inc.; Stairco.
 - 2. American Stair Corporation.
 - 3. Duvinage, LLC; Sharon Stairs.
- B. Integral Stair Railings and Guards - Basis-of-Design Product: Subject to compliance with requirements, provide Pacific Stair Corporation; R100 Series Two-Line Railing System or comparable product by one of the following:
 - 1. Alfab, Inc.; Stairco.
 - 2. American Stair Corporation.
 - 3. Duvinage, LLC; Sharon Stairs.

2.2 PERFORMANCE REQUIREMENTS

- A. Delegated Design: Engage a qualified professional engineer, as defined in Section 013573 "Delegated Design Procedures," to design stairs, integral and wall-mounted railings and guards, including attachment to building construction.

- B. Structural Performance of Stairs: Metal stairs shall withstand the effects of gravity loads and the following loads and stresses within limits and under conditions indicated:
 - 1. Uniform Load: 100 lbf/sq. ft. (4.79 kN/sq. m).
 - 2. Concentrated Load: 300 lbf (1.33 kN) applied on an area of 4 sq. in. (2580 sq. mm).
 - 3. Uniform and concentrated loads need not be assumed to act concurrently.
 - 4. Stair Framing: Capable of withstanding stresses resulting from railing and guard loads in addition to loads specified above.
 - 5. Limit deflection of treads, platforms, and framing members to $L/360$ or 1/4 inch (6.4 mm), whichever is less.
- C. Structural Performance of Integral Stair and Wall-Mounted Railings and Guards: Railings and guards, including attachment to building construction, shall withstand the effects of gravity loads and the following loads and stresses within limits and under conditions indicated:
 - 1. Handrails and Top Rails of Guards:
 - a. Uniform load of 50 lbf/ft. (0.73 kN/m) applied in any direction.
 - b. Concentrated load of 200 lbf (0.89 kN) applied in any direction.
 - c. Uniform and concentrated loads need not be assumed to act concurrently.

2.3 METALS

- A. Metal Surfaces: Provide materials with smooth, flat surfaces unless otherwise indicated. For components exposed to view in the completed Work, provide materials without seam marks, roller marks, rolled trade names, or blemishes.
- B. Steel Plates, Shapes, and Bars: ASTM A36/A36M.
- C. Steel Tubing for Railings and Guards: ASTM A500/A500M (cold formed) or ASTM A513/A513M.
- D. Steel Pipe for Railings and Guards: ASTM A53/A53M, Type F or Type S, Grade A, Standard Weight (Schedule 40), unless another grade and weight are required by structural loads.
- E. Uncoated, Cold-Rolled Steel Sheet: ASTM A1008/A1008M, either commercial steel, Type B, or structural steel, Grade 25 (Grade 170), unless another grade is required by design loads; exposed.
- F. Uncoated, Hot-Rolled Steel Sheet: ASTM A1011/A1011M, either commercial steel, Type B, or structural steel, Grade 30 (Grade 205), unless another grade is required by design loads.

2.4 FASTENERS

- A. General: Provide zinc-plated fasteners with coating complying with ASTM B633 or ASTM F1941/F1941M, Class Fe/Zn 12 for exterior use, and Class Fe/Zn 5 where built into exterior walls.
 - 1. Select fasteners for type, grade, and class required.
- B. Fasteners for Anchoring Railings and Guards to Other Construction: Select fasteners of type, grade, and class required to produce connections suitable for anchoring railings and guards to other types of construction indicated and capable of withstanding design loads.
- C. Bolts and Nuts: Regular hexagon-head bolts, ASTM A307, Grade A; with hex nuts, ASTM A563 (ASTM A563M); and, where indicated, flat washers.
- D. Anchor Bolts: ASTM F1554, Grade 36, of dimensions indicated; with nuts, ASTM A563 (ASTM A563M); and, where indicated, flat washers.

- E. Post-Installed Anchors: Torque-controlled expansion anchors or chemical anchors capable of sustaining, without failure, a load equal to six times the load imposed when installed in unit masonry and four times the load imposed when installed in concrete, as determined by testing in accordance with ASTM E488/E488M, conducted by a qualified independent testing agency.
 - 1. Material for Interior Locations: Carbon-steel components zinc plated to comply with ASTM B633 or ASTM F1941/F1941M, Class Fe/Zn 5, unless otherwise indicated.

2.5 MISCELLANEOUS MATERIALS

- A. Handrail Wall Brackets: Cast nickel-silver, center of rail 2-1/2 inches (63.5 mm) from face of wall.
 - 1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
 - a. Blum, Julius & Co., Inc.
 - b. The Wagner Companies; R&B Wagner, Inc.
- B. Welding Electrodes: Comply with AWS requirements.
- C. Shop Primers: Provide primers that comply with Section 099123 "Interior Painting."
- D. Universal Shop Primer: Fast-curing, lead- and chromate-free, universal modified-alkyd primer complying with MPI#79 and compatible with topcoat.
- E. Nonmetallic, Shrinkage-Resistant Grout: ASTM C1107/C1107M, factory-packaged, nonmetallic aggregate grout; recommended by manufacturer for interior use; noncorrosive and nonstaining; mixed with water to consistency suitable for application and a 30-minute working time.

2.6 FABRICATION, GENERAL

- A. Provide complete stair assemblies, including metal framing, hangers, struts, integral and wall-mounted railings and guards, clips, brackets, bearing plates, and other components necessary to support and anchor stairs and platforms on supporting structure.
 - 1. Join components by welding unless otherwise indicated.
 - 2. Use connections that maintain structural value of joined pieces.
- B. Assemble stairs, railings, and guards in shop to greatest extent possible.
 - 1. Disassemble units only as necessary for shipping and handling limitations.
 - 2. Clearly mark units for reassembly and coordinated installation.
- C. Cut, drill, and punch metals cleanly and accurately.
 - 1. Remove burrs and ease edges to a radius of approximately 1/32 inch (1 mm) unless otherwise indicated.
 - 2. Remove sharp or rough areas on exposed surfaces.
- D. Form bent-metal corners to smallest radius possible without causing grain separation or otherwise impairing work.
- E. Form exposed work with accurate angles and surfaces and straight edges.
- F. Weld connections to comply 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. Weld exposed corners and seams continuously unless otherwise indicated.
5. At exposed connections, finish exposed welds to comply with NOMMA's "Voluntary Joint Finish Standards" for Finish #4 - Good quality, uniform undressed weld with minimal splatter.

G. Form exposed connections with hairline joints, flush and smooth, using concealed fasteners where possible.

1. Where exposed fasteners are required, use Phillips flat-head (countersunk) screws or bolts unless otherwise indicated.
2. Locate joints where least conspicuous.
3. Fabricate joints that will be exposed to weather in a manner to exclude water.
4. Provide weep holes where water may accumulate internally.

2.7 FABRICATION OF STEEL-FRAMED STAIRS

A. NAAMM Stair Standard: Comply with NAAMM AMP 510, "Metal Stairs Manual," for Service Class, unless more stringent requirements are indicated.

B. Stair Framing:

1. Fabricate stringers of steel channels.
 - a. Stringer Size: As indicated on Drawings.
 - b. Provide closures for exposed ends of channel stringers.
 - c. Finish: Shop primed.
2. Weld or bolt stringers to headers; weld or bolt framing members to stringers and headers. If using bolts, fabricate and join so bolts are not exposed on finished surfaces.
3. Where masonry walls support metal stairs, provide temporary supporting struts designed for erecting steel stair components before installing masonry.

C. Metal Pan Stairs: Form risers, subtread pans, and subplatforms to configurations shown from steel sheet of thickness needed to comply with performance requirements, but not less than 0.067 inch (1.7 mm).

1. Steel Sheet: Uncoated, cold-rolled steel sheet.
2. Directly weld metal pans to stringers; locate welds on top of subtreads where they will be concealed by concrete fill. Do not weld risers to stringers.
3. Shape metal pans to include nosing integral with riser.

2.8 FABRICATION OF INTEGRAL STAIR AND WALL-MOUNTED RAILINGS AND GUARDS

A. Fabricate railings and guards to comply with requirements indicated for design, dimensions, details, finish, and member sizes, including wall thickness of member, post spacings, wall bracket spacing, and anchorage, but not less than that needed to withstand indicated loads.

1. Rails and Posts: 1-5/8-inch- (41-mm-) diameter top and bottom rails and 1-1/2-inch- (38-mm-) square posts.
2. Gates: Form gates from steel tube of same size and shape as top rails. Provide with spring hinges for fastening to wall and overlapping stop with rubber bumper to prevent gate from opening in direction opposite egress.

B. Welded Connections: Fabricate railings and guards with welded connections.

1. Cope components at connections to provide close fit, or use fittings designed for this purpose.
2. Weld all around at connections, including at fittings.
3. Use materials and methods that minimize distortion and develop strength and corrosion resistance of base metals.
4. Obtain fusion without undercut or overlap.

5. Remove flux immediately.
6. Finish welds to comply with NOMMA's "Voluntary Joint Finish Standards" for Finish #4 - Good quality, uniform undressed weld with minimal splatter as shown in NAAMM AMP 521.

C. Form changes in direction of railings and guards as follows:

1. By flush bends or by inserting prefabricated flush-elbow fittings.

D. For changes in direction made by bending, use jigs to produce uniform curvature for each repetitive configuration required. Maintain cross section of member throughout entire bend without buckling, twisting, cracking, or otherwise deforming exposed surfaces of components.

E. Close exposed ends of railing and guard members with prefabricated end fittings.

F. Provide wall returns at ends of wall-mounted handrails unless otherwise indicated.

1. Close ends of returns unless clearance between end of rail and wall is 1/4 inch (6 mm) or less.

G. Connect posts to stair framing by direct welding unless otherwise indicated.

H. Brackets, Flanges, Fittings, and Anchors: Provide wall brackets, end closures, flanges, miscellaneous fittings, and anchors for interconnecting components and for attaching to other work.

1. Furnish inserts and other anchorage devices for connecting to concrete or masonry work.
2. For nongalvanized railings and guards, provide nongalvanized ferrous-metal fittings, brackets, fasteners, and sleeves, except galvanize anchors embedded in exterior masonry and concrete construction.
3. Provide type of bracket with predrilled hole for exposed bolt anchorage and that provides 1-1/2-inch (38-mm) clearance from inside face of handrail to finished wall surface.

2.9 FINISHES

A. Finish metal stairs after assembly.

B. Preparation for Shop Priming: Prepare uncoated, ferrous-metal surfaces to comply with SSPC-SP 3, "Power Tool Cleaning."

C. Apply shop primer to uncoated surfaces of metal stair components, except those with galvanized finishes and those to be embedded in concrete or masonry unless otherwise indicated. Comply with SSPC-PA 1, "Paint Application Specification No. 1: Shop, Field, and Maintenance Painting of Steel," for shop painting.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Verify elevations of floors, bearing surfaces and locations of bearing plates, and other embedments for compliance with requirements.

B. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 INSTALLATION OF METAL PAN STAIRS

A. Fastening to In-Place Construction: Provide anchorage devices and fasteners where necessary for securing metal stairs to in-place construction.

1. Include threaded fasteners for concrete and masonry inserts, through-bolts, lag bolts, and other connectors.
- B. Cutting, Fitting, and Placement: Perform cutting, drilling, and fitting required for installing metal stairs. Set units accurately in location, alignment, and elevation, measured from established lines and levels and free of rack.
- 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 hairline joints.
 1. Weld connections that are not to be left as exposed joints but cannot be shop welded because of shipping size limitations.
 2. 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.
 3. Comply with requirements for welding in "Fabrication, General" Article.
- E. Place and finish concrete fill for treads and platforms to comply with Section 033000 "Cast-in-Place Concrete."

3.3 INSTALLATION OF RAILINGS AND GUARDS

- A. Adjust railing and guard systems before anchoring to ensure matching alignment at abutting joints with tight, hairline joints.
 1. Space posts at spacing indicated or, if not indicated, as required by design loads.
 2. Plumb posts in each direction, within a tolerance of 1/16 inch in 3 ft. (2 mm in 1 m).
 3. Align rails and guards so variations from level for horizontal members and variations from parallel with rake of stairs for sloping members do not exceed 1/4 inch in 12 ft. (6 mm in 3.5 m).
 4. Secure posts, rail ends, and guard ends to building construction as follows:
 - a. Anchor integral stair railing and guard posts to steel by welding to steel supporting members.
 - b. Anchor handrail and guard ends to concrete and masonry with steel round flanges welded to rail and guard ends and anchored with post-installed anchors and bolts.
- B. Install railing gates level, plumb, and secure for full opening without interference.
 1. Attach hardware using tamper-resistant or concealed means.
 2. Adjust hardware for smooth operation.
- C. Attach wall-mounted handrails to substrate with brackets.
 1. Locate brackets as indicated or, if not indicated, at spacing required to support structural loads.
 2. Secure wall brackets to building construction as follows:
 - a. For concrete and solid masonry anchorage, use drilled-in expansion shields and hanger or lag bolts.
 - b. For hollow masonry anchorage, use toggle bolts.

3.4 REPAIR

- A. Touchup Painting: Cleaning and touchup painting of field welds, bolted connections, and abraded areas of shop paint are specified in Section 099123 "Interior Painting."

END OF SECTION 055113

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SECTION 055213 - PIPE AND TUBE RAILINGS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Special Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. Section Includes:
 - 1. Steel tube railings.

1.3 COORDINATION

- A. Coordinate selection of shop primers with topcoats to be applied over them. Comply with paint and coating manufacturers' written recommendations to ensure that shop primers and topcoats are compatible with one another.
- B. Schedule installation so wall attachments are made only to completed walls. Do not support railings temporarily by any means that do not satisfy structural performance requirements.

1.4 ACTION SUBMITTALS

- A. Product Data: For the following:
 - 1. Manufacturer's product lines of mechanically connected railings.
 - 2. Railing brackets.
 - 3. Grout, anchoring cement, and paint products.
 - 4. Post-installed anchors.
- B. Shop Drawings: Include plans, elevations, sections, details, and attachments to other work.

1.5 DELIVERY, STORAGE, AND HANDLING

- A. Protect mechanical finishes on exposed surfaces from damage by applying a strippable, temporary protective covering before shipping.

1.6 FIELD CONDITIONS

- A. Field Measurements: Verify actual locations of walls and other construction contiguous with metal fabrications by field measurements before fabrication.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

- A. Steel Pipe and Tube Railings: Subject to compliance with requirements, manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:
 - 1. R&B Wagner, Inc.
 - 2. McNichols Company Inc.
 - 3. Sharpe Products
- B. Source Limitations: Obtain each type of railing from single source from single manufacturer.

2.2 PERFORMANCE REQUIREMENTS

- A. Structural Performance: Railings, including attachment to building construction, shall withstand the effects of gravity loads and the following loads and stresses within limits and under conditions indicated:
 - 1. Handrails and Top Rails of Guards:
 - a. Uniform load of 50 lbf/ ft. (0.73 kN/m) applied in any direction.
 - b. Concentrated load of 200 lbf (0.89 kN) applied in any direction.
 - c. Uniform and concentrated loads need not be assumed to act concurrently.
 - 2. Infill of Guards:
 - a. Concentrated load of 50 lbf (0.22 kN) applied horizontally on an area of 1 sq. ft. (0.093 sq. m).
 - b. Infill load and other loads need not be assumed to act concurrently.

2.3 METALS, GENERAL

- A. Metal Surfaces, General: Provide materials with smooth surfaces, without seam marks, roller marks, rolled trade names, stains, discolorations, or blemishes.
- B. Brackets, Flanges, and Anchors: Cast or formed metal of same type of material and finish as supported rails unless otherwise indicated.
 - 1. Provide type of bracket with predrilled hole for exposed bolt anchorage and that provides 1-1/2-inch (38-mm) clearance from inside face of handrail to finished wall surface.

2.4 STEEL AND IRON

- A. Tubing: ASTM A 500 (cold formed) or ASTM A 513.
- B. Plates, Shapes, and Bars: ASTM A 36/A 36M.

2.5 FASTENERS

- A. General: Provide the following:
 - 1. Ungalvanized-Steel Railings: Plated steel fasteners complying with ASTM B 633 or ASTM F 1941 (ASTM F 1941M), Class Fe/Zn 5 for zinc coating.

- B. Fasteners for Anchoring Railings to Other Construction: Select fasteners of type, grade, and class required to produce connections suitable for anchoring railings to other types of construction indicated and capable of withstanding design loads.
- C. Fasteners for Interconnecting Railing Components:
 - 1. Provide concealed fasteners for interconnecting railing components and for attaching them to other work, unless otherwise indicated.
- D. Post-Installed Anchors: Torque-controlled expansion anchors capable of sustaining, without failure, a load equal to 6 times the load imposed when installed in unit masonry and 4 times the load imposed when installed in concrete, as determined by testing according to ASTM E 488/E 488M, conducted by a qualified independent testing agency.
 - 1. Material for Interior Locations: Carbon-steel components zinc-plated to comply with ASTM B 633 or ASTM F 1941 (ASTM F 1941M), Class Fe/Zn 5, unless otherwise indicated.

2.6 MISCELLANEOUS MATERIALS

- A. Universal Shop Primer: Fast-curing, lead- and chromate-free, universal modified-alkyd primer complying with MPI#79 and compatible with topcoat.
- B. Intermediate Coats and Topcoats: Provide products that comply with Section 099123 "Interior Painting."

2.7 FABRICATION

- A. General: Fabricate railings to comply with requirements indicated for design, dimensions, member sizes and spacing, details, finish, and anchorage, but not less than that required to support structural loads.
- B. Shop assemble railings to greatest extent possible to minimize field splicing and assembly. Disassemble units only as necessary for shipping and handling limitations. Clearly mark units for reassembly and coordinated installation. Use connections that maintain structural value of joined pieces.
- C. Cut, drill, and punch metals cleanly and accurately. Remove burrs and ease edges to a radius of approximately 1/32 inch (1 mm) unless otherwise indicated. Remove sharp or rough areas on exposed surfaces.
- D. Form work true to line and level with accurate angles and surfaces.
- E. Fabricate connections that are exposed to weather in a manner that excludes water. Provide weep holes where water may accumulate.
- F. Cut, reinforce, drill, and tap as indicated to receive finish hardware, screws, and similar items.
- G. Connections: Fabricate railings with nonwelded connections unless otherwise indicated.
- H. Nonwelded Connections: Connect members with concealed mechanical fasteners and fittings. Fabricate members and fittings to produce flush, smooth, rigid, hairline joints.
 - 1. Fabricate splice joints for field connection using an epoxy structural adhesive if this is manufacturer's standard splicing method.
- I. Form Changes in Direction as Follows:
 - 1. By radius bends of radius indicated or by inserting prefabricated elbow fittings of radius indicated.

- J. For changes in direction made by bending, use jigs to produce uniform curvature for each repetitive configuration required. Maintain cross section of member throughout entire bend without buckling, twisting, cracking, or otherwise deforming exposed surfaces of components.
- K. Close exposed ends of railing members with prefabricated end fittings.
- L. Provide wall returns at ends of wall-mounted handrails unless otherwise indicated. Close ends of returns unless clearance between end of rail and wall is 1/4 inch (6 mm) or less.
- M. Brackets, Flanges, Fittings, and Anchors: Provide wall brackets, flanges, miscellaneous fittings, and anchors to interconnect railing members to other work unless otherwise indicated.

2.8 STEEL AND IRON FINISHES

- A. For nongalvanized-steel railings, provide nongalvanized ferrous-metal fittings, brackets, fasteners, and sleeves; however, galvanize anchors to be embedded in exterior concrete or masonry.
- B. Preparation for Shop Priming: Prepare uncoated ferrous-metal surfaces to comply with SSPC-SP 3, "Power Tool Cleaning."
- C. Primer Application: Apply shop primer to prepared surfaces of railings unless otherwise indicated. Comply with requirements in SSPC-PA 1, "Shop, Field, and Maintenance Painting of Steel," for shop painting. Primer need not be applied to surfaces to be embedded in concrete or masonry.

PART 3 - EXECUTION

3.1 INSTALLATION, GENERAL

- A. Fit exposed connections together to form tight, hairline joints.
- B. Perform cutting, drilling, and fitting required for installing railings. Set railings accurately in location, alignment, and elevation; measured from established lines and levels and free of rack.
 - 1. Do not weld, cut, or abrade surfaces of railing components that are coated or finished after fabrication and that are intended for field connection by mechanical or other means without further cutting or fitting.
 - 2. Set posts plumb within a tolerance of 1/16 inch in 3 feet (2 mm in 1 m).
 - 3. Align rails so variations from level for horizontal members and variations from parallel with rake of steps and ramps for sloping members do not exceed 1/4 inch in 12 feet (6 mm in 3.5 m).
- C. Control of Corrosion: Prevent galvanic action and other forms of corrosion by insulating metals and other materials from direct contact with incompatible materials.
- D. Adjust railings before anchoring to ensure matching alignment at abutting joints.
- E. Fastening to In-Place Construction: Use anchorage devices and fasteners where necessary for securing railings and for properly transferring loads to in-place construction.

3.2 RAILING CONNECTIONS

- A. Nonwelded Connections: Use mechanical or adhesive joints for permanently connecting railing components. Seal recessed holes of exposed locking screws using plastic cement filler colored to match finish of railings.

3.3 ANCHORING POSTS

- A. Anchor posts to metal surfaces with oval flanges, angle type, or floor type as required by conditions, connected to posts and to metal supporting members as follows:
 - 1. For steel pipe railings, weld flanges to post and bolt to metal supporting surfaces.

3.4 ATTACHING RAILINGS

- A. Attach railings to wall with wall brackets, except where end flanges are used. Locate brackets as indicated or, if not indicated, at spacing required to support structural loads.
- B. Secure wall brackets and railing end flanges to building construction as follows:
 - 1. For concrete and solid masonry anchorage, use drilled-in expansion shields and hanger or lag bolts.
 - 2. For hollow masonry anchorage, use toggle bolts.

3.5 ADJUSTING AND CLEANING

- A. Clean by washing thoroughly with clean water and soap and rinsing with clean water.
- B. Touchup Painting: Immediately after erection, bolted connections, and abraded areas of shop paint, and paint exposed areas with the same material as used for shop painting to comply with SSPC-PA 1 requirements for touching up shop-painted surfaces.
 - 1. Apply by brush or spray to provide a minimum 2.0-mil (0.05-mm) dry film thickness.

3.6 PROTECTION

- A. Protect finishes of railings from damage during construction period with temporary protective coverings approved by railing manufacturer. Remove protective coverings at time of Substantial Completion.

END OF SECTION 055213

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SECTION 064023 - INTERIOR ARCHITECTURAL WOODWORK

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Special Conditions and Division 01 Specification Sections, apply to this Section.

1.2 REFERENCED STANDARDS

- A. AWI: Architectural Woodwork Institute
- B. AWS: Architectural Woodwork Standards, latest edition.

1.3 SUMMARY

- A. This Section includes the following:
 - 1. Plastic-laminate cabinets.
 - 2. Closet and utility shelving.

1.4 DEFINITIONS

- A. Interior architectural woodwork includes wood furring, blocking, shims, and hanging strips for installing woodwork items unless concealed within other construction before woodwork installation.

1.5 ACTION SUBMITTALS

- A. All submittals for this project shall be in accordance with Section 1 "Submittals" of AWS, latest addition.
- B. Product Data: For each type of product indicated, including cabinet hardware and accessories.
- C. Shop Drawings: Show location of each item, dimensioned plans and elevations, large-scale details, attachment devices, and other components.
 - 1. Show locations and sizes of furring, blocking, and hanging strips.
 - 2. Apply AWI-certified compliance label to first page of Shop Drawings.
- D. Samples: For each type of material indicated:
 - 1. Plastic laminates.
 - 2. PVC edge material.
 - 3. Thermoset decorative panels.

1.6 INFORMATIONAL SUBMITTALS

- A. Qualification Data: For Installer and fabricator.

- B. Woodwork Quality Standard Compliance Certificates: AWI Quality Certification Program certificates .

1.7 QUALITY ASSURANCE

- A. Fabricator Qualifications: Shop that employs skilled workers who custom-fabricate products similar to those required for this Project and whose products have a record of successful in-service performance. Shop is an accredited participant in AWI's Quality Certification Program.
- B. Quality Standard: Unless otherwise indicated, comply with AWI's "Architectural Woodwork Quality Standards" for Premium Grade interior architectural woodwork indicated for construction, finishes, installation, and other requirements.

1.8 DELIVERY, STORAGE, AND HANDLING

- A. Do not deliver woodwork until painting and similar operations that could damage woodwork have been completed in installation areas. If woodwork must be stored in other than installation areas, store only in areas where environmental conditions comply with requirements specified in "Project Conditions" Article, and as found in the AWS, latest addition.

1.9 PROJECT CONDITIONS

- A. Field Measurements: Where woodwork is indicated to fit to other construction, verify dimensions of other construction by field measurements before fabrication, and indicate measurements on Shop Drawings. Coordinate fabrication schedule with construction progress to avoid delaying the Work.

PART 2 - PRODUCTS

2.1 MATERIALS

- A. General: Provide materials that comply with requirements of AWS, latest addition for each type of woodwork and quality grade specified, unless otherwise indicated.
- B. Wood Products: Comply with the following:
 - 1. Hardboard: AHA A135.4.
 - 2. Medium-Density Fiberboard: ANSI A208.2, Grade 130.
 - 3. Particleboard: ANSI A208.1, Grade M-2.
- C. Thermoset Decorative Panels: Particleboard finished with thermally fused, melamine-impregnated decorative paper complying with LMA SAT-1.
 - 1. Provide PVC or polyester edge banding complying with LMA EDG-1 on components with exposed or semi-exposed edges. Self-edging, while allowed by the AWS, latest addition, is not allowed on this project.
- D. High-Pressure Decorative Laminate: NEMA LD 3, grades as indicated or, if not indicated, as required by woodwork quality standard.
 - 1. Manufacturer: Subject to compliance with requirements, provide high-pressure decorative laminates by one of the following:
 - a. Abet Laminati, Inc.
 - b. Arborite; Division of ITW Canada, Inc.
 - c. Formica Corporation.

- d. Lamin-Art, Inc.
- e. Nevamar Company, LLC; Decorative Products Div.
- f. Wilsonart International; Div. of Premark International, Inc.

2.2 MISCELLANEOUS MATERIALS

- A. Anchors: Select material, type, size, and finish required for each substrate for secure anchorage. Provide nonferrous-metal or hot-dip galvanized anchors and inserts on inside face of exterior walls and elsewhere as required for corrosion resistance. Provide toothed-steel or lead expansion sleeves for drilled-in-place anchors. All installation fasteners shall be in accordance with AWS, latest edition.
- B. Adhesive for Bonding Plastic Laminate at countertops: contact cement.
 - 1. Adhesive for Bonding Edges: Hot-melt adhesive.
 - 2. Adhesive for items other than laminate countertops as required in AWS, latest edition.

2.3 FABRICATION, GENERAL

- A. Interior Woodwork Grade: Unless otherwise indicated, provide Premium-grade interior woodwork complying with referenced quality standard.
- B. Wood Moisture Content: Comply with requirements of referenced quality standard for wood moisture content in relation to ambient relative humidity during fabrication and in installation areas.
- C. Fabricate woodwork to dimensions, profiles, and details indicated. Ease edges to radius indicated for the following:
 - 1. Corners of Cabinets and Edges of Solid-Wood (Lumber) Members 3/4 Inch (19 mm) Thick or Less: 1/16 inch (1.5 mm).
 - 2. Edges of Rails and Similar Members More Than 3/4 Inch (19 mm) Thick: 1/8 inch (3 mm).
- D. Complete fabrication to maximum extent possible before shipment to Project site. Disassemble components only as necessary for shipment and installation. Where necessary for fitting at site, provide ample allowance for scribing, trimming, and fitting.

2.4 PLASTIC-LAMINATE CABINETS

- A. Grade: Custom.
- B. Laminate Cladding for Exposed Surfaces: High-pressure decorative laminate complying with the following requirements:
 - 1. Cabinet Surfaces including shelves, other than counter tops: Grade VGS.
 - 2. Postformed Surfaces: Grade PFG.
 - 3. Edges: PVC edge banding, 0.12 inch (3 mm) thick, matching laminate in color, pattern, and finish, or as indicated.
- C. Concealed Backs of Panels with Exposed Plastic Laminate Surfaces: High-pressure decorative laminate, Grade BKR.
- D. Colors, Patterns, and Finishes: Provide materials and products that result in colors and textures of exposed laminate surfaces complying with the following requirements:
 - 1. As selected by Architect from laminate manufacturer's full range in the following categories:
 - a. Solid colors with core same color as surface, matte finish.
 - b. Wood grains, matte finish.

- c. Patterns, matte finish.

2.5 CLOSET AND UTILITY SHELVEING

- A. Grade: Custom.
- B. Shelf Material: 3/4 inch (19 mm) veneer-faced panel product with solid-lumber edge with supports at 36" OC or less. Shelf material to be 1" thick where supports are at greater than 36" OC.
- C. Cleats: 3/4 inch (19 mm) solid lumber.
- D. Wood Species: Maple.

PART 3 - EXECUTION

3.1 PREPARATION

- A. Before installation, condition woodwork to average prevailing humidity conditions in installation areas.
- B. Before installing architectural woodwork, examine shop-fabricated work for completion and complete work as required, including removal of packing and backpriming.

3.2 INSTALLATION

- A. Grade: Install woodwork to comply with requirements for the same grade specified in Part 2 for fabrication of type of woodwork involved.
- B. Assemble woodwork and complete fabrication at Project site to comply with requirements for fabrication in Part 2, to extent that it was not completed in the shop.
- C. Install woodwork level, plumb, true, and straight. Shim as required with concealed shims. Install level and plumb (including tops) as indicated in the AWS execution/installation section, latest edition.
- D. Scribe and cut woodwork to fit adjoining work, refinish cut surfaces, and repair damaged finish at cuts.
- E. Anchor woodwork to anchors or blocking built in or directly attached to substrates. Secure with countersunk, concealed fasteners and blind nailing as required for complete installation. Use fine finishing nails for exposed fastening, countersunk and filled flush with woodwork and matching final finish if transparent finish is indicated.
- F. Touch up finishing work specified in this Section after installation of woodwork. Fill nail holes with matching filler where exposed.

3.3 ADJUSTING AND CLEANING

- A. Repair damaged and defective woodwork, where possible, to eliminate functional and visual defects; where not possible to repair, replace woodwork. Adjust joinery for uniform appearance.
- B. Clean woodwork on exposed and semi-exposed surfaces. Touch up shop-applied finishes to restore damaged or soiled areas.

END OF SECTION 064023

SECTION 070150.19 - PREPARATION FOR REROOFING

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Special Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. Section Includes:
 - 1. Full tear-off of entire roof.
 - 2. Removal of base flashings.

1.3 DEFINITIONS

- A. Roofing Terminology: Definitions in ASTM D 1079 and glossary of NRCA's "The NRCA Roofing and Waterproofing Manual" apply to work of this Section.
- B. Full Roof Tear-Off: Removal of existing roofing system from deck.

1.4 ACTION SUBMITTALS

- A. Product Data: For each type of product.

1.5 QUALITY ASSURANCE

- A. Reroofing Conference: Conduct conference at Project site.
 - 1. Meet with Owner; Architect; roofing system manufacturer's representative; roofing Installer, including project manager, superintendent, and foreman; and installers whose work interfaces with or affects reroofing, including installers of roof deck, roof accessories, and roof-mounted equipment.
 - 2. Review methods and procedures related to roofing system tear-off and replacement.

1.6 FIELD CONDITIONS

- A. Existing Roofing System: Existing system components consist of:
 - 1. EPDM and cover board.
 - 2. Built-up asphalt.
 - 3. 2" of reinforced insulating concrete over plastic sheeting.
- B. Owner will occupy portions of building immediately below reroofing area. Conduct reroofing so Owner's operations are not disrupted. Provide Owner with not less than 72 hours' notice of activities that may affect Owner's operations.

1. Coordinate work activities daily with Owner so Owner can place protective dust and water-leakage covers over sensitive equipment and furnishings, shut down HVAC and fire-alarm or -detection equipment if needed, and evacuate occupants from below work area.
- C. Protect building to be reroofed, walkways, site improvements, exterior plantings, and landscaping from damage or soiling from reroofing operations.
- D. Maintain access to existing walkways, corridors, and other adjacent occupied or used facilities.
- E. Conditions existing at time of inspection for bidding are maintained by Owner as far as practical.
 1. A roof moisture survey of existing roofing system is available for Contractor's reference.
- F. Weather Limitations: Proceed with reroofing preparation only when existing and forecasted weather conditions permit Work to proceed without water entering existing roofing system or building.
 1. Remove only as much roofing in one day as can be made watertight in the same day.
- G. Hazardous Materials: It is not expected that hazardous materials, such as asbestos-containing materials, will be encountered in the Work.
 1. If materials suspected of containing hazardous materials are encountered, do not disturb; immediately notify Architect and Owner. Hazardous materials will be removed by Owner under a separate contract.

H. PRODUCTS

1.7 TEMPORARY ROOFING MATERIALS

- A. Design and selection of materials for temporary roofing are Contractor's responsibilities.

1.8 AUXILIARY REROOFING MATERIALS

- A. General: Use auxiliary reroofing preparation materials recommended by roofing system manufacturer for intended use and compatible with components of new roofing system.

PART 2 - EXECUTION

2.1 PREPARATION

- A. During removal operations, have sufficient and suitable materials on-site to facilitate rapid installation of temporary protection in the event of unexpected rain.
- B. Maintain roof drains in functioning condition to ensure roof drainage at end of each workday. Prevent debris from entering or blocking roof drains and conductors. Use roof-drain plugs specifically designed for this purpose. Remove roof-drain plugs at end of each workday, when no work is taking place, or when rain is forecast.

2.2 ROOF TEAR-OFF

- A. Full Roof Tear-Off: Remove existing roofing and other roofing system components down to the deck.
 1. Remove vapor retarder, insulating concrete, bitumen and felts, and cover board.

2. Remove wood blocking, curbs, and nailers.

2.3 DECK PREPARATION

- A. Inspect deck after tear-off of roofing system.
- B. Verify that concrete substrate is visibly dry and free of moisture. Test for capillary moisture by plastic sheet method according to ASTM D 4263 or by pouring 1 pint (0.5 L) of hot roofing asphalt on deck at start of each day's work and at start of each roof area or plane. Do not proceed with roofing work if moisture condenses under plastic sheet or if asphalt test sample foams or can be easily and cleanly stripped after cooling.
- C. If deck surface is unsuitable for receiving new roofing or if structural integrity of deck is suspect, immediately notify Architect. Do not proceed with installation until directed by Architect.

2.4 TEMPORARY ROOFING

- A. Install approved temporary roofing over area to be reroofed.
- B. Remove temporary roofing before installing new roofing.

2.5 BASE FLASHING REMOVAL

- A. Remove existing base flashings. Clean substrates of contaminants, such as asphalt, sheet materials, dirt, and debris.

2.6 DISPOSAL

- A. Collect demolished materials and place in containers. Promptly dispose of demolished materials. Do not allow demolished materials to accumulate on-site.
 1. Storage or sale of demolished items or materials on-site is not permitted.
- B. Transport and legally dispose of demolished materials off Owner's property.

END OF SECTION 070150.19

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SECTION 071326 - SELF-ADHERING SHEET WATERPROOFING

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Special Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. Section Includes:
 - 1. Modified bituminous sheet waterproofing.

1.3 ACTION SUBMITTALS

- A. Product Data: For each type of product.
 - 1. Include construction details, material descriptions, and tested physical and performance properties of waterproofing.
 - 2. Include manufacturer's written instructions for evaluating, preparing, and treating substrate.

1.4 INFORMATIONAL SUBMITTALS

- A. Qualification Data: For Installer.

1.5 QUALITY ASSURANCE

- A. Installer Qualifications: An entity that employs installers and supervisors who are trained and approved by waterproofing manufacturer.

1.6 FIELD CONDITIONS

- A. Environmental Limitations: Apply waterproofing within the range of ambient and substrate temperatures recommended by waterproofing manufacturer. Do not apply waterproofing to a damp or wet substrate.
 - 1. Do not apply waterproofing in snow, rain, fog, or mist.
- B. Maintain adequate ventilation during preparation and application of waterproofing materials.

1.7 WARRANTY

- A. Manufacturer's Warranty: Manufacturer's standard materials-only warranty in which manufacturer agrees to furnish replacement waterproofing material for waterproofing that does not comply with requirements or that fails to remain watertight within specified warranty period.
 - 1. Warranty Period: Five years from date of Substantial Completion.

PART 2 - PRODUCTS

2.1 MATERIALS, GENERAL

- A. Source Limitations for Waterproofing System: Obtain waterproofing materials, and molded-sheet drainage panels from single source from single manufacturer.

2.2 MODIFIED BITUMINOUS SHEET WATERPROOFING

- A. Modified Bituminous Sheet: Minimum 60-mil (1.5-mm) nominal thickness, self-adhering sheet consisting of 56 mils (1.4 mm) of rubberized asphalt laminated on one side to a 4-mil- (0.10-mm-) thick, polyethylene-film reinforcement, and with release liner on adhesive side.
 - 1. Basis-of-Design Product: Subject to compliance with requirements, provide Grace, W. R., & Co. - Conn.; 'Bituthene 4000' or comparable product by one of the following
 - a. Carlisle Coatings & Waterproofing Inc.; CCW MiraDRI 860/861.
 - b. Henry Company; Blueskin WP 100/200.
 - c. Meadows, W. R., Inc.; SealTight Mel-Rol.
 - 2. Physical Properties:
 - a. Tensile Strength, Membrane: 325 psi (2.24 MPa) minimum; ASTM D 412, Die C, modified.
 - b. Ultimate Elongation: 300 percent minimum; ASTM D 412, Die C, modified.
 - c. Low-Temperature Flexibility: Pass at minus 25 deg F (minus 32 deg C); ASTM D 1970.
 - d. Crack Cycling: Unaffected after 100 cycles of 1/8-inch (3-mm) movement; ASTM C 836.
 - e. Puncture Resistance: 50 lbs (222 N) minimum; ASTM E 154.
 - f. Water Absorption: 0.1 percent weight-gain maximum after 48-hour immersion at 70 deg F (21 deg C); ASTM D 570.
 - g. Water Vapor Permeance: 0.1 perms (5.8 ng/Pa x s x sq. m) maximum; ASTM E 96/E 96M, Water Method.
 - h. Hydrostatic-Head Resistance: 230 feet (70 m) minimum; ASTM D 5385.
 - 3. Sheet Strips: Self-adhering, rubberized-asphalt strips of same material and thickness as sheet waterproofing.

2.3 AUXILIARY MATERIALS

- A. General: Furnish auxiliary materials recommended by waterproofing manufacturer for intended use and compatible with sheet waterproofing.
 - 1. Furnish liquid-type auxiliary materials that comply with VOC limits of authorities having jurisdiction.
- B. Primer: Liquid primer recommended for substrate by sheet-waterproofing material manufacturer.
- C. Surface Conditioner: Liquid, waterborne surface conditioner recommended for substrate by sheet-waterproofing material manufacturer.
- D. Liquid Membrane: Elastomeric, two-component liquid, cold fluid applied, of trowel grade or low viscosity.
- E. Substrate Patching Membrane: Low-viscosity, two-component, modified asphalt coating.
- F. Metal Termination Bars: Aluminum bars, approximately 1 by 1/8 inch (25 by 3 mm) thick, predrilled at 9-inch (229-mm) centers.

2.4 MOLDED-SHEET DRAINAGE PANELS

- A. Molded-Sheet Drainage Panel:
- B. Nonwoven-Geotextile-Faced, Molded-Sheet Drainage Panel: Composite subsurface drainage panel consisting of a studded, nonbiodegradable, molded-plastic-sheet drainage core; with a nonwoven, needle-punched geotextile facing with an apparent opening size not exceeding No. 70 (0.21-mm) sieve laminated to one side of the core and a polymeric film bonded to the other side; and with a vertical flow rate of 9 to 15 gpm per ft. (112 to 188 L/min. per m).
 - 1. Basis-of-Design Product: Subject to compliance with requirements, provide Grace, W. R., & Co. - Conn.; 'Hydroduct 220' or comparable product by one of the following
 - a. Carlisle Coatings & Waterproofing Inc.
 - b. Protecto Wrap Company; Protecto Drain 2000-V.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine substrates, areas, and conditions, with Installer present, for compliance with requirements and other conditions affecting performance of the waterproofing.
 - 1. Verify that concrete has cured and aged for minimum time period recommended in writing by waterproofing manufacturer.
 - 2. Verify that substrate is visibly dry and within the moisture limits recommended in writing by manufacturer. Test for capillary moisture by plastic sheet method according to ASTM D 4263.
- B. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 SURFACE PREPARATION

- A. Clean, prepare, and treat substrates according to manufacturer's written instructions. Provide clean, dust-free, and dry substrates for waterproofing application.
- B. Mask off adjoining surfaces not receiving waterproofing to prevent spillage and overspray affecting other construction.
- C. Remove grease, oil, bitumen, form-release agents, paints, curing compounds, and other penetrating contaminants or film-forming coatings from concrete.
- D. Remove fins, ridges, mortar, and other projections and fill honeycomb, aggregate pockets, holes, and other voids.
- E. Prepare, fill, prime, and treat joints and cracks in substrates. Remove dust and dirt from joints and cracks according to ASTM D 4258.
 - 1. Install sheet strips of width according to manufacturer's written instructions and center over treated construction and contraction joints and cracks exceeding a width of 1/16 inch (1.6 mm).
- F. Corners: Prepare, prime, and treat inside and outside corners according to ASTM D 6135.
- G. Prepare, treat, and seal vertical and horizontal surfaces at terminations and penetrations through waterproofing and at drains and protrusions according to ASTM D 6135.

3.3 MODIFIED BITUMINOUS SHEET-WATERPROOFING APPLICATION

- A. Install modified bituminous sheets according to waterproofing manufacturer's written instructions and recommendations in ASTM D 6135.
- B. Apply primer to substrates at required rate and allow it to dry. Limit priming to areas that will be covered by sheet waterproofing in same day. Reprime areas exposed for more than 24 hours.
- C. Apply and firmly adhere sheets over area to receive waterproofing. Accurately align sheets and maintain uniform 2-1/2-inch- (64-mm-) minimum lap widths and end laps. Overlap and seal seams, and stagger end laps to ensure watertight installation.
 - 1. When ambient and substrate temperatures range between 25 and 40 deg F (minus 4 and plus 5 deg C), install self-adhering, modified bituminous sheets produced for low-temperature application. Do not use low-temperature sheets if ambient or substrate temperature is higher than 60 deg F (16 deg C).
- D. Seal edges of sheet-waterproofing terminations with mastic.
- E. Repair tears, voids, and lapped seams in waterproofing not complying with requirements. Slit and flatten fishmouths and blisters. Patch with sheet waterproofing extending 6 inches (150 mm) beyond repaired areas in all directions.
- F. Immediately install protection course with butted joints over waterproofing membrane.
 - 1. Molded-sheet drainage panels may be used in place of a separate protection course to vertical applications when approved by waterproofing manufacturer and installed immediately.

3.4 MOLDED-SHEET DRAINAGE-PANEL INSTALLATION

- A. Place and secure molded-sheet drainage panels, with geotextile facing away from wall or deck substrate, according to manufacturer's written instructions. Use adhesives or other methods that do not penetrate waterproofing. Lap edges and ends of geotextile to maintain continuity. Protect installed molded-sheet drainage panels during subsequent construction.

3.5 FIELD QUALITY CONTROL

- A. Owner will engage a site representative qualified by waterproofing membrane manufacturer to inspect substrate conditions, surface preparation, membrane application, flashings, protection, and drainage components, and to furnish daily reports to Architect.

3.6 PROTECTION, REPAIR, AND CLEANING

- A. Protect waterproofing from damage and wear during remainder of construction period.
- B. Correct deficiencies in or remove waterproofing that does not comply with requirements; repair substrates, reapply waterproofing, and repair sheet flashings.
- C. Clean spillage and soiling from adjacent construction using cleaning agents and procedures recommended by manufacturer of affected construction.

END OF SECTION 07 13 26

SECTION 075323 - ETHYLENE-PROPYLENE-DIENE-MONOMER (EPDM) ROOFING

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Special Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. Section Includes:

- 1. Adhered ethylene-propylene-diene-terpolymer (EPDM) roofing system.
 - 2. Vapor retarder.
 - 3. Roof insulation.
 - 4. Cover board.

- B. Related Requirements:

- 1. Section 061000 "Rough Carpentry" Section for wood nailers, curbs, and blocking.
 - 2. Section 076200 "Sheet Metal Flashing and Trim" for metal roof flashings and counterflashings.
 - 3. Section 077100 "Roof Specialties" for manufactured copings and roof edge flashings.
 - 4. Section 077129 "Manufactured Roof Expansion Joints" for manufactured roof expansion-joint assemblies.

1.3 DEFINITIONS

- A. Roofing Terminology: Definitions in ASTM D1079 and glossary of NRCA's "The NRCA Roofing Manual: Membrane Roof Systems" apply to work of this Section.

1.4 PREINSTALLATION MEETINGS

- A. Preinstallation Roofing Conference: Conduct conference at Project site.

- 1. Meet with Owner, Architect, roofing Installer, roofing system manufacturer's representative, deck Installer, air barrier Installer, and installers whose work interfaces with or affects roofing, including installers of roof accessories and roof-mounted equipment.
 - 2. Review methods and procedures related to roofing installation, including manufacturer's written instructions.
 - 3. Review and finalize construction schedule, and verify availability of materials, Installer's personnel, equipment, and facilities needed to make progress and avoid delays.
 - 4. Examine deck substrate conditions and finishes, including flatness and fastening.
 - 5. Review structural loading limitations of roof deck during and after roofing.
 - 6. Review base flashings, special roofing details, roof drainage, roof penetrations, equipment curbs, and condition of other construction that affects roofing system.
 - 7. Review temporary protection requirements for roofing system during and after installation.
 - 8. Review roof observation and repair procedures after roofing installation.

1.5 ACTION SUBMITTALS

- A. Product Data: For each type of product.

- B. Shop Drawings: Include roof plans, sections, details, and attachments to other work, including the following:
 - 1. Layout and thickness if insulation.
 - 2. Base flashings and membrane terminations.
 - 3. Flashing details at penetrations.
 - 4. Tapered insulation, thickness, and slopes.
 - 5. Roof plan showing orientation of steel roof deck and orientation of roof membrane and fastening spacings and patterns for mechanically fastened roofing system.
 - 6. Insulation fastening patterns for corner, perimeter, and field-of-roof locations.
- C. Wind Uplift Resistance Submittal: For roofing system, indicating compliance with wind uplift performance requirements.

1.6 INFORMATIONAL SUBMITTALS

- A. Qualification Data: For Installer and manufacturer.
- B. Manufacturer Certificates:
 - 1. Performance Requirement Certificate: Signed by roof membrane manufacturer, certifying that roofing system complies with requirements specified in "Performance Requirements" Article.
 - a. Submit evidence of complying with performance requirements.
 - 2. Special Warranty Certificate: Signed by roof membrane manufacturer, certifying that all materials supplied under this Section are acceptable for special warranty.
- C. Product Test Reports: For components of roof membrane and insulation, for tests performed by a qualified testing agency, indicating compliance with specified requirements.
- D. Evaluation Reports: For components of roofing system, from ICC-ES.
- E. Sample Warranties: For manufacturer's special warranties.

1.7 CLOSEOUT SUBMITTALS

- A. Maintenance Data: For roofing system to include in maintenance manuals.

1.8 QUALITY ASSURANCE

- A. Manufacturer Qualifications: A qualified manufacturer that is UL listed or listed in FM Approvals' RoofNav for roofing system identical to that used for this Project.
- B. Installer Qualifications: A qualified firm that is approved, authorized, or licensed by roofing system manufacturer to install manufacturer's product and that is eligible to receive manufacturer's special warranty.

1.9 DELIVERY, STORAGE, AND HANDLING

- A. Deliver roofing materials to Project site in original containers with seals unbroken and labeled with manufacturer's name, product brand name and type, date of manufacture, approval or listing agency markings, and directions for storing and mixing with other components.

- B. Store liquid materials in their original undamaged containers in a clean, dry, protected location and within the temperature range required by roofing system manufacturer. Protect stored liquid material from direct sunlight.
 - 1. Discard and legally dispose of liquid material that cannot be applied within its stated shelf life.
- C. Protect roof insulation materials from physical damage and from deterioration by sunlight, moisture, soiling, and other sources. Store in a dry location. Comply with insulation manufacturer's written instructions for handling, storing, and protecting during installation.
- D. Handle and store roofing materials, and place equipment in a manner to avoid permanent deflection of deck.

1.10 FIELD CONDITIONS

- A. Weather Limitations: Proceed with installation only when existing and forecasted weather conditions permit roofing system to be installed in accordance with manufacturer's written instructions and warranty requirements.

1.11 WARRANTY

- A. Special Warranty: Manufacturer agrees to repair or replace components of roofing system that fail in materials or workmanship within specified warranty period.
 - 1. Special warranty includes roof membrane, base flashings, roof insulation, fasteners, cover boards, and other components of roofing system.
 - 2. Warranty Period: 30 years from Date of Substantial Completion.
- B. Special Project Warranty: Submit roofing Installer's warranty, on warranty form at end of this Section, signed by Installer, covering the Work of this Section, including all components of roofing system such as roof membrane, base flashing, roof insulation, fasteners, cover boards, and vapor retarders, for the following warranty period:
 - 1. Warranty Period: Two years from Date of Substantial Completion.

PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

- A. General Performance: Installed roofing system and base flashings shall withstand specified uplift pressures, thermally induced movement, and exposure to weather without failure due to defective manufacture, fabrication, installation, or other defects in construction. Roofing and flashings shall remain watertight.
 - 1. Accelerated Weathering: Roof membrane shall withstand 2000 hours of exposure when tested in accordance with ASTM G152, ASTM G154, or ASTM G155.
 - 2. Impact Resistance: Roof membrane shall resist impact damage when tested in accordance with ASTM D3746, ASTM D4272, or the Resistance to Foot Traffic Test in FM Approvals 4470.
- B. Material Compatibility: Roofing materials shall be compatible with one another and adjacent materials under conditions of service and application required, as demonstrated by roof membrane manufacturer based on testing and field experience.
 - 1. Zone 1 (Roof Area Field): As indicated on Drawings.
 - 2. Zone 2 (Roof Area Perimeter): As indicated on Drawings.
 - 3. Zone 3 (Roof Area Corners): As indicated on Drawings.

- C. FM Approvals' RoofNav Listing: Roof membrane, base flashings, and component materials shall comply with requirements in FM Approvals 4450 or FM Approvals 4470 as part of a roofing system, and shall be listed in FM Approvals' RoofNav for Class 1 or noncombustible construction, as applicable. Identify materials with FM Approvals Certification markings.

1. Fire/Windstorm Classification: Class 1A-120.
2. Hail-Resistance Rating: MH.

2.2 ETHYLENE-PROPYLENE-DIENE-TERPOLYMER (EPDM) ROOFING

- A. EPDM Sheet: ASTM D4637/D4637M, Type I, nonreinforced, EPDM sheet.

1. Basis-of-Design Product: Subject to compliance with requirements, provide Versico Roofing Systems; VersiGard® EPDM or comparable product by one of the following:
 - a. Firestone Building Products.
 - b. GenFlex Roofing Systems.
2. Thickness: 90 mils (2.2 mm), nominal.
3. Exposed Face Color: Black.
4. Source Limitations: Obtain components for roofing system from roof membrane manufacturer or manufacturers approved by roof membrane manufacturer.

2.3 AUXILIARY ROOFING MATERIALS

- A. General: Auxiliary materials recommended by roofing system manufacturer for intended use and compatible with other roofing components.
1. Adhesive and Sealants: Comply with VOC limits of authorities having jurisdiction.
- B. Sheet Flashing: 60-mil- (1.5-mm-) thick EPDM, partially cured or cured, in accordance with application.
- C. Prefabricated Pipe Flashings: As recommended by roof membrane manufacturer.
- D. Bonding Adhesive: Manufacturer's standard, water based and, low VOC.
- E. Seaming Material: Manufacturer's standard, synthetic-rubber polymer primer and 3-inch- (75-mm-) wide minimum, butyl splice tape with release film.
- F. Lap Sealant: Manufacturer's standard, single-component sealant, colored to match membrane roofing.
- G. Water Cutoff Mastic: Manufacturer's standard butyl mastic sealant.
- H. Metal Termination Bars: Manufacturer's standard, predrilled stainless steel or aluminum bars, approximately 1 by 1/8 inch (25 by 3 mm) thick; with anchors.
1. Where exposed to view, provide termination bar fascia.
- I. Fasteners: Factory-coated steel fasteners and metal or plastic plates complying with corrosion-resistance provisions in FM Approvals 4470, designed for fastening components to substrate, and acceptable to roofing system manufacturer.
- J. Miscellaneous Accessories: Provide pourable sealers, preformed cone and vent sheet flashings, molded pipe boot flashings, preformed inside and outside corner sheet flashings, reinforced EPDM securement strips, T-joint covers, in-seam sealants, termination reglets, cover strips, and other accessories.

2.4 VAPOR RETARDER

- A. Self-Adhering-Sheet Vapor Retarder: ASTM D1970/D1970M, polyethylene film laminated to layer of rubberized asphalt adhesive, minimum 40-mil- (1.0-mm-) total thickness; maximum permeance rating of 0.1 perm (6 ng/Pa x s x sq. m); cold applied, with slip-resisting surface and release paper backing. Provide primer when recommended by vapor retarder manufacturer.

2.5 ROOF INSULATION

- A. General: Preformed roof insulation boards manufactured by EPDM roof membrane manufacturer, approved for use in FM Approvals' RoofNav-listed roof assemblies.
- B. Polyisocyanurate Board Insulation: ASTM C1289, Type II, Class 1, Grade 2, felt or glass-fiber mat facer on both major surfaces.
 - 1. Basis-of-Design Product: Subject to compliance with requirements, provide Versico Roofing Systems; Versicore MP-H Polyiso or a comparable product by one of the following:
 - a. Firestone Building Products.
 - b. Flex Membrane International Corp.
 - 2. Compressive Strength: 25 psi (172 kPa).
 - 3. Size: 48 by 48 inches (1219 by 1219 mm).
 - 4. Thickness:
 - a. Base Layer: 4-1/2 inches (114 mm).
- C. Tapered Insulation: Provide factory-tapered insulation boards.
 - 1. Material: Match roof insulation.
 - 2. Minimum Thickness: 1/2 inch (12.70 mm).
 - 3. Slope:
 - a. Roof Field (existing structure): 1/8 inch per foot (1:96).
 - b. Roof Field (addition): 1/4 inch per foot (1:48).
 - c. Saddles and Crickets: 1/2 inch per foot (1:24) unless otherwise indicated on Drawings.

2.6 INSULATION ACCESSORIES

- A. General: Roof insulation accessories recommended by insulation manufacturer for intended use and compatibility with other roofing system components.
- B. Insulation Adhesive: Insulation manufacturer's recommended adhesive formulated to attach roof insulation to substrate or to another insulation layer as follows:
 - 1. Bead-applied, low-rise, one-component or multicomponent urethane adhesive.
- C. Cover Board: ASTM C1278/C1278M, fiber-reinforced gypsum board.
 - 1. Basis-of-Design Product: Subject to compliance with requirements, provide USG Securock® Brand; Gypsum-Fiber Roof Board or comparable product by one of the following:
 - a. CertainTeed Corporation.
 - b. Georgia-Pacific Gypsum LLC.
 - 2. Thickness: 5/8 inch (16 mm).

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine substrates, areas, and conditions, with Installer present, for compliance with requirements and other conditions affecting performance of the Work.
 - 1. Verify that roof openings and penetrations are in place, curbs are set and braced, and roof-drain bodies are securely clamped in place.
 - 2. Verify that wood blocking, curbs, and nailers are securely anchored to roof deck at penetrations and terminations and that nailers match thicknesses of insulation.
 - 3. Verify that surface plane flatness and fastening of steel roof deck complies with requirements in Section 053100 "Steel Decking."
 - 4. Verify that concrete substrate is visibly dry and free of moisture, and that minimum concrete internal relative humidity is not more than 75 percent, or as recommended by roofing system manufacturer when tested in accordance with ASTM F2170.
 - a. Test Frequency: One test probe per each 1000 sq. ft. (93 sq. m), or portion thereof, of roof deck, with not less than three test probes.
 - b. Submit test reports within 24 hours of performing tests.
- B. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 PREPARATION

- A. Clean substrate of dust, debris, moisture, and other substances detrimental to roofing system installation in accordance with roofing system manufacturer's written instructions. Remove sharp projections.
- B. Prevent materials from entering and clogging roof drains and conductors and from spilling or migrating onto surfaces of other construction. Remove roof-drain plugs when no work is taking place or when rain is forecast.

3.3 ROOFING INSTALLATION, GENERAL

- A. Install roofing system in accordance with roofing system manufacturer's written instructions, FM Approvals' RoofNav assembly requirements, and FM Global Property Loss Prevention Data Sheet 1-29.
- B. Complete terminations and base flashings and provide temporary seals to prevent water from entering completed sections of roofing system at end of workday or when rain is forecast. Remove and discard temporary seals before beginning work on adjoining roofing.

3.4 VAPOR RETARDER INSTALLATION

- A. Self-Adhering-Sheet Vapor Retarder: Prime substrate if required by manufacturer. Install self-adhering-sheet vapor retarder over area to receive vapor retarder, side and end lapping each sheet a minimum of 3-1/2 and 6 inches (90 and 150 mm), respectively.
 - 1. Extend vertically up parapet walls and projections to a minimum height equal to height of insulation and cover board.
 - 2. Seal laps by rolling.
- B. Completely seal vapor retarder at terminations, obstructions, and penetrations to prevent air movement into roofing system.

3.5 INSULATION INSTALLATION

- A. Coordinate installing roofing system components so insulation is not exposed to precipitation or left exposed at end of workday.
- B. Comply with roofing system and insulation manufacturer's written instructions for installing roof insulation.
- C. Installation Over Metal Decking:
 - 1. Install base layer of insulation with joints staggered not less than 24 inches (610 mm) in adjacent rows.
 - a. Locate end joints over crests of decking.
 - b. Trim insulation neatly to fit around penetrations and projections, and to fit tight to intersecting sloping roof decks.
 - c. Make joints between adjacent insulation boards not more than 1/4 inch (6 mm) in width.
 - d. Fill gaps exceeding 1/4 inch (6 mm) with insulation.
 - e. Cut and fit insulation within 1/4 inch (6 mm) of nailers, projections, and penetrations.
 - f. Adhere base layer of insulation to vapor retarder in accordance with FM Approvals' RoofNav assembly requirements and FM Global Property Loss Prevention Data Sheet 1-29 for specified Windstorm Resistance Classification, as follows:
 - 1) Set insulation in ribbons of bead-applied insulation adhesive, firmly pressing and maintaining insulation in place.
 - 2. Install upper layers of insulation and tapered insulation with joints of each layer offset not less than 12 inches (305 mm) from previous layer of insulation.
 - a. Staggered end joints within each layer not less than 24 inches (610 mm) in adjacent rows.
 - b. Trim insulation neatly to fit around penetrations and projections, and to fit tight to intersecting sloping roof decks.
 - c. Make joints between adjacent insulation boards not more than 1/4 inch (6 mm) in width.
 - d. At internal roof drains, provide insulation manufacturers standard 48 by 48 inches (1219 by 1219 mm) prefabricated target sumps.
 - e. Trim insulation so that water flow is unrestricted.
 - f. Fill gaps exceeding 1/4 inch (6 mm) with insulation.
 - g. Cut and fit insulation within 1/4 inch (6 mm) of nailers, projections, and penetrations.
 - h. Adhere each layer of insulation to substrate using adhesive in accordance with FM Approvals' RoofNav assembly requirements and FM Global Property Loss Prevention Data Sheet 1-29 for specified Windstorm Resistance Classification, as follows:
 - 1) Set each layer of insulation in ribbons of bead-applied insulation adhesive, firmly pressing and maintaining insulation in place.
- D. Installation Over Concrete Decks:
 - 1. Install base layer of insulation with joints staggered not less than 24 inches (610 mm) in adjacent rows.
 - a. Trim insulation neatly to fit around penetrations and projections, and to fit tight to intersecting sloping roof decks.
 - b. Make joints between adjacent insulation boards not more than 1/4 inch (6 mm) in width.
 - c. At internal roof drains, slope insulation to create a square drain sump with each side
 - d. Fill gaps exceeding 1/4 inch (6 mm) with insulation.
 - e. Cut and fit insulation within 1/4 inch (6 mm) of nailers, projections, and penetrations.
 - f. Adhere base layer of insulation to vapor retarder in accordance with FM Approvals' RoofNav assembly requirements and FM Global Property Loss Prevention Data Sheet 1-29 for specified Windstorm Resistance Classification, as follows:
 - 1) Set insulation in ribbons of bead-applied insulation adhesive, firmly pressing and maintaining insulation in place.
 - 2. Install upper layers of insulation and tapered insulation with joints of each layer offset not less than 12 inches (305 mm) from previous layer of insulation.
 - a. Staggered end joints within each layer not less than 24 inches (305 mm) in adjacent rows.
 - b. Trim insulation neatly to fit around penetrations and projections, and to fit tight to intersecting sloping roof decks.

- c. Make joints between adjacent insulation boards not more than 1/4 inch (6 mm) in width.
- d. At internal roof drains, provide insulation manufacturers standard 48 by 48 inches (1219 by 1219 mm) prefabricated target sumps.
- e. Fill gaps exceeding 1/4 inch (6 mm) with insulation.
- f. Cut and fit insulation within 1/4 inch (6 mm) of nailers, projections, and penetrations.
- g. Adhere each layer of insulation to substrate using adhesive in accordance with FM Approvals' RoofNav assembly requirements and FM Global Property Loss Prevention Data Sheet 1-29 for specified Windstorm Resistance Classification, as follows:
 - 1) Set each layer of insulation in ribbons of bead-applied insulation adhesive, firmly pressing and maintaining insulation in place.

3.6 INSTALLATION OF COVER BOARDS

- A. Install cover boards over insulation with long joints in continuous straight lines with end joints staggered between rows. Offset joints of insulation below a minimum of 6 inches (150 mm) in each direction.
 - 1. Trim cover board neatly to fit around penetrations and projections, and to fit tight to intersecting sloping roof decks.
 - 2. At internal roof drains, conform to slope of drain sump.
 - a. Trim cover board so that water flow is unrestricted.
 - 3. Cut and fit cover board tight to nailers, projections, and penetrations.
 - 4. Adhere cover board to substrate using adhesive in accordance with FM Approvals' RoofNav assembly requirements and FM Global Property Loss Prevention Data Sheet 1-29 for specified Windstorm Resistance Classification, as follows:
 - a. Set cover board in ribbons of bead-applied insulation adhesive, firmly pressing and maintaining insulation in place.

3.7 ADHERED ROOFING INSTALLATION

- A. Adhere roof membrane over area to receive roofing in accordance with roofing system manufacturer's written instructions.
- B. Unroll membrane roof membrane and allow to relax before installing.
- C. Accurately align roof membrane, and maintain uniform side and end laps of minimum dimensions required by manufacturer. Stagger end laps.
- D. Bonding Adhesive: Apply to substrate and underside of roof membrane at rate required by manufacturer, and allow to partially dry before installing roof membrane. Do not apply to splice area of roof membrane.
- E. In addition to adhering, mechanically fasten roof membrane securely at terminations, penetrations, and perimeters.
- F. Apply roof membrane with side laps shingled with slope of roof deck where possible.
- G. Tape Seam Installation: Clean and prime both faces of splice areas, apply splice tape.
 - 1. Firmly roll side and end laps of overlapping roof membrane to ensure a watertight seam installation.
 - 2. Apply lap sealant and seal exposed edges of roofing terminations.
- H. Repair tears, voids, and lapped seams in roof membrane that do not comply with requirements.
- I. Spread sealant or mastic bed over deck-drain flange at roof drains, and securely seal roof membrane in place with clamping ring.

3.8 BASE FLASHING INSTALLATION

- A. Install sheet flashings and preformed flashing accessories, and adhere to substrates in accordance with roofing system manufacturer's written instructions.
- B. Apply bonding adhesive to substrate and underside of sheet flashing at required rate, and allow to partially dry. Do not apply to seam area of flashing.
- C. Flash penetrations and field-formed inside and outside corners with cured or uncured sheet flashing.
- D. Clean splice areas, apply splicing cement, and firmly roll side and end laps of overlapping sheets to ensure a watertight seam installation. Apply lap sealant and seal exposed edges of sheet flashing terminations.
- E. Terminate and seal top of sheet flashings and mechanically anchor to substrate through termination bars.

3.9 FIELD QUALITY CONTROL

- A. Testing Agency: Engage a qualified testing agency to inspect substrate conditions, surface preparation, roof membrane application, sheet flashings, protection, and drainage components, and to furnish reports to Architect.
- B. Perform the following tests:
 - 1. Flood Testing: Flood test each roofing area for leaks, in accordance with recommendations in ASTM D5957, after completing roofing and flashing. Install temporary containment assemblies, plug or dam drains, and flood with potable water.
 - a. Perform tests before overlying construction is placed.
 - b. Flood to an average depth of 2-1/2 inches (65 mm) with a minimum depth of 1 inch (25 mm) and not exceeding a depth of 4 inches (100 mm). Maintain 2 inches (50 mm) of clearance from top of base flashing.
 - c. Flood each area for 48 hours.
 - d. After flood testing, repair leaks, repeat flood tests, and make further repairs until roofing and flashing installations are watertight.
 - 1) Cost of retesting is Contractor's responsibility.
 - e. Testing agency shall prepare survey report indicating locations initial leaks, if any, and final survey report.
 - 2. Testing agency shall prepare survey report indicating locations of initial discontinuities, if any.
- C. Final Roof Inspection: Arrange for roofing system manufacturer's technical personnel to inspect roofing installation on completion, in presence of Architect, and to prepare inspection report.
- D. Repair or remove and replace components of roofing system where inspections indicate that they do not comply with specified requirements.
- E. Additional testing and inspecting, at Contractor's expense, will be performed to determine if replaced or additional work complies with specified requirements.

3.10 PROTECTING AND CLEANING

- A. Protect roofing system from damage and wear during remainder of construction period. When remaining construction does not affect or endanger roofing system, inspect roofing system for deterioration and damage, describing its nature and extent in a written report, with copies to Architect and Owner.

- B. Correct deficiencies in or remove roofing system that does not comply with requirements, repair substrates, and repair or reinstall roofing system to a condition free of damage and deterioration at time of Substantial Completion and in accordance with warranty requirements.

3.11 ROOFING INSTALLER'S WARRANTY

- A. WHEREAS _____ of _____, herein called the "Roofing Installer," has performed roofing and associated work ("work") on the following project:

1. Owner: <Insert name of Owner>.
2. Address: <Insert address>.
3. Building Name/Type: <Insert information>.
4. Address: <Insert address>.
5. Area of Work: <Insert information>.
6. Acceptance Date: _____.
7. Warranty Period: <Insert time>.
8. Expiration Date: _____.

- B. AND WHEREAS Roofing Installer has contracted (either directly with Owner or indirectly as a subcontractor) to warrant said work against leaks and faulty or defective materials and workmanship for designated Warranty Period,

- C. NOW THEREFORE Roofing Installer hereby warrants, subject to terms and conditions herein set forth, that during Warranty Period Roofing Installer will, at Roofing Installer's own cost and expense, make or cause to be made such repairs to or replacements of said work as are necessary to correct faulty and defective work and as are necessary to maintain said work in a watertight condition.

- D. This Warranty is made subject to the following terms and conditions:

1. Specifically excluded from this Warranty are damages to work and other parts of the building, and to building contents, caused by:
 - a. lightning;
 - b. peak gust wind speed exceeding 120 mph (53.6 m/s);
 - c. fire;
 - d. failure of roofing system substrate, including cracking, settlement, excessive deflection, deterioration, and decomposition;
 - e. faulty construction of parapet walls, copings, chimneys, skylights, vents, equipment supports, and other edge conditions and penetrations of the work;
 - f. vapor condensation on bottom of roofing; and
 - g. activity on roofing by others, including construction contractors, maintenance personnel, other persons, and animals, whether authorized or unauthorized by Owner.
2. When work has been damaged by any of foregoing causes, Warranty shall be null and void until such damage has been repaired by Roofing Installer and until cost and expense thereof have been paid by Owner or by another responsible party so designated.
3. Roofing Installer is responsible for damage to work covered by this Warranty but is not liable for consequential damages to building or building contents resulting from leaks or faults or defects of work.
4. During Warranty Period, if Owner allows alteration of work by anyone other than Roofing Installer, including cutting, patching, and maintenance in connection with penetrations, attachment of other work, and positioning of anything on roof, this Warranty shall become null and void on date of said alterations, but only to the extent said alterations affect work covered by this Warranty. If Owner engages Roofing Installer to perform said alterations, Warranty shall not become null and void unless Roofing Installer, before starting said work, shall have notified Owner in writing, showing reasonable cause for claim, that said alterations would likely damage or deteriorate work, thereby reasonably justifying a limitation or termination of this Warranty.
5. During Warranty Period, if original use of roof is changed and it becomes used for, but was not originally specified for, a promenade, work deck, spray-cooled surface, flooded basin, or other use or service more severe than originally specified, this Warranty shall become null and void on date of said change, but only to the extent said change affects work covered by this Warranty.



6. Owner shall promptly notify Roofing Installer of observed, known, or suspected leaks, defects, or deterioration and shall afford reasonable opportunity for Roofing Installer to inspect work and to examine evidence of such leaks, defects, or deterioration.
7. This Warranty is recognized to be the only warranty of Roofing Installer on said work and shall not operate to restrict or cut off Owner from other remedies and resources lawfully available to Owner in cases of roofing failure. Specifically, this Warranty shall not operate to relieve Roofing Installer of responsibility for performance of original work in accordance with requirements of the Contract Documents, regardless of whether Contract was a contract directly with Owner or a subcontract with Owner's General Contractor.

E. IN WITNESS THEREOF, this instrument has been duly executed this _____ day of _____, _____.

1. Authorized Signature: _____.
2. Name: _____.
3. Title: _____.

END OF SECTION 075323

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SECTION 077100 - ROOF SPECIALTIES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Special Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. Section Includes:

- 1. Copings.
 - 2. Roof-edge specialties.
 - 3. Counterflashings.

- B. Related Requirements:

- 1. Section 061000 "Rough Carpentry for wood nailers, curbs, and blocking.
 - 2. Section 077129 "Manufactured Roof Expansion Joints" for manufactured roof expansion-joint cover assemblies.
 - 3. Section 077200 "Roof Accessories" for set-on-type curbs, equipment supports, roof hatches, vents, and other manufactured roof accessory units.

1.3 ACTION SUBMITTALS

- A. Product Data: For each type of product.

- 1. Include construction details, material descriptions, dimensions of individual components and profiles, and finishes.

- B. Shop Drawings: For roof specialties.

- 1. Include plans, elevations, expansion-joint locations, keyed details, and attachments to other work. Distinguish between plant- and field-assembled work.
 - 2. Include details for expansion and contraction; locations of expansion joints, including direction of expansion and contraction.
 - 3. Indicate profile and pattern of seams and layout of fasteners, cleats, clips, and other attachments.
 - 4. Detail termination points and assemblies, including fixed points.
 - 5. Include details of special conditions.

- C. Samples: For each type of roof specialty and for each color and texture specified.

1.4 INFORMATIONAL SUBMITTALS

- A. Qualification Data: For manufacturer.

- B. Product Certificates: For each type of roof specialty.

- C. Product Test Reports: For copings and roof-edge flashings, for tests performed by a qualified testing agency.

- D. Sample Warranty: For manufacturer's special warranty.

1.5 CLOSEOUT SUBMITTALS

- A. Maintenance Data: For roofing specialties to include in maintenance manuals.

1.6 QUALITY ASSURANCE

- A. Manufacturer Qualifications: A qualified manufacturer offering products meeting requirements that are SPRI ES-1 tested to specified design pressure.
- B. Source Limitations: Obtain roof specialties approved by manufacturer providing roofing-system warranty specified in Section 075323 "Ethylene-Propylene-Diene-Monomer (EPDM) Roofing."

1.7 DELIVERY, STORAGE, AND HANDLING

- A. Do not store roof specialties in contact with other materials that might cause staining, denting, or other surface damage. Store roof specialties away from uncured concrete and masonry.
- B. Protect strippable protective covering on roof specialties from exposure to sunlight and high humidity, except to extent necessary for the period of roof-specialty installation.

1.8 FIELD CONDITIONS

- A. Field Measurements: Verify profiles and tolerances of roof-specialty substrates by field measurements before fabrication, and indicate measurements on Shop Drawings.
- B. Coordination: Coordinate roof specialties with flashing, trim, and construction of parapets, roof deck, roof and wall panels, and other adjoining work to provide a leakproof, secure, and noncorrosive installation.

1.9 WARRANTY

- A. Roofing-System Warranty: Roof specialties are included in warranty provisions in Section Section 075323 "Ethylene-Propylene-Diene-Monomer (EPDM) Roofing."
- B. Special Warranty on Painted Finishes: Manufacturer agrees to repair finish or replace roof specialties that show evidence of deterioration of factory-applied finishes within specified warranty period.
 - 1. Fluoropolymer Finish: Deterioration includes, but is not limited to, the following:
 - a. Color fading more than 5 Hunter units when tested according to ASTM D 2244.
 - b. Chalking in excess of a No. 8 rating when tested according to ASTM D 4214.
 - c. Cracking, checking, peeling, or failure of paint to adhere to bare metal.
 - 2. Finish Warranty Period: 20 years from date of Substantial Completion.

PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

- A. General Performance: Roof specialties shall withstand exposure to weather and resist thermally induced movement without failure, rattling, leaking, or fastener disengagement due to defective manufacture, fabrication, installation, or other defects in construction.
- B. SPRI Wind Design Standard: Manufacture and install copings and roof-edge specialties tested according to SPRI ES-1 and capable of resisting the following design pressures:
 - 1. Design Pressure: As indicated on Drawings.
- C. Thermal Movements: Allow for thermal movements from ambient and surface temperature changes to prevent buckling, opening of joints, hole elongation, overstressing of components, failure of joint sealants, failure of connections, and other detrimental effects. Provide clips that resist rotation and avoid shear stress as a result of thermal movements. Base calculations on surface temperatures of materials due to both solar heat gain and nighttime-sky heat loss.
 - 1. Temperature Change (Range): 120 deg F (67 deg C), ambient; 180 deg F (100 deg C), material surfaces.

2.2 COPINGS

- A. Metal Copings: Manufactured coping system consisting of metal coping cap in section lengths not exceeding 12 feet (3.6 m), concealed anchorage; with corner units, end cap units, and concealed splice plates with finish matching coping caps.
 - 1. Basis-of-Design Product: Subject to compliance with requirements, provide Metal-Era Roof Edge Solutions; 'Perma-Tite Gold Coping Tapered' or comparable product by one of the following
 - a. Architectural Products Company.
 - b. Atas International, Inc.
 - c. Pac-Clad Peterson (A Carlisle Company).
 - 2. Formed Aluminum Sheet Coping Caps: Aluminum sheet, 0.050 inch (1.27 mm) thick.
 - a. Surface: Smooth, flat finish.
 - b. Finish: Three-coat fluoropolymer .
 - c. Color: As selected by Architect from manufacturer's full range.
 - 3. Corners: Factory mitered and mechanically clinched and sealed watertight.
 - 4. Coping-Cap Attachment Method: Snap-on, fabricated from coping-cap material.
 - a. Snap-on Coping Anchor Plates: Concealed, galvanized-steel sheet, 12 inches (300 mm) wide, with integral cleats.
 - b. Face-Leg Cleats: Concealed, continuous galvanized-steel sheet.

2.3 ROOF-EDGE SPECIALTIES

- A. Roof-Edge Fascia: Manufactured, two-piece, roof-edge fascia consisting of snap-on metal fascia cover in section lengths not exceeding 12 feet (3.6 m) and a continuous metal receiver with integral drip-edge cleat to engage fascia cover and secure single-ply roof membrane. Provide matching corner units.
 - 1. Basis-of-Design Product: Subject to compliance with requirements, provide Metal-Era Roof Edge Solutions; 'Termination Bar Fascia' or comparable product by one of the following
 - a. Architectural Products Company.
 - b. Atas International, Inc.
 - c. Pac-Clad Peterson (A Carlisle Company).

2. Formed Aluminum Sheet Fascia Covers: Aluminum sheet, 0.050 inch (1.27 mm) thick.
 - a. Surface: Smooth, flat finish.
 - b. Finish: Three-coat fluoropolymer.
 - c. Color: As selected by Architect from manufacturer's full range.
3. Splice Plates: Concealed, of same material, finish, and shape as fascia cover.
4. Receiver: Extruded aluminum, 0.080 inch (2.03 mm) thick.

2.4 COUNTERFLASHINGS

1. Basis-of-Design Product: Subject to compliance with requirements, provide Metal-Era Roof Edge Solutions; 'Counter-Flash 2-Piece Counterflashing' or comparable product by one of the following
 - a. Architectural Products Company.
 - b. Atas International, Inc.
 - c. Pac-Clad Peterson (A Carlisle Company).
- B. 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 and compress against base flashings with joints lapped, from the following exposed metal:
 1. Formed Aluminum: 0.040 inch (1.02 mm) thick .
- C. Accessories:
 1. Counterflashing Wind-Restraint Clips: Provide clips to be installed before counterflashing to prevent wind uplift of counterflashing lower edge.
- D. Aluminum Finish: Two-coat fluoropolymer.
 1. Color: As selected by Architect from manufacturer's full range.

2.5 MATERIALS

- A. Zinc-Coated (Galvanized) Steel Sheet: ASTM A 653/A 653M, G90 (Z275) coating designation.
- B. Aluminum Sheet: ASTM B 209 (ASTM B 209M), alloy as standard with manufacturer for finish required, with temper to suit forming operations and performance required.
- C. Aluminum Extrusions: ASTM B 221 (ASTM B 221M), alloy and temper recommended by manufacturer for type of use and finish indicated, finished as follows:

2.6 MISCELLANEOUS MATERIALS

- A. Fasteners: Manufacturer's recommended fasteners, suitable for application and designed to meet performance requirements. Furnish the following unless otherwise indicated:
 1. Fasteners for Aluminum: Aluminum or Series 300 stainless steel.
 2. 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.
- B. Elastomeric Sealant: ASTM C 920, elastomeric polymer sealant of type, grade, class, and use classifications required by roofing-specialty manufacturer for each application.
- C. Butyl Sealant: ASTM C 1311, single-component, solvent-release butyl rubber sealant; polyisobutylene plasticized; heavy bodied for hooked-type joints with limited movement.

- D. Bituminous Coating: Cold-applied asphalt emulsion complying with ASTM D 1187/D 1187M.
- E. Asphalt Roofing Cement: ASTM D 4586, asbestos free, of consistency required for application.

2.7 FINISHES

- A. Comply with NAAMM's "Metal Finishes Manual for Architectural and Metal Products" for recommendations for applying and designating finishes.
- B. Protect mechanical and painted 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 unacceptable. 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. Coil-Coated Aluminum Sheet Finishes:
 - 1. High-Performance Organic Finish: Prepare, pretreat, and apply coating to exposed metal surfaces to comply with coating and resin manufacturers' written instructions.
 - a. Two-Coat Fluoropolymer: AAMA 2605. Fluoropolymer finish containing not less than 70 percent PVDF resin by weight in color coat. Prepare, pretreat, and apply coating to exposed metal surfaces to comply with coating and resin manufacturers' written instructions.
 - b. Three-Coat Fluoropolymer: AAMA 2605. Fluoropolymer finish containing not less than 70 percent PVDF resin by weight in both color coat and clear topcoat. Prepare, pretreat, and apply coating to exposed metal surfaces to comply with coating and resin manufacturers' written instructions.
 - c. Concealed Surface Finish: Apply pretreatment and manufacturer's standard acrylic or polyester backer finish consisting of prime coat and wash coat with a minimum total dry film thickness of 0.5 mil (0.013 mm).

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine substrates, areas, and conditions, with Installer present, to verify actual locations, dimensions, and other conditions affecting performance of the Work.
- B. Examine walls, roof edges, and parapets for suitable conditions for roof specialties.
- C. Verify that substrate is sound, dry, smooth, clean, sloped for drainage where applicable, and securely anchored.
- D. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 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, underlayments, 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 weathertight performance. Verify shapes and dimensions of surfaces to be covered before manufacture.
 4. Torch cutting of roof specialties is not permitted.
 5. Do not use graphite pencils to mark metal surfaces.
- 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 uncoated aluminum roof specialties with bituminous coating where in contact with wood, ferrous metal, or cementitious construction.
 2. Bed flanges in thick coat of asphalt roofing cement where required by manufacturers of roof specialties for waterproof performance.
- 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 indicated 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 penetrate substrate not less than recommended by fastener manufacturer to achieve maximum pull-out resistance but not less than 1-1/4 inches (32 mm) for nails and not less than 3/4 inch (19 mm) for wood screws.
- E. Seal concealed joints with butyl sealant as required by roofing-specialty manufacturer.
- F. Seal joints as required for weathertight construction. Place sealant to be completely concealed in joint. Do not install sealants at temperatures below 40 deg F (4 deg C).

3.3 COPING INSTALLATION

- A. Install cleats, anchor plates, and other anchoring and attachment accessories and devices with concealed fasteners.
- B. Anchor copings with manufacturer's required devices, fasteners, and fastener spacing to meet performance requirements.
1. Interlock face and back leg drip edges of snap-on coping cap into cleated anchor plates anchored to substrate at manufacturer's required spacing that meets performance requirements.

3.4 ROOF-EDGE SPECIALITIES INSTALLATION

- A. Install cleats, cants, and other anchoring and attachment accessories and devices with concealed fasteners.
- B. Anchor roof edgings with manufacturer's required devices, fasteners, and fastener spacing to meet performance requirements.

3.5 COUNTERFLASHING INSTALLATION

- A. General: Coordinate installation of counterflashings with installation of base flashings.
- B. Counterflashings: Insert counterflashings into masonry joints; 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 butyl sealant. Fit counterflashings tightly to base flashings.

3.6 CLEANING AND PROTECTION

- A. Clean exposed metal surfaces of substances that interfere with uniform oxidation and weathering.
- B. Remove temporary protective coverings and strippable films as roof specialties are installed. On completion of installation, clean finished surfaces, including removing unused fasteners, metal filings, pop rivet stems, and pieces of flashing. Maintain roof specialties in a clean condition during construction.
- C. Replace roof specialties that have been damaged or that cannot be successfully repaired by finish touchup or similar minor repair procedures.

END OF SECTION 077100

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SECTION 077129 - MANUFACTURED ROOF EXPANSION JOINTS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Special Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. Section Includes:
 - 1. Aluminum roof expansion joints.
- B. Related Requirements:
 - 1. Section 061000 " Rough Carpentry" for wooden curbs or cants for mounting roof expansion joints.

1.3 ACTION SUBMITTALS

- A. Product Data: For each type of product.
- B. Shop Drawings: For roof expansion joints.
 - 1. Include plans, elevations, sections, and attachment details.
 - 2. Include details of splices, intersections, transitions, fittings, method of field assembly, and location and size of each field splice.
 - 3. Provide isometric drawings of intersections, terminations, changes in joint direction or planes, and transition to other expansion joint systems depicting how components interconnect with each other and adjacent construction to allow movement and achieve waterproof continuity.
- C. Samples: For each exposed product and for each color specified, 6 inches (150 mm) in size.

1.4 INFORMATIONAL SUBMITTALS

- A. Qualification Data: For manufacturer and installer.
- B. Sample Warranties: For special warranties.

1.5 QUALITY ASSURANCE

- A. Installer Qualifications: Installer of roofing membrane.

1.6 WARRANTY

- A. Special Warranty: Manufacturer and Installer agree to repair or replace roof expansion joints and components that leak, deteriorate beyond normal weathering, or otherwise fail in materials or workmanship within specified warranty period.

1. Warranty Period: Two years from date of Substantial Completion.
- B. Special Warranty on Painted Finishes: Manufacturer's standard form in which manufacturer agrees to repair finish or replace roof expansion joints that show evidence of deterioration of factory-applied finishes within specified warranty period.
 1. Fluoropolymer Finish: Deterioration includes, but is not limited to, the following:
 - a. Color fading more than 5 Delta E units when tested in accordance with ASTM D2244.
 - b. Chalking in excess of a No. 8 rating when tested in accordance with ASTM D4214.
 - c. Cracking, checking, peeling, or failure of paint to adhere to bare metal.
 2. Warranty Period: 20 years from date of Substantial Completion.

PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

- A. Thermal Movements: Allow for thermal movements from ambient and surface temperature changes to prevent buckling, opening of joints, hole elongation, overstressing of components, failure of joint seals, failure of connections, and other detrimental effects.
 1. Temperature Change: 120 deg F (67 deg C), ambient; 180 deg F (100 deg C), material surfaces.

2.2 ALUMINUM ROOF EXPANSION JOINTS

- A. Aluminum Roof Expansion Joint: Factory-fabricated, continuous, waterproof, joint cover; consisting of a formed or extruded metal cover secured to extruded aluminum frames, with water-resistant gasketing between cover and frames, and with provision for securing assembly to substrate and sealing assembly to roofing membrane or flashing.
 1. Basis-of-Design Product: Subject to compliance with requirements, provide Metal-Era Roof Edge Solutions; 'Perma-Tite Expansion Joint (Roof-to-Roof)' or comparable product by one of the following
 - a. Balco; a CSW Industrials Company.
 - b. C/S Group.
 - c. Nystrom.
 2. Joint Movement Capability: As indicated on Drawings.
 3. Frame Members: Extruded aluminum configured for curbs as indicated; with exposed finish matching cover.
 4. Cover: Formed aluminum, 0.050 inch (1.27 mm) thick.
 5. Centering Devices: Centering bars.
 6. Accessories: Provide splicing units, adhesives, and other components as recommended by roof-expansion-joint manufacturer for complete installation.
 7. Secondary Seal: Continuous, waterproof membrane within joint and attached to substrate on sides of joint below the cover.
 - a. Thermal Insulation: Fill space above secondary seal with mineral-fiber blanket insulation; with maximum flame-spread and smoke-developed indexes of 25 and 50, respectively, per ASTM E84.
- B. Materials:
 1. Aluminum: ASTM B209 (ASTM B209M) for sheet and plate, ASTM B221 (ASTM B221M) for extrusions; alloy as standard with manufacturer for finish required, with temper to suit forming operations and performance required.

- a. Apply manufacturer's standard protective coating on aluminum surfaces to be placed in contact with cementitious or preservative-treated wood materials.
 - 1) Three-Coat Fluoropolymer: System consisting of primer, fluoropolymer color coat, and clear fluoropolymer topcoat, with both color coat and clear topcoat containing not less than 70 percent PVDF resin by weight.
- b. Aluminum Finish Color: As selected by Architect from manufacturer's full range.

2.3 MISCELLANEOUS MATERIALS

- A. Adhesives: As recommended by roof-expansion-joint manufacturer.
- B. Fasteners: Manufacturer's recommended fasteners, suitable for application and designed to withstand design loads.
- C. Mineral-Fiber Blanket: ASTM C665.
- D. Bituminous Coating: Cold-applied asphalt emulsion complying with ASTM D1187/D1187M.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine joint openings, substrates, and expansion-control joint systems that interface with roof expansion joints, for suitable conditions where roof expansion joints will be installed.
- B. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 INSTALLATION

- A. Comply with manufacturer's written instructions for handling and installing roof expansion joints.
 - 1. Anchor roof expansion joints securely in place, with provisions for required movement. Use fasteners, protective coatings, sealants, and miscellaneous items as required to complete roof expansion joints.
 - 2. Install roof expansion joints true to line and elevation; and without warping, jogs in alignment, buckling, or tool marks.
 - 3. Provide for linear thermal expansion of roof expansion joint materials.
 - 4. Provide uniform profile of roof expansion joint throughout its length; do not stretch or squeeze membranes.
 - 5. Provide uniform, neat seams.
 - 6. Install roof expansion joints to fit substrates and to result in watertight performance.
- B. Splices: Splice roof expansion joints to provide continuous, uninterrupted, and waterproof joints.
 - 1. Install waterproof splices and prefabricated end dams to prevent leakage of secondary-seal membrane.
- C. 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.

END OF SECTION 077129

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SECTION 077200 - ROOF ACCESSORIES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Special Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. Section Includes:

- 1. Equipment supports.
 - 2. Roof hatches.

- B. Related Sections:

- 1. Section 055000 "Metal Fabrications" for metal vertical ladders, ships' ladders, and stairs for access to roof hatches.
 - 2. Section 077100 "Roof Specialties" for manufactured fasciae, copings, gravel stops, gutters and downspouts, and counterflashing.
 - 3. Section 077129 "Manufactured Roof Expansion Joints" for manufactured roof expansion-joint covers.

1.3 COORDINATION

- A. Coordinate layout and installation of roof accessories with roofing membrane and base flashing and interfacing and adjoining construction to provide a leakproof, weathertight, secure, and noncorrosive installation.
- B. Coordinate dimensions with rough-in information or Shop Drawings of equipment to be supported.

1.4 ACTION SUBMITTALS

- A. Product Data: For each type of roof accessory.

- 1. Include construction details, material descriptions, dimensions of individual components and profiles, and finishes.

- B. Samples: For each exposed product and for each color and texture specified, prepared on Samples of size to adequately show color.

1.5 CLOSEOUT SUBMITTALS

- A. Operation and Maintenance Data: For roof accessories to include in operation and maintenance manuals.

PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

- A. General Performance: Roof accessories shall withstand exposure to weather and resist thermally induced movement without failure, rattling, leaking, or fastener disengagement due to defective manufacture, fabrication, installation, or other defects in construction.

2.2 EQUIPMENT SUPPORTS

- A. Equipment Supports: Rail-type metal equipment supports capable of supporting superimposed live and dead loads between structural supports, including equipment loads and other construction indicated on Drawings, spanning between structural supports; capable of meeting performance requirements; with welded or mechanically fastened and sealed corner joints, and integrally formed structure-mounting flange at bottom.
- B. Size: Coordinate dimensions with roughing-in information or Shop Drawings of equipment to be supported.
- C. Supported Load Capacity: <Insert load requirements>.
- D. Material: Zinc-coated (galvanized) steel sheet, 0.052 inch (1.32 mm) thick.
 - 1. Finish: Mill phosphatized.
- E. Construction:
 - 1. Curb Profile: Manufacturer's standard compatible with roofing system.
 - 2. Nailer: Factory-installed continuous wood nailers 3-1/2 inches (90 mm) wide on top flange of equipment supports, continuous around support perimeter.
 - 3. Wind Restraint Straps and Base Flange Attachment: Provide wind restraint straps, welded strap connectors, and base flange attachment to roof structure at perimeter of curb of size and spacing required to meet wind uplift requirements.
 - 4. Metal Counterflashing: Manufacturer's standard, removable, fabricated of same metal and finish as equipment support.
 - 5. Fabricate equipment supports to minimum height of 12 inches (305 mm) above roofing surface unless otherwise indicated.

2.3 ROOF HATCH

- A. Roof Hatches: Metal roof-hatch units with lids and insulated single-walled curbs, welded or mechanically fastened and sealed corner joints, continuous lid-to-curb counterflashing and weathertight perimeter gasketing, straight sides, and integrally formed deck-mounting flange at perimeter bottom.
 - 1. Basis-of-Design Product: Subject to compliance with requirements, provide The Bilco Company; 'S-50' or comparable product by one of the following:
 - a. Babcock-Davis.
 - b. Kingspan Light + Air LLC.
 - c. Nystrom.
- B. Type and Size: Single-leaf lid, 36 by 36 inches (900 by 900 mm).
- C. Loads: Minimum 40-lbf/sq. ft. (1.9-kPa) external live load and 20-lbf/sq. ft. (0.95-kPa) internal uplift load.
- D. Hatch Material: Aluminum sheet.

1. Thickness: Manufacturer's standard thickness for hatch size indicated.
2. Finish: Baked enamel or powder coat.
3. Color: As selected by Architect from manufacturer's full range.

E. Construction:

1. Insulation: Glass-fiber board.
2. Nailer: Factory-installed wood nailer continuous around hatch perimeter.
3. Hatch Lid: Opaque, insulated, and double walled, with manufacturer's standard metal liner of same material and finish as outer metal lid.
4. Curb Liner: Manufacturer's standard, of same material and finish as metal curb.
5. On ribbed or fluted metal roofs, form flange at perimeter bottom to conform to roof profile.
6. Fabricate curbs to minimum height of 12 inches (305 mm) above roofing surface unless otherwise indicated.

F. Hardware: Spring operators, hold-open arm, galvanized-steel spring latch with turn handles, galvanized-steel butt- or pintle-type hinge system, and padlock hasps inside and outside.

G. Safety Railing System: One-piece welded safety rail including , fasteners, and accessories required for a complete installation; attached to roof hatch and complying with 29 CFR 1910.23 requirements and authorities having jurisdiction.

1.
 - a. Finish: Manufacturer's standard.

H. Ladder-Assist Post: Roof-hatch manufacturer's standard device for attachment to roof-access ladder.

1. Operation: Post locks in place on full extension; release mechanism returns post to closed position.
2. Height: 42 inches (1060 mm) above finished roof deck.
3. Material: Steel.
4. Post: 1-5/8-inch- (41-mm-) diameter pipe.
5. Finish: Manufacturer's standard baked enamel or powder coat.

2.4 METAL MATERIALS

A. Zinc-Coated (Galvanized) Steel Sheet: ASTM A 653/A 653M, G90 (Z275) coating designation.

1. Mill-Phosphatized Finish: Manufacturer's standard for field painting.

B. Aluminum Sheet: ASTM B 209 (ASTM B 209M), manufacturer's standard alloy for finish required, with temper to suit forming operations and performance required.

1. Baked-Enamel or Powder-Coat Finish: AAMA 2603 except with a minimum dry film thickness of 1.5 mils (0.04 mm). Comply with coating manufacturer's written instructions for cleaning, conversion coating, and applying and baking finish.

C. Steel Shapes: ASTM A 36/A 36M, hot-dip galvanized according to ASTM A 123/A 123M unless otherwise indicated.

D. Steel Tube: ASTM A 500/A 500M, round tube.

E. Steel Pipe: ASTM A 53/A 53M, galvanized.

2.5 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. Glass-Fiber Board Insulation: ASTM C 726, nominal density of 3 lb/cu. ft. (48 kg/cu. m), thermal resistivity of 4.3 deg F x h x sq. ft./Btu x in. at 75 deg F (29.8 K x m/W at 24 deg C), thickness as indicated.
- C. Polyisocyanurate Board Insulation: ASTM C 1289, thickness and thermal resistivity as indicated.
- 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. Bituminous Coating: Cold-applied asphalt emulsion complying with ASTM D 1187/D 1187M.
- F. Underlayment:
 - 1. Felt: ASTM D 226/D 226M, Type II (No. 30), asphalt-saturated organic felt, nonperforated.
 - 2. Polyethylene Sheet: 6-mil- (0.15-mm-) thick polyethylene sheet complying with ASTM D 4397.
 - 3. Slip Sheet: Building paper, 3 lb/100 sq. ft. (0.16 kg/sq. m) minimum, rosin sized.
 - 4. 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.
 - 5. 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. Furnish the following unless otherwise indicated:
 - 6. Fasteners for Zinc-Coated or Aluminum-Zinc Alloy-Coated Steel: Series 300 stainless steel or hot-dip zinc-coated steel according to ASTM A 153/A 153M or ASTM F 2329.
 - 7. Fasteners for Aluminum Sheet: Aluminum or Series 300 stainless steel.
 - 8. Fasteners for Stainless-Steel Sheet: Series 300 stainless steel.
- G. Gaskets: Manufacturer's standard tubular or fingered design of neoprene, EPDM, PVC, or silicone or a flat design of foam rubber, sponge neoprene, or cork.

2.6 GENERAL FINISH REQUIREMENTS

- A. Comply with NAAMM's "Metal Finishes Manual for Architectural and Metal Products" for recommendations for applying and designating finishes.
- B. 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.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine substrates, areas, and conditions, with Installer present, to verify actual locations, dimensions, and other conditions affecting performance of the Work.
- B. Verify that substrate is sound, dry, smooth, clean, sloped for drainage, and securely anchored.
- C. Verify dimensions of roof openings for roof accessories.
- D. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 INSTALLATION

- A. General: 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, buckling, or tool marks.
 - 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 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 underlayment and cover with manufacturer's recommended slip sheet.
 - 3. Bed flanges in thick coat of asphalt roofing cement where required by manufacturers of roof accessories for waterproof performance.
- C. Equipment Support Installation: Install equipment supports so top surfaces are level with each other.
- D. Roof-Hatch Installation:
 - 1. Verify that roof hatch operates properly. Clean, lubricate, and adjust operating mechanism and hardware.
 - 2. Attach safety railing system to roof-hatch curb.
 - 3. Attach ladder-assist post according to manufacturer's written instructions.

3.3 REPAIR AND CLEANING

- A. Clean exposed surfaces according to manufacturer's written instructions.
- B. Clean off excess sealants.
- 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 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Special Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. Section Includes:
 - 1. Penetration firestopping systems for the following applications:
 - a. Penetrations in fire-resistance-rated walls.
 - b. Penetrations in horizontal assemblies.
- B. Related Requirements:
 - 1. Section 078443 "Joint Firestopping" for joints in or between fire-resistance-rated construction.

1.3 ACTION SUBMITTALS

- A. Product Data: For each type of product.
- B. Product Schedule: For each penetration firestopping system. Include location, illustration of firestopping system, and design designation of qualified testing and inspecting agency.
 - 1. Engineering Judgments: Where Project conditions require modification to a qualified testing and inspecting agency's illustration for a particular penetration firestopping system, submit illustration, with modifications marked, approved by penetration firestopping system manufacturer's fire-protection engineer as an engineering judgment or equivalent fire-resistance-rated assembly. Obtain approval of authorities having jurisdiction prior to submittal.

1.4 INFORMATIONAL SUBMITTALS

- A. Qualification Data: For Installer.
- B. Product Test Reports: For each penetration firestopping system, for tests performed by a qualified testing agency.

1.5 CLOSEOUT SUBMITTALS

- A. Installer Certificates: From Installer indicating that penetration firestopping systems have been installed in compliance with requirements and manufacturer's written instructions.

1.6 QUALITY ASSURANCE

- A. Installer Qualifications: A firm that has been approved by FM Approval in accordance with FM Approval 4991, "Approval Standard for Firestop Contractors," or been evaluated by UL and found to comply with its "Qualified Firestop Contractor Program Requirements."

1.7 PROJECT CONDITIONS

- A. Environmental Limitations: Do not install penetration firestopping system when ambient or substrate temperatures are outside limits permitted by penetration firestopping system manufacturers or when substrates are wet because of rain, frost, condensation, or other causes.
- B. Install and cure penetration firestopping materials per manufacturer's written instructions using natural means of ventilations or, where this is inadequate, forced-air circulation.

1.8 COORDINATION

- A. Coordinate construction of openings and penetrating items to ensure that penetration firestopping systems can be installed in accordance with specified firestopping system design.
- B. Coordinate sizing of sleeves, openings, core-drilled holes, or cut openings to accommodate penetration firestopping systems.

PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

- A. Fire-Test-Response Characteristics:
 - 1. Perform penetration firestopping system tests by a qualified testing agency acceptable to authorities having jurisdiction.
 - 2. Test per testing standards referenced in "Penetration Firestopping Systems" Article. Provide rated systems complying with the following requirements:
 - a. Penetration firestopping systems shall bear classification marking of a qualified testing agency.
 - 1) UL in its "Fire Resistance Directory."
 - 2) Intertek Group in its "Directory of Listed Building Products."
 - 3) FM Approval in its "Approval Guide."

2.2 PENETRATION FIRESTOPPING SYSTEMS

- A. Penetration Firestopping Systems: Systems that resist spread of fire, 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.
 - 1. 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:
 - a. 3M Fire Protection Products.
 - b. Grabber Construction Products.
 - c. Hilti, Inc.
 - d. Passive Fire Protection Partners.

- B. Penetrations in Fire-Resistance-Rated Walls: Penetration firestopping systems with ratings determined per ASTM E814 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: Penetration firestopping systems with ratings determined per ASTM E814 or UL 1479, based on testing at a positive pressure differential of 0.01-inch wg (2.49 Pa).
 - 1. F-Rating: At least one hour, but not less than the fire-resistance rating of constructions penetrated.
 - 2. T-Rating: At least one hour, but not less than the fire-resistance rating of constructions penetrated except for floor penetrations within the cavity of a wall.
- D. Exposed Penetration Firestopping Systems: Flame-spread and smoke-developed indexes of less than 25 and 450, respectively, per ASTM E84.
- E. 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 system manufacturer and approved by qualified testing and inspecting agency for conditions indicated.
 - 1. Permanent forming/damming/backing materials.
 - 2. Substrate primers.
 - 3. Collars.
 - 4. Steel sleeves.

2.3 FILL MATERIALS

- A. Intumescent Putties: Nonhardening, water-resistant, intumescent putties containing no solvents or inorganic fibers.
- B. Mortars: Prepackaged dry mixes consisting of a blend of inorganic binders, hydraulic cement, fillers and lightweight aggregate formulated for mixing with water at Project site to form a nonshrinking, homogeneous mortar.

2.4 MIXING

- A. Penetration Firestopping Materials: For those products requiring mixing before application, comply with penetration firestopping system manufacturer's written instructions for accurate proportioning of materials, water (if required), type of mixing equipment, selection of mixer speeds, mixing containers, mixing time, and other items or procedures needed to produce products of uniform quality with optimum performance characteristics for application indicated.

PART 3 - EXECUTION

3.1 EXAMINATION

- 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. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 PREPARATION

- A. Surface Cleaning: Before installing penetration firestopping systems, clean out openings immediately to comply with manufacturer's written instructions and with the following requirements:

1. Remove from surfaces of opening substrates and from penetrating items foreign materials that could interfere with adhesion of penetration firestopping materials.
 2. Clean opening substrates and penetrating items to produce clean, sound surfaces capable of developing optimum bond with penetration firestopping materials. Remove loose particles remaining from cleaning operation.
 3. Remove laitance and form-release agents from concrete.
- B. Prime substrates where recommended in writing by manufacturer using that manufacturer's recommended products and methods. Confine primers to areas of bond; do not allow spillage and migration onto exposed surfaces.

3.3 INSTALLATION

- A. General: Install penetration firestopping systems to comply with manufacturer's written installation instructions and published drawings for products and applications.
- B. 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.
1. After installing fill materials and allowing them to fully cure, remove combustible forming materials and other accessories not forming permanent components of firestopping.
- C. Install fill materials by proven techniques to produce the following results:
1. Fill voids and cavities formed by openings, forming materials, accessories and penetrating items to achieve required fire-resistance ratings.
 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.

3.4 IDENTIFICATION

- A. Wall Identification: Permanently label walls containing penetration firestopping systems with the words "FIRE AND/OR SMOKE BARRIER - PROTECT ALL OPENINGS," using lettering not less than 3 inches (76 mm) high and with minimum 0.375-inch (9.5-mm) strokes.

3.5 FIELD QUALITY CONTROL

- A. Owner will engage a qualified testing agency to perform tests and inspections in accordance with ASTM E2174.
- B. Where deficiencies are found or penetration firestopping system is damaged or removed because of testing, repair or replace penetration firestopping system to comply with requirements.
- C. Proceed with enclosing penetration firestopping systems with other construction only after inspection reports are issued and installations comply with requirements.

3.6 CLEANING AND PROTECTION

- A. Clean off excess fill materials adjacent to openings as the Work progresses by methods and with cleaning materials that are approved in writing by penetration firestopping system manufacturers and that do not damage materials in which openings occur.

- B. Provide final protection and maintain conditions during and after installation that ensure that penetration firestopping systems are without damage or deterioration at time of Substantial Completion. If, despite such protection, damage or deterioration occurs, immediately cut out and remove damaged or deteriorated penetration firestopping material and install new materials to produce systems complying with specified requirements.

END OF SECTION 078413

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SECTION 078443 - JOINT FIRESTOPPING

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Special Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. Section Includes:
 - 1. Joints in or between fire-resistance-rated constructions; floor and wall.
- B. Related Requirements:
 - 1. Section 078413 "Penetration Firestopping" for penetrations in fire-resistance-rated walls, horizontal assemblies, and smoke barriers.

1.3 ACTION SUBMITTALS

- A. Product Data: For each type of product.
- B. Product Schedule: For each joint firestopping system. Include location, illustration of firestopping system, and design designation of qualified testing agency.
 - 1. Engineering Judgments: Where Project conditions require modification to a qualified testing agency's illustration for a particular joint firestopping system condition, submit illustration, with modifications marked, approved by joint firestopping system manufacturer's fire-protection engineer as an engineering judgment or equivalent fire-resistance-rated assembly.

1.4 INFORMATIONAL SUBMITTALS

- A. Qualification Data: For Installer.
- B. Product Test Listings: For each joint firestopping system, for tests performed by a qualified testing agency.

1.5 CLOSEOUT SUBMITTALS

- A. Installer Certificates: From Installer indicating that joint firestopping systems have been installed in compliance with requirements and manufacturer's written instructions.

1.6 QUALITY ASSURANCE

- A. Installer Qualifications: A firm that has been approved by FM Approval in accordance with FM Approval 4991, "Approval Standard for Firestop Contractors," or been evaluated by UL and found to comply with its "Qualified Firestop Contractor Program Requirements."

1.7 PROJECT CONDITIONS

- A. Environmental Limitations: Do not install joint firestopping systems when ambient or substrate temperatures are outside limits permitted by joint firestopping system manufacturers or when substrates are wet due to rain, frost, condensation, or other causes.
- B. Install and cure joint firestopping systems per manufacturer's written instructions using natural means of ventilation or, where this is inadequate, forced-air circulation.

1.8 COORDINATION

- A. Coordinate construction of joints to ensure that joint firestopping systems can be installed in accordance with specified firestopping system design.
- B. Coordinate sizing of joints to accommodate joint firestopping systems.

PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

- A. Fire-Test-Response Characteristics:
 - 1. Perform joint firestopping system tests by a qualified testing agency acceptable to authorities having jurisdiction.
 - 2. Test per testing standards referenced in "Joint Firestopping Systems" Article. Provide rated systems complying with the following requirements:
 - a. Joint firestopping systems shall bear classification marking of a qualified testing agency.
 - 1) UL in its "Fire Resistance Directory."
 - 2) Intertek Group in its "Directory of Listed Building Products."

2.2 JOINT FIRESTOPPING SYSTEMS

- A. Joint Firestopping Systems: Systems that resist spread of fire, passage of smoke and other gases, and maintain original fire-resistance rating of assemblies in or between which joint firestopping systems are installed. Joint firestopping systems shall accommodate building movements without impairing their ability to resist the passage of fire and hot gases.
- B. Joints in or between Fire-Resistance-Rated Construction: Provide joint firestopping systems with ratings determined per ASTM E1966 or UL 2079.
 - 1. 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:
 - a. 3M Fire Protection Products.
 - b. Grabber Construction Products.
 - c. Hilti, Inc.
 - d. Passive Fire Protection Partners.
 - 2. Fire-Resistance Rating: Equal to or exceeding the fire-resistance rating of the wall, floor, or roof in or between which it is installed.
- C. Exposed Joint Firestopping Systems: Flame-spread and smoke-developed indexes of less than 25 and 450, respectively, as determined per ASTM E84.

- D. Accessories: Provide components of joint firestopping systems, including primers and forming materials, that are needed to install elastomeric fill materials and to maintain ratings required. Use only components specified by joint firestopping system manufacturer and approved by the qualified testing agency for conditions indicated.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine substrates and conditions, with Installer present, for compliance with requirements for joint configurations, substrates, and other conditions affecting performance of the Work.
- B. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 PREPARATION

- A. Surface Cleaning: Before installing joint firestopping systems, clean joints immediately to comply with fire-resistive joint system manufacturer's written instructions and the following requirements:
 - 1. Remove from surfaces of joint substrates foreign materials that could interfere with adhesion of elastomeric fill materials or compromise fire-resistive rating.
 - 2. Clean joint substrates to produce clean, sound surfaces capable of developing optimum bond with elastomeric fill materials. Remove loose particles remaining from cleaning operation.
 - 3. Remove laitance and form-release agents from concrete.
- B. Prime substrates where recommended in writing by joint firestopping system manufacturer using that manufacturer's recommended products and methods. Confine primers to areas of bond; do not allow spillage and migration onto exposed surfaces.

3.3 INSTALLATION

- A. General: Install joint firestopping systems to comply with manufacturer's written installation instructions and published drawings for products and applications indicated.
- B. Install forming materials and other accessories of types required to support elastomeric fill materials during their application and in position needed to produce cross-sectional shapes and depths required to achieve fire ratings indicated.
 - 1. After installing elastomeric fill materials and allowing them to fully cure, remove combustible forming materials and other accessories not indicated as permanent components of fire-resistive joint system.
- C. Install elastomeric fill materials for joint firestopping systems by proven techniques to produce the following results:
 - 1. Elastomeric fill voids and cavities formed by joints and forming materials as required to achieve fire-resistance ratings indicated.
 - 2. Apply elastomeric fill materials so they contact and adhere to substrates formed by joints.
 - 3. For elastomeric fill materials that will remain exposed after completing the Work, finish to produce smooth, uniform surfaces that are flush with adjoining finishes.

3.4 FIELD QUALITY CONTROL

- A. Inspecting Agency: Owner will engage a qualified testing agency to perform tests and inspections in accordance with ASTM E2393.
- B. Where deficiencies are found or joint firestopping systems are damaged or removed due to testing, repair or replace joint firestopping systems so they comply with requirements.
- C. Proceed with enclosing joint firestopping systems with other construction only after inspection reports are issued and installations comply with requirements.

3.5 CLEANING AND PROTECTION

- A. Clean off excess elastomeric fill materials adjacent to joints as the Work progresses by methods and with cleaning materials that are approved in writing by joint firestopping system manufacturers and that do not damage materials in which joints occur.
- B. Provide final protection and maintain conditions during and after installation that ensure joint firestopping systems are without damage or deterioration at time of Substantial Completion. If damage or deterioration occurs despite such protection, cut out and remove damaged or deteriorated joint firestopping systems immediately and install new materials to produce joint firestopping systems complying with specified requirements.

END OF SECTION 078443

SECTION 079200 - JOINT SEALANTS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Special Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. Section Includes:
 - 1. Nonstaining silicone joint sealants.
 - 2. Butyl joint sealants.

1.3 ACTION SUBMITTALS

- A. Product Data: For each joint-sealant product.
- B. Samples: Manufacturer's color charts consisting of strips of cured sealants showing the full range of colors available for each product exposed to view.
- 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. Qualification Data: For qualified testing agency.
- B. Product Test Reports: For each kind of joint sealant, for tests performed by a qualified testing agency.
- C. Preconstruction Field-Adhesion-Test Reports: Indicate which sealants and joint preparation methods resulted in optimum adhesion to joint substrates based on testing specified in "Preconstruction Testing" Article.

1.5 QUALITY ASSURANCE

- A. Product Testing: Test joint sealants using a qualified testing agency.
 - 1. Testing Agency Qualifications: Qualified according to ASTM C 1021 to conduct the testing indicated.
- B. Mockups: Install sealant in mockups of assemblies specified in other Sections that are indicated to receive joint sealants specified in this Section. Use materials and installation methods specified in this Section.

1.6 FIELD CONDITIONS

- A. Do not proceed with installation of joint sealants under the following conditions:
1. When ambient and substrate temperature conditions are outside limits permitted by joint-sealant manufacturer or are below 40 deg F (5 deg C).
 2. When joint substrates are wet.
 3. Where joint widths are less than those allowed by joint-sealant manufacturer for applications indicated.
 4. Where contaminants capable of interfering with adhesion have not yet been removed from joint substrates.

1.7 WARRANTY

- A. Special Installer's Warranty: 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 agrees to furnish joint sealants to repair or replace those joint sealants 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.
- C. Special warranties specified in this article exclude deterioration or failure of joint sealants from the following:
1. Movement of the structure caused by stresses on the sealant exceeding sealant manufacturer's written specifications for sealant elongation and compression.
 2. Disintegration of joint substrates from causes exceeding design specifications.
 3. Mechanical damage caused by individuals, tools, or other outside agents.
 4. Changes in sealant appearance caused by accumulation of dirt or other atmospheric contaminants.

PART 2 - PRODUCTS

2.1 JOINT SEALANTS, GENERAL

- A. Compatibility: Provide joint sealants, backings, and other related materials that are compatible with one another and with joint substrates under conditions of service and application, as demonstrated by joint-sealant manufacturer, based on testing and field experience.
- B. Colors of Exposed Joint Sealants: As selected by Architect from manufacturer's full range.

2.2 NONSTAINING SILICONE JOINT SEALANTS

- A. Nonstaining Joint Sealants: No staining of substrates when tested according to ASTM C 1248.
- B. Silicone, Nonstaining, S, NS, 50, NT: Nonstaining, single-component, nonsag, plus 50 percent and minus 50 percent movement capability, nontraffic-use, neutral-curing silicone joint sealant; ASTM C 920, Type S, Grade NS, Class 50, Use NT.

1. 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:
 - a. Dow Chemicals Company, The.
 - b. GE Sealants.
 - c. Master Builders Solutions (a brand of MBCC Group).
 - d. Pecora Corporation

2.3 JOINT-SEALANT BACKING

- A. Sealant Backing Material, General: Nonstaining; compatible with joint substrates, sealants, primers, and other joint fillers; and approved for applications indicated by sealant manufacturer based on field experience and laboratory testing.
- B. 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.
- C. Bond-Breaker Tape: Polyethylene tape or other plastic tape recommended by sealant manufacturer for preventing sealant from adhering to rigid, inflexible joint-filler materials or joint surfaces at back of joint. Provide self-adhesive tape where applicable.

2.4 MISCELLANEOUS MATERIALS

- A. Primer: Material recommended by joint-sealant manufacturer where required for adhesion of sealant to joint substrates indicated, as determined from preconstruction joint-sealant-substrate tests and field tests.
- B. Cleaners for Nonporous Surfaces: Chemical cleaners acceptable to manufacturers of sealants and sealant backing materials, free of oily residues or other substances capable of staining or harming joint substrates and adjacent nonporous surfaces in any way, and formulated to promote optimum adhesion of sealants to joint substrates.
- C. Masking Tape: Nonstaining, nonabsorbent material compatible with joint sealants and surfaces adjacent to joints.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine joints indicated to receive joint sealants, with Installer present, for compliance with requirements for joint configuration, installation tolerances, and other conditions affecting performance of the Work.
- B. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 PREPARATION

- A. Surface Cleaning of Joints: Clean out joints immediately before installing joint sealants to comply with joint-sealant manufacturer's written instructions and the following requirements:
 1. Remove all foreign material from joint substrates that could interfere with adhesion of joint sealant, including dust, paints (except for permanent, protective coatings tested and approved for sealant adhesion and compatibility by sealant manufacturer), old joint sealants, oil, grease, waterproofing, water repellents, water, surface dirt, and frost.

2. Clean porous joint substrate surfaces by brushing, grinding, mechanical abrading, or a combination of these methods to produce a clean, sound substrate capable of developing optimum bond with joint sealants. Remove loose particles remaining after cleaning operations above by vacuuming or blowing out joints with oil-free compressed air. Porous joint substrates include the following:
 - a. Masonry.
 3. Remove laitance and form-release agents from concrete.
 4. Clean nonporous joint substrate surfaces with chemical cleaners or other means that do not stain, harm substrates, or leave residues capable of interfering with adhesion of joint sealants. Nonporous joint substrates include the following:
 - a. Metal.
 - b. Porcelain enamel.
 - c. Glazed surfaces of ceramic tile.
- 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.

3.3 INSTALLATION OF JOINT SEALANTS

- A. General: Comply with joint-sealant manufacturer's written installation instructions for products and applications indicated, unless more stringent requirements apply.
- B. Sealant Installation Standard: Comply with recommendations in ASTM C 1193 for use of joint sealants as applicable to materials, applications, and conditions indicated.
- C. Install sealant backings of kind indicated to support sealants during application and at position required to produce cross-sectional shapes and depths of installed sealants relative to joint widths that allow optimum sealant movement capability.
1. Do not leave gaps between ends of sealant backings.
 2. Do not stretch, twist, puncture, or tear sealant backings.
 3. Remove absorbent sealant backings that have become wet before sealant application, and replace them with dry materials.
- D. Install 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.

3.4 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 10 tests for the first 1000 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.
 - a. For joints with dissimilar substrates, verify adhesion to each substrate separately; extend cut along one side, verifying adhesion to opposite side. Repeat procedure for opposite side.
 3. Inspect tested joints and report on the following:
 - a. Whether sealants filled joint cavities and are free of voids.
 - b. Whether sealant dimensions and configurations comply with specified requirements.
 - c. Whether sealants in joints connected to pulled-out portion failed to adhere to joint substrates or tore cohesively. Include data on pull distance used to test each kind of product and joint substrate. Compare these results to determine if adhesion complies with sealant manufacturer's field-adhesion hand-pull test criteria.
 4. Record test results in a field-adhesion-test log. Include dates when sealants were installed, names of persons who installed sealants, test dates, test locations, whether joints were primed, adhesion results and percent elongations, sealant material, sealant configuration, and sealant dimensions.
 5. Repair sealants pulled from test area by applying new sealants following same procedures used originally to seal joints. Ensure that original sealant surfaces are clean and that new sealant contacts original sealant.
- B. Evaluation of Field-Adhesion-Test Results: Sealants not evidencing adhesive failure from testing or noncompliance with other indicated requirements will be considered satisfactory. Remove sealants that fail to adhere to joint substrates during testing or to comply with other requirements. Retest failed applications until test results prove sealants comply with indicated requirements.

3.5 CLEANING

- A. Clean off excess sealant or sealant smears adjacent to joints as the Work progresses by methods and with cleaning materials approved in writing by manufacturers of joint sealants and of products in which joints occur.

3.6 PROTECTION

- A. Protect joint sealants during and after curing period from contact with contaminating substances and from damage resulting from construction operations or other causes so sealants are without deterioration or damage at time of Substantial Completion. If, despite such protection, damage or deterioration occurs, cut out, remove, and repair damaged or deteriorated joint sealants immediately so installations with repaired areas are indistinguishable from original work.

3.7 JOINT-SEALANT SCHEDULE

- A. Joint-Sealant Application: Exterior joints in vertical surfaces and horizontal nontraffic surfaces.
1. Joint Locations:
 - a. Control and expansion joints in unit masonry.
 - b. Perimeter joints between materials listed above and frames of doors and windows.

2. Joint Sealant: Silicone, nonstaining, S, NS, 50, NT.
3. Joint-Sealant Color: As selected by Architect from manufacturer's full range of colors.

B. Joint-Sealant Application: Concealed mastics.

1. Joint Locations:
 - a. Aluminum thresholds.
2. Joint Sealant: Butyl-rubber based.

END OF SECTION 079200

SECTION 079513 - EXPANSION JOINT COVER ASSEMBLIES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Special Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. Section includes interior expansion joint cover assemblies.

1.3 ACTION SUBMITTALS

- A. Product Data: For each type of product.
 - 1. Include construction details, material descriptions, dimensions of individual components and profiles, and finishes for expansion joint cover assemblies.
- B. Shop Drawings: For each expansion joint cover assembly.
 - 1. Include plans, elevations, sections, details, splices, block-out requirement, attachments to other work, and line diagrams showing entire route of each expansion joint.
- C. Samples: For each expansion joint cover assembly and for each color and texture specified, full width by 6 inches (150 mm) long in size.

1.4 QUALITY ASSURANCE

PART 2 - PRODUCTS

2.1 MANUFACTURERS

- A. Source Limitations: Obtain expansion control systems from single source from single manufacturer.

2.2 ASSEMBLY DESCRIPTION

- A. Furnish units in longest practicable lengths to minimize field splicing.
- B. Include factory-fabricated closure materials and transition pieces, T-joints, corners, curbs, cross-connections, and other accessories as required to provide continuous expansion joint cover assemblies.

2.3 EXTERIOR VERTICAL EXPANSION JOINT COVERS

- A. Cover plate, extruded aluminum, surface mount, seismic centering bar, integrated moisture barrier; accommodating seismic movement with lateral shear.

1. Basis-of-Design Product: Subject to compliance with requirements, provide Construction Specialties, Inc.; 'Model AFW-200X' or comparable product by one of the following:
 - a. Nystrom, Inc.
 - b. Watson Bowman Acme Corp.
2. Design Criteria:
 - a. System Width: 2" (51mm).
 - b. Nominal Joint Width: 2" (51mm).
 - c. Minimum Joint Width: 0.38" (10mm).
 - d. Maximum Joint Width: 3.50" (89mm).
 - e. Material: 6063-T6 aluminum; clear anodized finish.
 - f. Attachment Method: Mechanical fasteners, SR-Sealant.
 - g. Moisture Barrier: Manufacturer's standard.

2.4 INTERIOR FLOOR-TO-FLOOR EXPANSION JOINT COVERS

- A. Cover plate aluminum extruded surface mount, anti-slip serrations, accommodating horizontal movement.
 1. Basis-of-Design Product: Subject to compliance with requirements, provide Nystrom, Inc.; Model DT or comparable product by one of the following:
 - a. Construction Specialties, Inc.
 - b. Watson Bowman Acme Corp.
 2. Design Criteria:
 - a. Exposed Sight Line: 6" (152.4 mm).
 - b. Nominal Joint Width: 2" (50.8 mm).
 - c. Minimum Joint Width: 0.10 inches (2.54 mm).
 - d. Maximum Joint Width: 3" (76.2 mm).
 - e. Material: 6063-T6 aluminum; mill finish.
 - f. Attachment Method: Mechanical anchors.
 - g. Moisture Barrier: Manufacturer's standard.

2.5 INTERIOR FLOOR-TO-WALL EXPANSION JOINT COVERS

- A. Cover plate aluminum extruded surface mount, anti-slip serrations; accommodating horizontal thermal movement.
 1. Basis-of-Design Product: Subject to compliance with requirements, provide Nystrom, Inc.; Model SW-300, 1 inch (25.4 mm) to 3 inch (76 mm) joint opening or comparable product by one of the following:
 - a. Construction Specialties, Inc.
 - b. Watson Bowman Acme Corp.
 2. Design Criteria:
 - a. Exposed Sight Line: 5 inch (127 mm).
 - b. Nominal Joint Width: 1 inch (25.4 mm) to 3 inch (76 mm).
 - c. Maximum Joint Size: 4.5 inch (114.3 mm).
 - d. Minimum Joint Size: 1 inch (25.4 mm).
 - e. Finish: Mill.
 - f. Attachment Method: Mechanical anchors.
 - g. Moisture Barrier: Manufacturer's standard.

2.6 INTERIOR WALL-TO-WALL EXPANSION JOINT COVERS

- A. Elastomeric seal, extruded aluminum base, recessed, accommodating horizontal thermal movement.

1. Basis-of-Design Product: Subject to compliance with requirements, provide Nystrom, Inc.; Model LCWF or comparable product by one of the following:
 - a. Construction Specialties, Inc.
 - b. Watson Bowman Acme Corp.
2. Design Criteria:
 - a. Nominal Joint Width: 2" (50.8 mm).
 - b. Minimum Joint Width: 1 inch (25.4 mm).
 - c. Maximum Joint Width: 3 inch (76 mm).
 - d. Material:
 - 1) 6063-T6 aluminum; mill finish.
 - 2) Seal:
 - a) Basis-of-Design Product: Subject to compliance with requirements, provide Santoprene or equivalent.
 - b) Color: A selected by Architect from Manufacturers full range.
 - e. Attachment Method: Mechanical fasteners.
 - f. Moisture Barrier: Manufacturer's standard.

2.7 INTERIOR WALL-CEILING CORNER EXPANSION JOINT COVERS

- A. Elastomeric seal, extruded aluminum base, surface mount with drywall bead; accommodating horizontal thermal movement.
 1. Basis-of-Design Product: Subject to compliance with requirements, provide Nystrom, Inc.; Model LCWM or comparable product by one of the following:
 - a. Construction Specialties, Inc.
 - b. Watson Bowman Acme Corp.
 2. Design Criteria:
 - a. Nominal Joint Width: 2" (50.8mmmm) .
 - b. Minimum Joint Width: 1 inch (25.4 mm).
 - c. Maximum Joint Width: 3 inch (76 mm).
 - d. Material:
 - 1) 6063-T6 aluminum; mill finish.
 - 2) Seal:
 - a) Basis-of-Design Product: Subject to compliance with requirements, provide Santoprene or equivalent.
 - b) Color: A selected by Architect from Manufacturers full range.
 - e. Attachment Method: Mechanical fasteners.
 - f. Moisture Barrier: Manufacturer's standard.

2.8 MATERIALS

- A. Aluminum: ASTM B 221 (ASTM B 221M), Alloy 6063-T5 for extrusions; ASTM B 209 (ASTM B 209M), Alloy 6061-T6 for sheet and plate.
 1. Apply manufacturer's standard protective coating on aluminum surfaces to be placed in contact with cementitious materials.
- B. Elastomeric Seals: Manufacturer's standard preformed elastomeric membranes or extrusions to be installed in metal frames.
- C. Moisture Barrier: Manufacturer's standard, flexible elastomeric material.

2.9 ALUMINUM FINISHES

- A. Mill finish.
- B. Clear Anodic Finish: AAMA 611, AA-M12C22A31, Class II, 0.010 mm or thicker.

2.10 ACCESSORIES

- A. Moisture Barriers: Manufacturer's standard continuous, waterproof membrane within joint and attached to substrate on sides of joint.
- B. Manufacturer's standard attachment devices. Include anchors, clips, fasteners, set screws, spacers, and other accessories compatible with material in contact, as indicated or required for complete installations.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine surfaces where expansion joint cover assemblies will be installed for installation tolerances and other conditions affecting performance of the Work.
- B. Notify Architect where discrepancies occur that will affect proper expansion joint cover assembly installation and performance.
- C. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 PREPARATION

- A. Prepare substrates according to expansion joint cover assembly manufacturer's written instructions.
- B. Coordinate and furnish anchorages, setting drawings, and instructions for installing expansion joint cover assemblies. Provide fasteners of metal, type, and size to suit type of construction indicated and to provide for secure attachment of expansion joint cover assemblies.

3.3 INSTALLATION

- A. Comply with manufacturer's written instructions for storing, handling, and installing expansion joint cover assemblies and materials unless more stringent requirements are indicated.
- B. Metal Frames: Perform cutting, drilling, and fitting required to install expansion joint cover assemblies.
 - 1. Repair or grout block out as required for continuous frame support using nonmetallic, shrinkage-resistant grout.
 - 2. Install frames in continuous contact with adjacent surfaces.
 - a. Shimming is not permitted.
 - 3. Install in true alignment and proper relationship to joints and adjoining finished surfaces measured from established lines and levels.
 - 4. Adjust for differences between actual structural gap and nominal design gap due to ambient temperature at time of installation.

5. Cut and fit ends to accommodate thermal expansion and contraction of metal without buckling of frames.
 6. Locate anchors at interval recommended by manufacturer, but not less than 3 inches (75 mm) from each end and not more than 24 inches (600 mm) o.c.
- C. Seals: Install elastomeric seals and membranes in frames to comply with manufacturer's written instructions. Install with minimum number of end joints.
1. Provide in continuous lengths for straight sections.
 2. Seal transitions. Vulcanize or heat-weld field-spliced joints as recommended by manufacturer.
 3. Installation: Mechanically lock seals into frames or adhere to frames with adhesive or pressure-sensitive tape as recommended by manufacturer.
- D. Install with hairline mitered corners where expansion joint cover assemblies change direction or abut other materials.
- E. Terminate exposed ends of expansion joint cover assemblies with field- or factory-fabricated termination devices.

3.4 PROTECTION

- A. Do not remove protective covering until finish work in adjacent areas is complete. When protective covering is removed, clean exposed metal surfaces to comply with manufacturer's written instructions.
- B. Protect the installation from damage by work of other Sections. Where necessary due to heavy construction traffic, remove and properly store cover plates or seals and install temporary protection over expansion joint cover assemblies. Reinstall cover plates or seals prior to Substantial Completion.

END OF SECTION 079513.13

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SECTION 081113 - HOLLOW METAL DOORS AND FRAMES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Special Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. Section includes hollow-metal work.
- B. Related Requirements:
 - 1. Section 087100 "Door Hardware" for door hardware for hollow-metal doors.

1.3 DEFINITIONS

- A. Minimum Thickness: Minimum thickness of base metal without coatings according to NAAMM-HMMA 803 or SDI A250.8.

1.4 COORDINATION

- A. Coordinate anchorage installation for hollow-metal frames. Furnish setting drawings, templates, and directions for installing anchorages, including sleeves, concrete inserts, anchor bolts, and items with integral anchors. Deliver such items to Project site in time for installation.

1.5 ACTION SUBMITTALS

- A. Product Data: For each type of product.
 - 1. Include construction details, material descriptions, core descriptions, fire-resistance ratings, temperature-rise ratings, and finishes.
- B. Shop Drawings: Include the following:
 - 1. Elevations of each door type.
 - 2. Details of doors, including vertical- and horizontal-edge details and metal thicknesses.
 - 3. Frame details for each frame type, including dimensioned profiles and metal thicknesses.
 - 4. Locations of reinforcement and preparations for hardware.
 - 5. Details of each different wall opening condition.
 - 6. Details of anchorages, joints, field splices, and connections.
 - 7. Details of accessories.
 - 8. Details of moldings, removable stops, and glazing.
 - 9. Details of conduit and preparations for power, signal, and control systems.
- C. Schedule: Provide a schedule of hollow-metal work prepared by or under the supervision of supplier, using same reference numbers for details and openings as those on Drawings. Coordinate with final Door Hardware Schedule.

1.6 INFORMATIONAL SUBMITTALS

- A. Product Test Reports: For each type of hollow-metal door and frame assembly, for tests performed by a qualified testing agency.

1.7 DELIVERY, STORAGE, AND HANDLING

- A. Deliver hollow-metal work palletized, packaged, or crated to provide protection during transit and Project-site storage. Do not use nonvented plastic.
 - 1. Provide additional protection to prevent damage to factory-finished units.
- B. Deliver welded frames with two removable spreader bars across bottom of frames, tack welded to jambs and mullions.
- C. Store hollow-metal work vertically under cover at Project site with head up. Place on minimum 4-inch- (102-mm-) high wood blocking. Provide minimum 1/4-inch (6-mm) space between each stacked door to permit air circulation.

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:
 - 1. Commercial Door Manufacturing.
 - 2. Pioneer Industries.
 - 3. Steelcraft; an Allegion brand.
- B. Source Limitations: Obtain hollow-metal work from single source from single manufacturer.

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. Construct interior doors and frames to comply with the standards indicated for materials, fabrication, hardware locations, hardware reinforcement, tolerances, and clearances, and as specified.
- B. Heavy-Duty Doors and Frames: SDI A250.8, Level 2.
 - 1. Physical Performance: Level B according to SDI A250.4.
 - 2. Doors:
 - a. Type: As indicated in the Door and Frame Schedule.
 - b. Thickness: 1-3/4 inches (44.5 mm).

- c. Face: Metallic-coated, cold-rolled steel sheet, minimum thickness of 0.042 inch (1.0 mm).
 - d. Edge Construction: Model 1, Full Flush.
 - e. Core: Vertical steel stiffener with fiberglass insulation.
3. Frames:
- a. Materials: Metallic-coated steel sheet, minimum thickness of 0.053 inch (1.3 mm).
 - b. Construction: Full profile welded.
4. Exposed Finish: Prime.

2.4 EXTERIOR HOLLOW-METAL DOORS AND FRAMES

- A. Construct exterior doors and frames to comply with the standards indicated for materials, fabrication, hardware locations, hardware reinforcement, tolerances, and clearances, and as specified.
- B. Heavy-Duty Doors and Frames: SDI A250.8, Level 2.
- 1. Physical Performance: Level B according to SDI A250.4.
 - 2. Doors:
 - a. Type: As indicated in the Door and Frame Schedule.
 - b. Thickness: 1-3/4 inches (44.5 mm.)
 - c. Face: Metallic-coated steel sheet, minimum thickness of 0.042 inch (1.0 mm), with minimum A40 (ZF120) coating.
 - d. Edge Construction: Model 1, Full Flush.
 - e. Core: Polyurethane.
 - 3. Frames:
 - a. Materials: Metallic-coated steel sheet, minimum thickness of 0.053 inch (1.3 mm), with minimum A40 (ZF120) coating.
 - b. Construction: Full profile welded.
 - 4. Exposed Finish: Prime.

2.5 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. 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.
- B. Floor Anchors: Formed from same material as frames, minimum thickness of 0.042 inch (1.0 mm), and as follows:
- 1. Monolithic Concrete Slabs: Clip-type anchors, with two holes to receive fasteners.
 - 2. 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.

2.6 MATERIALS

- A. Cold-Rolled Steel Sheet: ASTM A 1008/A 1008M, Commercial Steel (CS), Type B; suitable for exposed applications.

- B. Hot-Rolled Steel Sheet: ASTM A 1011/A 1011M, Commercial Steel (CS), Type B; free of scale, pitting, or surface defects; pickled and oiled.
- C. Metallic-Coated Steel Sheet: ASTM A 653/A 653M, Commercial Steel (CS), Type B.
- D. Frame Anchors: ASTM A 879/A 879M, Commercial Steel (CS), 04Z (12G) coating designation; mill phosphatized.
 - 1. 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.
- E. Inserts, Bolts, and Fasteners: Hot-dip galvanized according to ASTM A 153/A 153M.
- F. Power-Actuated Fasteners in Concrete: Fastener system of type suitable for application indicated, fabricated from corrosion-resistant materials, with clips or other accessory devices for attaching hollow-metal frames of type indicated.
- G. Grout: ASTM C 476, except with a maximum slump of 4 inches (102 mm), as measured according to ASTM C 143/C 143M.
- H. Mineral-Fiber Insulation: ASTM C 665, Type I (blankets without membrane facing); consisting of fibers manufactured from slag or rock wool; with maximum flame-spread and smoke-developed indexes of 25 and 50, respectively; passing ASTM E 136 for combustion characteristics.
- I. Bituminous Coating: Cold-applied asphalt mastic, compounded for 15-mil (0.4-mm) dry film thickness per coat. Provide inert-type noncorrosive compound free of asbestos fibers, sulfur components, and other deleterious impurities.

2.7 FABRICATION

- A. Fabricate hollow-metal work to be rigid and free of defects, warp, or buckle. Accurately form metal to required sizes and profiles, with minimum radius for metal thickness. Where practical, fit and assemble units in manufacturer's plant. To ensure proper assembly at Project site, clearly identify work that cannot be permanently factory assembled before shipment.
- B. Hollow-Metal Doors:
 - 1. Steel-Stiffened Door Cores: Provide minimum thickness 0.026 inch (0.66 mm), steel vertical stiffeners of same material as face sheets extending full-door height, with vertical webs spaced not more than 6 inches (152 mm) apart. Spot weld to face sheets no more than 5 inches (127 mm) o.c. Fill spaces between stiffeners with glass- or mineral-fiber insulation.
 - 2. Fire Door Cores: As required to provide fire-protection and temperature-rise ratings indicated.
 - 3. Vertical Edges for Single-Acting Doors: Provide beveled or square edges at manufacturer's discretion.
 - 4. Top Edge Closures: Close top edges of doors with inverted closures, except provide flush closures at exterior doors of same material as face sheets.
 - 5. Bottom Edge Closures: Close bottom edges of doors with end closures or channels of same material as face sheets.
 - 6. 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.
- 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. Frames: Provide closed tubular members with no visible face seams or joints, fabricated from same material as door frame. Fasten members at crossings and to jambs by butt welding.
 - 2. Provide countersunk, flat- or oval-head exposed screws and bolts for exposed fasteners unless otherwise indicated.
 - 3. Grout Guards: Weld guards to frame at back of hardware mortises in frames to be grouted.

4. 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.
 5. 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. Compression Type: Not less than two anchors in each frame.
 - c. 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.
 6. Door Silencers: Except on weather-stripped frames, drill stops to receive door silencers as follows.
 - a. Single-Door Frames: Drill stop in strike jamb to receive three door silencers.
- D. Fabricate concealed stiffeners and edge channels from either cold- or hot-rolled steel sheet.
- E. Hardware Preparation: Factory prepare hollow-metal work to receive templated mortised hardware; include cutouts, reinforcement, mortising, drilling, and tapping according to SDI A250.6, the Door Hardware Schedule, and templates.
1. 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.

2.8 STEEL FINISHES

- A. Prime Finish: Clean, pretreat, and apply manufacturer's standard primer.
1. Shop Primer: Manufacturer's standard, fast-curing, lead- and chromate-free primer complying with SDI A250.10; recommended by primer manufacturer for substrate; compatible with substrate and field-applied coatings despite prolonged exposure.

2.9 ACCESSORIES

- A. Louvers: Provide louvers for interior doors, where indicated, which comply with SDI 111C, with blades or baffles formed of 0.020-inch- (0.5-mm-) thick, cold-rolled steel sheet set into 0.032-inch- (0.8-mm-) thick steel frame.
1. Fire-Rated Automatic Louvers: Louvers constructed with movable blades closed by actuating fusible link, and listed and labeled for use in fire-rated door assemblies of type and fire-resistance rating indicated by same qualified testing and inspecting agency that established fire-resistance rating of door assembly.
- B. Grout Guards: Formed from same material as frames, not less than 0.016 inch (0.4 mm) thick.

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 the Work.
- B. Examine roughing-in for embedded and built-in anchors to verify actual locations before frame installation.
- C. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 PREPARATION

- A. Remove welded-in shipping spreaders installed at factory. Restore exposed finish by grinding, filling, and dressing, as required to make repaired area smooth, flush, and invisible on exposed faces.
- B. Drill and tap doors and frames to receive nontemplated, mortised, and surface-mounted door hardware.

3.3 INSTALLATION

- A. General: Install hollow-metal work plumb, rigid, properly aligned, and securely fastened in place. Comply with Drawings and manufacturer's written instructions.
- B. Hollow-Metal Frames: Install hollow-metal frames for doors of size and profile indicated. Comply with SDI A250.11 or NAAMM-HMMA 840 as required by standards specified.
 - 1. Set frames accurately in position; plumbed, aligned, and braced securely until permanent anchors are set. After wall construction is complete, remove temporary braces, leaving surfaces smooth and undamaged.
 - a. At fire-rated openings, install frames according to NFPA 80.
 - b. Install door silencers in frames before grouting.
 - c. Remove temporary braces necessary for installation only after frames have been properly set and secured.
 - d. Check plumb, square, and twist of frames as walls are constructed. Shim as necessary to comply with installation tolerances.
 - e. 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.
 - 3. Masonry Walls: Coordinate installation of frames to allow for solidly filling space between frames and masonry with grout.
 - 4. 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.
 - 5. Installation Tolerances: Adjust hollow-metal door frames for squareness, alignment, twist, and plumb to the following tolerances:
 - a. Squareness: Plus or minus 1/16 inch (1.6 mm), measured at door rabbet on a line 90 degrees from jamb perpendicular to frame head.
 - b. Alignment: Plus or minus 1/16 inch (1.6 mm), measured at jambs on a horizontal line parallel to plane of wall.
 - c. 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.
 - d. Plumbness: Plus or minus 1/16 inch (1.6 mm), measured at jambs at floor.
- C. Hollow-Metal Doors: Fit hollow-metal doors accurately in frames, within clearances specified below. Shim as necessary.

1. Non-Fire-Rated Steel Doors:
 - a. Between Door and Frame Jambs and Head: 1/8 inch (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.

3.4 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 083613 - SECTIONAL DOORS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Special Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. Section includes electrically operated sectional doors with integral pass doors.

1.3 ACTION SUBMITTALS

- A. Product Data: For each type and size of sectional door and accessory.
 - 1. Include construction details, material descriptions, dimensions of individual components, profile door sections, and finishes.
 - 2. Include rated capacities, operating characteristics, electrical characteristics, and furnished accessories.
- B. Shop Drawings: For each installation and for special components not dimensioned or detailed in manufacturer's product data.
 - 1. Include plans, elevations, sections, and mounting details.
 - 2. Include details of equipment assemblies. Indicate dimensions, required clearances, method of field assembly, components, and location and size of each field connection.
 - 3. Include points of attachment and their corresponding static and dynamic loads imposed on structure.
 - 4. Include diagrams for power, signal, and control wiring.
- C. Samples: For each type of exposed finish on the following components, in manufacturer's standard sizes:
 - 1. Flat door sections.
 - 2. Frame for paneled door sections; of each width of stile and rail required.

1.4 INFORMATIONAL SUBMITTALS

- A. Qualification Data: For Installer.

1.5 CLOSEOUT SUBMITTALS

- A. Maintenance Data: For sectional doors to include in maintenance manuals.

1.6 QUALITY ASSURANCE

- A. Manufacturer Qualifications: Minimum ten years of documented experience.
- B. Installer Qualifications: An entity that employs installers and supervisors who are trained and approved by manufacturer for both installation and maintenance of units required for this Project.

1.7 WARRANTY

- A. Special Warranty: Manufacturer agrees to repair or replace components of sectional doors that fail in materials or workmanship within specified warranty period.
 - 1. Failures include, but are not limited to, the following:
 - a. Structural failures including, but not limited to, excessive deflection.
 - b. Failure of components or operators before reaching required number of operation cycles.
 - c. Faulty operation of hardware.
 - d. Deterioration of metals, metal finishes, and other materials beyond normal weathering and use; rust through.
 - e. Delamination of exterior or interior facing materials.
 - 2. Warranty Period: Eight years from date of Substantial Completion.
- B. Special Finish Warranty: Manufacturer agrees to repair or replace components that show evidence of deterioration of factory-applied finishes within specified warranty period.
 - 1. Warranty Period: 10 years from date of Substantial Completion.

PART 2 - PRODUCTS

2.1 MANUFACTURERS, GENERAL

- A. Source Limitations: Obtain sectional doors from single source from single manufacturer.
 - 1. Obtain operators and controls from sectional door manufacturer.

2.2 PERFORMANCE REQUIREMENTS

- A. General Performance: Sectional doors shall comply with performance requirements specified without failure due to defective manufacture, fabrication, installation, or other defects in construction and without requiring temporary installation of reinforcing components.
- B. Structural Performance, Exterior Doors: Capable of withstanding the design wind loads.
 - 1. Design Wind Load: Uniform pressure (velocity pressure) of 30 lbf/sq. ft. (1440 Pa), acting inward and outward.
 - 2. Testing: According to ASTM E 330 or DASMA 108 for garage doors and complying with the acceptance criteria of DASMA 108.
 - 3. Deflection Limits: Design sectional doors to withstand design wind loads without evidencing permanent deformation or disengagement of door components.
 - a. Deflection of door sections in horizontal position (open) shall not exceed 1/120 of the door width.
 - b. Deflection of horizontal track assembly shall not exceed 1/240 of the door height.

2.3 DOOR ASSEMBLY

- A. Steel Sectional Door: Sectional door formed with hinged sections and fabricated according to DASMA 102 unless otherwise indicated.
 - 1. Basis-of-Design Product: Subject to compliance with requirements, provide Clopay Corporation; 'Model 3722' or comparable product by one of the following

- B. Operation Cycles: Door components and operators capable of operating for not less than 25,000. One operation cycle is complete when a door is opened from the closed position to the fully open position and returned to the closed position.
- C. Air Infiltration: Maximum rate of 0.022 cfm/sq. ft. (0.112 L/s per sq. m) at 15 and 25 mph (24.1 and 40.2 km/h) when tested according to ASTM E 283 or DASMA 105.
- D. Steel Sections: Zinc-coated (galvanized) steel sheet with zinc coating.
 - 1. Section Thickness: 2 inches (51 mm).
 - 2. Exterior-Face, Steel Sheet Thickness: 0.034-inch- (0.86 -mm-) nominal coated thickness.
 - a. Surface: Flat.
 - 3. Insulation: Foamed in place.
 - 4. Interior Facing Material: Zinc-coated (galvanized) steel sheet with a nominal coated thickness of 0.016 inch (0.40 mm) .
- E. Track Configuration: Standard-lift track.
- F. Weatherseals: Fitted to bottom and top and around entire perimeter of door.
- G. Windows: Approximately 24 by 8 inches (610 by 203 mm), with square corners, and spaced apart the approximate distance as indicated on Drawings; in one row at height indicated on Drawings; installed with glazing of the following type:
 - 1. Insulating Glass: Manufacturer's standard.
- H. Pass Door: Integral part of door; 32 inches by 80 inches with aluminum frame, geared hinge, and pneumatic door closer; exterior matching door face; integral shiplap weather seal; keyed dead latch security lock.
- I. Roller-Tire Material: Manufacturer's standard.
- J. Locking Devices: Equip door with locking device assembly and chain lock keeper.
- K. Counterbalance Type: Torsion spring.
- L. Manual Door Operator: Chain-hoist operator.
- M. Electric Door Operator [EDO-1]:
 - 1. Standard duty, up to 25 cycles per hour and up to 90 cycles per day.
 - 2. Operator Type: Trolley.
 - 3. Safety: Listed according to UL 325 by a qualified testing agency for commercial or industrial use.
 - 4. Motor Exposure: Interior, clean, and dry.
 - 5. Obstruction-Detection Device: Automatic photoelectric sensor.
 - 6. Control Station: Interior-side and exterior-side mounted.
 - 7. Other Equipment:
 - a. Portable, radio-control system.
 - b. Internet connectivity.
- N. Electric Door Operator [EDO-2]:
 - 1. Industrial duty, up to 25 cycles per hour and up to 90 cycles per day.
 - 2. Operator Type: Jackshaft, side mounted.
 - 3. Emergency Manual Operation: Chain type.
 - 4. Obstruction-Detection Device: Automatic photoelectric sensor.
 - 5. Control Station: Interior-side and exterior-side mounted.
 - 6. Other Equipment:

7. Portable, radio-control system.
8. Internet connectivity.

- O. Door Finish:
1. Baked-Enamel Finish: Color and gloss as selected by Architect from manufacturer's full range.
 2. Finish of Interior Facing Material: Match finish of exterior section face.

2.4 MATERIALS, GENERAL

- 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.

2.5 STEEL DOOR SECTIONS

- A. Exterior Section Faces and Frames: Zinc-coated (galvanized), cold-rolled, commercial steel (CS) sheet, complying with ASTM A 653/A 653M, with indicated zinc coating and thickness.
1. Fabricate section faces from single sheets to provide sections not more than 24 inches (610 mm) high and of indicated thickness. Roll horizontal meeting edges to a continuous, interlocking, keyed, rabbeted, shiplap, or tongue-in-groove weather-resistant seal, with a reinforcing flange return.
 2. For insulated doors, provide sections with continuous thermal-break construction, separating the exterior and interior faces of door.
- B. Section Ends and Intermediate Stiles: Enclose open ends of sections with channel end stiles formed from galvanized-steel sheet not less than 0.064-inch- (1.63-mm-) nominal coated thickness and welded to door section. Provide intermediate stiles formed from not less than 0.064-inch- (1.63-mm-) thick galvanized-steel sheet, cut to door section profile, and welded in place. Space stiles not more than 48 inches (1219 mm) apart.
- C. Reinforce bottom section with a continuous channel or angle conforming to bottom-section profile.
- D. Reinforce sections with continuous horizontal and diagonal reinforcement, as required to stiffen door and for wind loading. Provide galvanized-steel bars, struts, trusses, or strip steel, formed to depth and bolted or welded in place. Ensure that reinforcement does not obstruct vision lites.
- E. Provide reinforcement for hardware attachment.
- F. Foamed-in-Place Thermal Insulation: Insulate interior of steel sections with door manufacturer's standard polyurethane insulation, foamed in place to completely fill interior of section and pressure bonded to face sheets to prevent delamination under wind load, and with maximum flame-spread and smoke-developed indexes of 75 and 450, respectively, according to ASTM E 84. Enclose insulation completely within steel sections and the interior facing material, with no exposed insulation.
- G. Interior Facing Material: Zinc-coated (galvanized), cold-rolled, commercial steel (CS) sheet, complying with ASTM A 653/A 653M, with indicated thickness.
- H. Fabricate sections so finished door assembly is rigid and aligned, with tight hairline joints and free of warp, twist, and deformation.

2.6 TRACKS, SUPPORTS, AND ACCESSORIES

- A. Tracks: Manufacturer's standard, galvanized-steel track system of configuration indicated, sized for door size and weight, designed for lift type indicated and clearances indicated on Drawings. Provide complete system including brackets, bracing, and reinforcement to ensure rigid support of ball-bearing roller guides for required door type, size, weight, and loading.

1. Galvanized Steel: ASTM A 653/A 653M, minimum G60 (Z180) zinc coating.
 2. Slope tracks at an angle from vertical or design tracks to ensure tight closure at jambs when door unit is closed.
 3. Track Reinforcement and Supports: Galvanized-steel members to support track without sag, sway, and vibration during opening and closing of doors. Slot vertical sections of track spaced 2 inches (51 mm) apart for door-drop safety device.
 - a. For Vertical Track: Continuous reinforcing angle attached to track and attached to wall with jamb brackets.
 - b. For Horizontal Track: Continuous reinforcing angle from curve in track to end of track, attached to track and supported at points by laterally braced attachments to overhead structural members.
- B. Weatherseals: Replaceable, adjustable, continuous, compressible weather-stripping gaskets of flexible vinyl, rubber, or neoprene fitted to bottom and top of sectional door unless otherwise indicated.
- C. Windows: Manufacturer's standard window units of type, size, and in arrangement indicated. Set glazing in vinyl, rubber, or neoprene glazing channel for metal-framed doors and elastic glazing compound for wood doors, as required. Provide removable stops of same material as door-section frames.
- D. Pass Doors: Manufacturer's standard pass doors where indicated, complete with glazing, operating hardware, and mortise lock. Construct pass doors of same materials, design, and finish as sectional door assembly unless otherwise indicated in "Door Assembly" Article.
1. Lock Cylinders: Cylinders standard with manufacturer.
 2. Keys: Five for each cylinder.

2.7 HARDWARE

- A. General: Heavy-duty, corrosion-resistant hardware, with hot-dip galvanized, stainless-steel, or other corrosion-resistant fasteners, to suit door type.
- B. Hinges: Heavy-duty, galvanized-steel hinges of not less than 0.079-inch- (2.01-mm-) nominal coated thickness at each end stile and at each intermediate stile, according to manufacturer's written recommendations for door size. Attach hinges to door sections through stiles and rails with bolts and lock nuts or lock washers and nuts. Use rivets or self-tapping fasteners where access to nuts is impossible. Provide double-end hinges where required, for doors more than 16 feet (4.88 m) wide unless otherwise recommended by door manufacturer.
- C. Rollers: Heavy-duty rollers with steel ball-bearings in case-hardened steel races, mounted with varying projections to suit slope of track. Extend roller shaft through both hinges where double hinges are required. Provide 3-inch- (76-mm-) diameter roller tires for 3-inch- (76-mm-) wide track and 2-inch- (51-mm-) diameter roller tires for 2-inch- (51-mm-) wide track.
- D. Push/Pull Handles: Equip each push-up operated or emergency-operated door with galvanized-steel lifting handles on each side of door, finished to match door.

2.8 LOCKING DEVICES

- A. Slide Bolt: Fabricate with side-locking bolts to engage through slots in tracks for locking by padlock, located on single-jamb side, operable from inside only.
- B. Chain Lock Keeper: Suitable for padlock.
- C. Safety Interlock Switch: Equip power-operated doors with safety interlock switch to disengage power supply when door is locked.

2.9 COUNTERBALANCE MECHANISM

- A. Torsion Spring: Counterbalance mechanism consisting of adjustable-tension torsion springs fabricated from steel-spring wire complying with ASTM A 229/A 229M, mounted on torsion shaft made of steel tube or solid steel. Provide springs designed for number of operation cycles indicated.
- B. Cables: Galvanized-steel, multistrand, lifting cables with cable safety factor of at least 7 to 1.
- C. Bracket: Provide anchor support bracket as required to connect stationary end of spring to the wall and to level the shaft and prevent sag.
- D. Bumper: Provide spring bumper at each horizontal track to cushion door at end of opening operation.

2.10 ELECTRIC DOOR OPERATORS [EDO-1]

- A. General: Electric door operator assembly of size and capacity recommended and provided by door manufacturer for door and "operation cycles" requirement specified, with electric motor and factory-prewired motor controls, starter, gear-reduction unit, solenoid-operated brake, clutch, control stations, control devices, integral gearing for locking door, and accessories required for proper operation.
 - 1. Basis-of-Design Product: Lift Master (The Chamberlain Group, LLC); "LiftMaster T Low-Profile Industrial-Duty Trolley Operator".
 - 2. Comply with NFPA 70.
 - 3. Control equipment complying with NEMA ICS 1, NEMA ICS 2, and NEMA ICS 6; with NFPA 70, Class 2 control circuit, maximum 24-V ac or dc.
- B. Usage Classification: Electric operator and components capable of operating for not less than number of cycles per hour indicated for each door.
- C. Door-Operator Type: Unit consisting of electric motor, gears, pulleys, belts, sprockets, chains, and controls needed to operate door and meet required usage classification.
 - 1. Trolley: Trolley operator mounted to ceiling above and to rear of door in raised position and directly connected to door with drawbar.
- D. Motors: Reversible-type motor with controller for motor exposure indicated.
 - 1. Electrical Characteristics:
 - a. Phase: Polyphase.
 - b. Volts: 208 V.
 - c. Hertz: 60.
 - 2. Motor Size: Minimum size as indicated. If not indicated, large enough to start, accelerate, and operate door in either direction from any position, at a speed not less than 8 in./sec. (203 mm/s) and not more than 12 in./sec. (305 mm/s), without exceeding nameplate ratings or service factor.
 - 3. Operating Controls, Controllers, Wiring Devices, and Wiring: Manufacturer's standard unless otherwise indicated.
 - 4. Coordinate wiring requirements and electrical characteristics of motors and other electrical devices with building electrical system and each location where installed.
 - 5. Use adjustable motor-mounting bases for belt-driven operators.
- E. Limit Switches: Equip motorized door with adjustable switches interlocked with motor controls and set to automatically stop door at fully opened and fully closed positions.
- F. Obstruction Detection Device: External entrapment protection consisting of indicated automatic safety sensor capable of protecting full width of door opening. Activation of device immediately stops and reverses downward door travel.

1. Photoelectric Sensor: Manufacturer's standard system designed to detect an obstruction in door opening without contact between door and obstruction.
 - G. Control Station: Three-button control station in fixed location with momentary-contact push-button controls labeled "Open" and "Stop" and sustained- or constant-pressure, push-button control labeled "Close."
 1. Full-guarded, surface-mounted, heavy-duty type, with general-purpose NEMA ICS 6, Type 1 enclosure with maintenance alert indicator to signal intervals for routine door and operator maintenance.
 2. Exterior-Mounted Units: Full-guarded, standard-duty, surface-mounted, weatherproof type, NEMA ICS 6, Type 4 enclosure, key operated.
 - H. Emergency Operation Disconnect Device: Equip operator with hand-operated disconnect mechanism for automatically engaging manual operator and releasing brake for emergency manual operation while disconnecting motor without affecting timing of limit switch. Mount mechanism so it is accessible from floor level.
 - I. Motor Removal: Design operator so motor may be removed without disturbing limit-switch adjustment and without affecting emergency manual operation.
 - J. Audible and Visual Signals: Audible alarm and visual indicator lights in compliance with regulatory requirements for accessibility.
 - K. Portable, Radio-Control System: Consisting of of the following:
 1. Three-channel universal coaxial receiver to open, close, and stop door.
 2. Portable control device to open and stop door may be momentary-contact type; control to close door shall be sustained- or constant-pressure type.
 3. Remote antenna and mounting kit.
- 2.11 ELECTRIC DOOR OPERATORS [EDO-2]
- A. General: Electric door operator assembly of size and capacity recommended and provided by door manufacturer for door and "operation cycles" requirement specified, with electric motor and factory-prewired motor controls, starter, gear-reduction unit, solenoid-operated brake, clutch, control stations, control devices, integral gearing for locking door, and accessories required for proper operation.
 1. Basis-of-Design Product: Lift Master (The Chamberlain Group, LLC); "LiftMaster BH".
 2. Comply with NFPA 70.
 3. Control equipment complying with NEMA ICS 1, NEMA ICS 2, and NEMA ICS 6; with NFPA 70, Class 2 control circuit, maximum 24-V ac or dc.
 - B. Usage Classification: Electric operator and components capable of operating for not less than number of cycles per hour indicated for each door.
 - C. Door-Operator Type: Unit consisting of electric motor, gears, pulleys, belts, sprockets, chains, and controls needed to operate door and meet required usage classification.
 1. Jackshaft, Side Mounted: Jackshaft operator mounted on the inside front wall on right or left side of door and connected to torsion shaft with an adjustable coupling or drive chain.
 - D. Motors: Reversible-type motor with controller for motor exposure indicated.
 1. Electrical Characteristics:
 - a. Phase: Polyphase.
 - b. Volts: 208 V.
 - c. Hertz: 60.

2. Motor Size: Minimum size as indicated. If not indicated, large enough to start, accelerate, and operate door in either direction from any position, at a speed not less than 8 in./sec. (203 mm/s) and not more than 12 in./sec. (305 mm/s), without exceeding nameplate ratings or service factor.
 3. Operating Controls, Controllers, Wiring Devices, and Wiring: Manufacturer's standard unless otherwise indicated.
 4. Coordinate wiring requirements and electrical characteristics of motors and other electrical devices with building electrical system and each location where installed.
 5. Use adjustable motor-mounting bases for belt-driven operators.
- E. Limit Switches: Equip motorized door with adjustable switches interlocked with motor controls and set to automatically stop door at fully opened and fully closed positions.
- F. Obstruction Detection Device: External entrapment protection consisting of indicated automatic safety sensor capable of protecting full width of door opening. Activation of device immediately stops and reverses downward door travel.
1. Photoelectric Sensor: Manufacturer's standard system designed to detect an obstruction in door opening without contact between door and obstruction.
- G. Control Station: Three-button control station in fixed location with momentary-contact push-button controls labeled "Open" and "Stop" and sustained- or constant-pressure, push-button control labeled "Close."
1. Interior-Mounted Units: Full-guarded, surface-mounted, heavy-duty type, with general-purpose NEMA ICS 6, Type 1 enclosure with maintenance alert indicator to signal intervals for routine door and operator maintenance.
 2. Exterior-Mounted Units: Full-guarded, standard-duty, surface-mounted, weatherproof type, NEMA ICS 6, Type 4 enclosure, key operated.
- H. Emergency Manual Operation: Equip electrically powered door with capability for emergency manual operation. Design manual mechanism so required force for door operation does not exceed 35 lbf (155 N).
- I. Emergency Operation Disconnect Device: Equip operator with hand-operated disconnect mechanism for automatically engaging manual operator and releasing brake for emergency manual operation while disconnecting motor without affecting timing of limit switch. Mount mechanism so it is accessible from floor level. Include interlock device to automatically prevent motor from operating when emergency operator is engaged.
- J. Motor Removal: Design operator so motor may be removed without disturbing limit-switch adjustment and without affecting emergency manual operation.
- K. Audible and Visual Signals: Audible alarm and visual indicator lights in compliance with regulatory requirements for accessibility.
- L. Portable, Radio-Control System: Consisting of of the following:
1. Three-channel universal coaxial receiver to open, close, and stop door.
 2. Portable control device to open and stop door may be momentary-contact type; control to close door shall be sustained- or constant-pressure type.
 3. Remote antenna and mounting kit.

2.12 GENERAL FINISH REQUIREMENTS

- A. Comply with NAAMM/NOMMA's "Metal Finishes Manual for Architectural and Metal Products (AMP 500-06)" for recommendations for applying and designating finishes.
- B. 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.

2.13 STEEL AND GALVANIZED-STEEL FINISHES

- A. Baked-Enamel Finish: Manufacturer's standard baked-on finish consisting of prime coat and thermosetting topcoat. Comply with coating manufacturer's written instructions for cleaning, pretreatment, application, and minimum dry film thickness.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine substrates, areas, and conditions, with Installer present, for compliance with requirements for substrate construction and other conditions affecting performance of the Work.
- B. Examine locations of electrical connections.
- C. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 INSTALLATION

- A. Install sectional doors and operating equipment complete with necessary hardware, anchors, inserts, hangers, and equipment supports; according to manufacturer's written instructions and as specified.
- B. Tracks:
 - 1. Fasten vertical track assembly to opening jambs and framing, spaced not more than 24 inches (610 mm) apart.
 - 2. Hang horizontal track assembly from structural overhead framing with angles or channel hangers attached to framing by welding or bolting, or both. Provide sway bracing, diagonal bracing, and reinforcement as required for rigid installation of track and door-operating equipment.
- C. Accessibility: Install sectional doors, switches, and controls along accessible routes in compliance with regulatory requirements for accessibility.
- D. Power-Operated Doors: Install according to UL 325.

3.3 STARTUP SERVICES

- A. Engage a factory-authorized service representative to perform startup service.
 - 1. Complete installation and startup checks according to manufacturer's written instructions.
 - 2. Test and adjust controls and safety devices. Replace damaged and malfunctioning controls and equipment.

3.4 ADJUSTING

- A. Adjust hardware and moving parts to function smoothly so that doors operate easily, free of warp, twist, or distortion.
- B. Lubricate bearings and sliding parts as recommended by manufacturer.
- C. Adjust doors and seals to provide weather-resistant fit around entire perimeter.

- D. Touch-up Painting: Immediately after welding galvanized materials, clean welds and abraded galvanized surfaces and repair galvanizing to comply with ASTM A 780/A 780M.

3.5 DEMONSTRATION

- A. Engage a factory-authorized service representative to train Owner's maintenance personnel to adjust, operate, and maintain sectional doors.

END OF SECTION 083613

SECTION 084113 - ALUMINUM-FRAMED ENTRANCES AND STOREFRONTS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Special Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. Section Includes:
 - 1. Exterior storefront framing and windows.
 - 2. Interior stone sills.

1.3 ACTION SUBMITTALS

- A. Product Data: For each type of product.
 - 1. Include construction details, material descriptions, dimensions of individual components and profiles, and finishes.
- B. Shop Drawings: For aluminum-framed entrances and storefronts. Include plans, elevations, sections, full-size details, and attachments to other work.
 - 1. Include details of provisions for assembly expansion and contraction and for draining moisture occurring within the assembly to the exterior.
 - 2. Include full-size isometric details of each vertical-to-horizontal intersection of aluminum-framed entrances and storefronts, showing the following:
 - a. Joinery, including concealed welds.
 - b. Anchorage.
 - c. Expansion provisions.
 - d. Glazing.
 - e. Flashing and drainage.
- C. Samples: For units with factory-applied color finishes.

1.4 INFORMATIONAL SUBMITTALS

- A. Qualification Data: For Installer.
- B. Energy Performance Certificates: For aluminum-framed entrances and storefronts, accessories, and components, from manufacturer.
- C. Product Test Reports: For aluminum-framed entrances and storefronts, for tests performed by a qualified testing agency.

1.5 CLOSEOUT SUBMITTALS

- A. Maintenance Data: For aluminum-framed entrances and storefronts to include in maintenance manuals.

1.6 QUALITY ASSURANCE

- A. Installer Qualifications: An entity that employs installers and supervisors who are trained and approved by manufacturer.
- B. Product Options: Information on Drawings and in Specifications establishes requirements for aesthetic effects and performance characteristics of assemblies. Aesthetic effects are indicated by dimensions, arrangements, alignment, and profiles of components and assemblies as they relate to sightlines, to one another, and to adjoining construction.
 - 1. Do not change intended aesthetic effects, as judged solely by Architect, except with Architect's approval. If changes are proposed, submit comprehensive explanatory data to Architect for review.

1.7 WARRANTY

- A. Special Warranty: Manufacturer agrees to repair or replace components of aluminum-framed entrances and storefronts that do not comply with requirements or that fail in materials or workmanship within specified warranty period.
 - 1. Failures include, but are not limited to, the following:
 - a. Structural failures including, but not limited to, excessive deflection.
 - b. Noise or vibration created by wind and thermal and structural movements.
 - c. Water penetration through fixed glazing and framing areas.
 - d. Failure of operating components.
 - 2. Warranty Period: Five years from date of Substantial Completion.
- B. Special Finish Warranty: Standard form in which manufacturer agrees to repair finishes or replace aluminum that shows evidence of deterioration of factory-applied finishes within specified warranty period.
 - 1. Deterioration includes, but is not limited to, the following:
 - a. Color fading more than 5 Hunter units when tested according to ASTM D 2244.
 - b. Chalking in excess of a No. 8 rating when tested according to ASTM D 4214.
 - c. Cracking, checking, peeling, or failure of paint to adhere to bare metal.
 - 2. Warranty Period: 20 years from date of Substantial Completion.

PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

- A. General Performance: Comply with performance requirements specified, as determined by testing of aluminum-framed entrances and storefronts representing those indicated for this Project without failure due to defective manufacture, fabrication, installation, or other defects in construction.
 - 1. Aluminum-framed entrances and storefronts shall withstand movements of supporting structure including, but not limited to, story drift, twist, column shortening, long-term creep, and deflection from uniformly distributed and concentrated live loads.
 - 2. Failure also includes the following:
 - a. Thermal stresses transferring to building structure.
 - b. Glass breakage.
 - c. Noise or vibration created by wind and thermal and structural movements.
 - d. Loosening or weakening of fasteners, attachments, and other components.
 - e. Failure of operating units.

B. Structural Loads:

1. Wind Loads: As indicated on Drawings.

C. Deflection of Framing Members: At design wind pressure, as follows:

1. Deflection Normal to Wall Plane: Limited to edge of glass in a direction perpendicular to glass plane not exceeding 1/175 of the glass edge length for each individual glazing lite or an amount that restricts edge deflection of individual glazing lites to 3/4 inch (19.1 mm), whichever is less.
2. Deflection Parallel to Glazing Plane: Limited to 1/360 of clear span or 1/8 inch (3.2 mm), whichever is smaller.
 - a. Operable Units: Provide a minimum 1/16-inch (1.6-mm) clearance between framing members and operable units.

D. Structural: Test according to ASTM E 330 as follows:

1. When tested at positive and negative wind-load design pressures, assemblies do not evidence deflection exceeding specified limits.
2. When tested at 150 percent of positive and negative wind-load design pressures, assemblies, including anchorage, do not evidence material failures, structural distress, or permanent deformation of main framing members exceeding 0.2 percent of span.
3. Test Durations: As required by design wind velocity, but not less than 10 seconds.

E. Air Infiltration: Test according to ASTM E 283 for infiltration as follows:

1. Fixed Framing and Glass Area:
 - a. Maximum air leakage of 0.06 cfm/sq. ft. (0.30 L/s per sq. m) at a static-air-pressure differential of 6.24 lbf/sq. ft. (300 Pa).
2. Entrance Doors:

F. Water Penetration under Static Pressure: Test according to ASTM E 331 as follows:

1. No evidence of water penetration through fixed glazing and framing areas when tested according to a minimum static-air-pressure differential of 20 percent of positive wind-load design pressure, but not less than 12 lbf/sq. ft. (575 Pa).

G. Energy Performance: Certify and label energy performance according to NFRC as follows:

1. Thermal Transmittance (U-factor): Fixed glazing and framing areas shall have U-factor of not more than 0.41 Btu/sq. ft. x h x deg F (2.33 W/sq. m x K) as determined according to NFRC 100.
2. Condensation Resistance: Fixed glazing and framing areas shall have an NFRC-certified condensation resistance rating of no less than 68 as determined according to NFRC 500.

H. Noise Reduction: Test according to ASTM E 90, with ratings determined by ASTM E 1332, as follows.

1. Outdoor-Indoor Transmission Class: Minimum 27.

I. Thermal Movements: Allow for thermal movements resulting from ambient and surface temperature changes:

1. Temperature Change: 120 deg F (67 deg C), ambient; 180 deg F (100 deg C), material surfaces.

2.2 MANUFACTURERS

- A. Basis-of-Design Product: Subject to compliance with requirements, provide YKK AP America, Inc.; YES 45 TU or a comparable product by one of the following:

1. EFCO Corporation.
2. TRACO.

- B. Source Limitations: Obtain all components of aluminum-framed entrance and storefront system, including framing, venting windows, and accessories, from single manufacturer.

2.3 FRAMING

- A. Framing Members: Manufacturer's extruded- or formed-aluminum framing members of thickness required and reinforced as required to support imposed loads.
1. Construction: Thermally broken.
 2. Glazing System: Retained mechanically with gaskets on four sides.
 3. Glazing Plane: Center.
 4. Finish: High-performance organic finish.
 5. Fabrication Method: Field-fabricated stick system.
- B. Backer Plates: Manufacturer's standard, continuous backer plates for framing members, if not integral, where framing abuts adjacent construction.
- C. Brackets and Reinforcements: Manufacturer's standard high-strength aluminum with nonstaining, nonferrous shims for aligning system components.
- D. Materials:
1. Aluminum: Alloy and temper recommended by manufacturer for type of use and finish indicated.
 - a. Sheet and Plate: ASTM B 209 (ASTM B 209M).
 - b. Extruded Bars, Rods, Profiles, and Tubes: ASTM B 221 (ASTM B 221M).
 - c. Extruded Structural Pipe and Tubes: ASTM B 429/B 429M.
 - d. Structural Profiles: ASTM B 308/B 308M.

2.4 INSULATED SPANDREL PANELS

- A. Insulated Spandrel Panels: Laminated, metal-faced flat panels with no deviations in plane exceeding 0.8 percent of panel dimension in width or length.
1. Overall Panel Thickness: 1 inch (25.4 mm).
 2. Exterior Skin: Aluminum.
 - a. Thickness: Manufacturer's standard for finish and texture indicated.
 - b. Finish: Match framing system.
 - c. Texture: Smooth.
 - d. Backing Sheet: 1/8-inch- (3.2-mm-) thick, tempered hardboard.
 3. Interior Skin: Aluminum.
 - a. Thickness: Manufacturer's standard for finish and texture indicated.
 - b. Finish: Matching storefront framing.
 - c. Texture: Smooth.
 - d. Backing Sheet: 1/8-inch- (3.2-mm-) thick, tempered hardboard.
 4. Thermal Insulation Core: Manufacturer's standard extruded-polystyrene board.
- B. Surface-Burning Characteristics: Comply with ASTM E 84; testing by a qualified testing agency. Identify products with appropriate markings of applicable testing agency.
1. Flame-Spread Index: 25 or less.
 2. Smoke-Developed Index: 450 or less.

2.5 VENTING WINDOWS

- A. Basis-of-Design Product: YKK APP America, Inc.; "YES SSG TU Vent".
1. Window Type: As indicated on Drawings.
 2. Minimum Performance Class: AW.
 3. Minimum Performance Grade: 65.
 4. Aluminum Extrusions: ASTM B 221 (ASTM B 221M), alloy and temper recommended by manufacturer for strength, corrosion resistance, and application of required finish, but not less than 0.064-inch (1.63-mm) thickness at any location for main frame and sash members.
 - a. Thermally Improved Construction: Fabricate window units with an integral, concealed, low-conductance thermal barrier; located between exterior materials and window members exposed on interior side; in a manner that eliminates direct metal-to-metal contact.
 5. Fasteners, Anchors, and Clips: Nonmagnetic stainless steel, aluminum, or other noncorrosive material, compatible with aluminum window members, trim, hardware, anchors, and other components of window units. Fasteners shall not be exposed, except for attaching hardware.
 - a. Reinforcement: Where fasteners screw-anchor into aluminum less than 0.128 inch (3.26 mm) thick, reinforce interior with aluminum or nonmagnetic stainless steel to receive screw threads, or provide standard, noncorrosive, pressed-in, spline grommet nuts.
 6. Hardware: Manufacturer's standard; of aluminum, stainless steel, die-cast steel, malleable iron, or bronze; including the following:
 - a. Steel or bronze operating arms.
 7. Insect Screens: Provide removable insect screen on each operable exterior sash, with screen frame finished to match window unit, complying with SMA 1004 or SMA 1201, and as follows:
 - a. Fabric: Manufacturer's standard aluminum wire fabric or glass-fiber mesh fabric.
- B. Glazing: Same as adjacent aluminum-framed entrances and storefront glazing.
- C. Finish: Match adjacent aluminum-framed entrances and storefront finish.

2.6 GLAZING

- A. Glazing: Comply with Section 088000 "Glazing."
- B. Glazing Gaskets: Manufacturer's standard sealed-corner pressure-glazing system of black, resilient elastomeric glazing gaskets, setting blocks, and shims or spacers.
- C. Glazing Sealants: As recommended by manufacturer.

2.7 STONE SILLS

- A. Slate Thresholds: ASTM C 629/C 629M, Classification II Interior, with fine, even grain and honed finish.
1. Description: Uniform, black stone.

2.8 ACCESSORIES

- A. Fasteners and Accessories: Manufacturer's standard corrosion-resistant, nonstaining, nonbleeding fasteners and accessories compatible with adjacent materials.
1. Use self-locking devices where fasteners are subject to loosening or turning out from thermal and structural movements, wind loads, or vibration.
 2. Reinforce members as required to receive fastener threads.

- B. Anchors: Three-way adjustable anchors with minimum adjustment of 1 inch (25.4 mm) that accommodate fabrication and installation tolerances in material and finish compatible with adjoining materials and recommended by manufacturer.
 - 1. Concrete and Masonry Inserts: Hot-dip galvanized cast-iron, malleable-iron, or steel inserts complying with ASTM A 123/A 123M or ASTM A 153/A 153M requirements.
- C. Bituminous Paint: Cold-applied asphalt-mastic paint complying with SSPC-Paint 12 requirements except containing no asbestos, formulated for 30-mil (0.762-mm) thickness per coat.

2.9 FABRICATION

- A. Form or extrude aluminum shapes before finishing.
- B. Fabricate components that, when assembled, have the following characteristics:
 - 1. Profiles that are sharp, straight, and free of defects or deformations.
 - 2. Accurately fitted joints with ends coped or mitered.
 - 3. Physical and thermal isolation of glazing from framing members.
 - 4. Accommodations for thermal and mechanical movements of glazing and framing to maintain required glazing edge clearances.
 - 5. Provisions for field replacement of glazing from interior for vision glass and exterior for metal panels.
 - 6. Fasteners, anchors, and connection devices that are concealed from view to greatest extent possible.
- C. Storefront Framing: Fabricate components for assembly using screw-spline system.

2.10 ALUMINUM FINISHES

- A. High-Performance Organic Finish: Three-coat fluoropolymer finish complying with AAMA 2605 and containing not less than 70 percent PVDF or FEVE resin by weight in both color coat and clear topcoat. Prepare, pretreat, and apply coating to exposed metal surfaces to comply with coating and resin manufacturers' written instructions.
 - 1. Color and Gloss: As selected by Architect from manufacturer's full range.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine areas, with Installer present, for compliance with requirements for installation tolerances and other conditions affecting performance of the Work.
- B. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 INSTALLATION

- A. General:
 - 1. Comply with manufacturer's written instructions.
 - 2. Do not install damaged components.
 - 3. Fit joints to produce hairline joints free of burrs and distortion.
 - 4. Rigidly secure nonmovement joints.

5. Install anchors with separators and isolators to prevent metal corrosion and electrolytic deterioration and to prevent impeding movement of moving joints.
6. Seal perimeter and other joints watertight unless otherwise indicated.

B. Metal Protection:

1. Where aluminum is in contact with dissimilar metals, protect against galvanic action by painting contact surfaces with materials recommended by manufacturer for this purpose or by installing nonconductive spacers.
2. Where aluminum is in contact with concrete or masonry, protect against corrosion by painting contact surfaces with bituminous paint.

C. Set continuous sill members and flashing in full sealant bed as specified in Section 079200 "Joint Sealants" to produce weathertight installation.

D. Install components plumb and true in alignment with established lines and grades.

E. Install operable units level and plumb, securely anchored, and without distortion. Adjust weather-stripping contact and hardware movement to produce proper operation.

F. Install glazing as specified in Section 088000 "Glazing."

3.3 ERECTION TOLERANCES

A. Erection Tolerances: Install aluminum-framed entrances and storefronts to comply with the following maximum tolerances:

1. Plumb: 1/8 inch in 10 feet (3.2 mm in 3 m); 1/4 inch in 40 feet (6.35 mm in 12.2 m).
2. Level: 1/8 inch in 20 feet (3.2 mm in 6 m); 1/4 inch in 40 feet (6.35 mm in 12.2 m).
3. Alignment:
 - a. Where surfaces abut in line or are separated by reveal or protruding element up to 1/2 inch (12.7 mm) wide, limit offset from true alignment to 1/16 inch (1.6 mm).
 - b. Where surfaces are separated by reveal or protruding element from 1/2 to 1 inch (12.7 to 25.4 mm) wide, limit offset from true alignment to 1/8 inch (3.2 mm).
 - c. Where surfaces are separated by reveal or protruding element of 1 inch (25.4 mm) wide or more, limit offset from true alignment to 1/4 inch (6 mm).
4. Location: Limit variation from plane to 1/8 inch in 12 feet (3.2 mm in 3.6 m); 1/2 inch (12.7 mm) over total length.

END OF SECTION 084113

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SECTION 087100 - DOOR HARDWARE

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Special Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. Section Includes:
 - 1. Mechanical door hardware for the following:
 - a. Swinging doors.

1.3 COORDINATION

- A. Installation Templates: Distribute for doors, frames, and other work specified to be factory prepared. Check Shop Drawings of other work to confirm that adequate provisions are made for locating and installing door hardware to comply with indicated requirements.

1.4 ACTION SUBMITTALS

- A. Product Data: For each type of product.
 - 1. Include construction details, material descriptions, dimensions of individual components and profiles, and finishes.
- B. Door Hardware Schedule: Prepared by or under the supervision of Installer's Architectural Hardware Consultant. Coordinate door hardware schedule with doors, frames, and related work to ensure proper size, thickness, hand, function, and finish of door hardware.
 - 1. Submittal Sequence: Submit door hardware schedule concurrent with submissions of Product Data, Samples, and Shop Drawings. Coordinate submission of door hardware schedule with scheduling requirements of other work to facilitate the fabrication of other work that is critical in Project construction schedule.
 - 2. Format: Use same scheduling sequence and format and use same door numbers as in door hardware schedule in the Contract Documents.
 - 3. Content: Include the following information:
 - a. Identification number, location, hand, fire rating, size, and material of each door and frame.
 - b. Locations of each door hardware set, cross-referenced to Drawings on floor plans and to door and frame schedule.
 - c. Complete designations, including name and manufacturer, type, style, function, size, quantity, function, and finish of each door hardware product.
 - d. Fastenings and other installation information.
 - e. Explanation of abbreviations, symbols, and designations contained in door hardware schedule.
 - f. Mounting locations for door hardware.
 - g. List of related door devices specified in other Sections for each door and frame.

- C. Keying Schedule: Prepared by or under the supervision of Installer's Architectural Hardware Consultant, detailing Owner's final keying instructions for locks. Include schematic keying diagram and index each key set to unique door designations that are coordinated with the Contract Documents.

1.5 INFORMATIONAL SUBMITTALS

- A. Qualification Data: For Architectural Hardware Consultant.
- B. Product Test Reports: For compliance with accessibility requirements, for tests performed by manufacturer and witnessed by a qualified testing agency, for door hardware on doors located in accessible routes.

1.6 CLOSEOUT SUBMITTALS

- A. Maintenance Data: For each type of door hardware to include in maintenance manuals.

1.7 QUALITY ASSURANCE

- A. Installer Qualifications: Supplier of products and an employer of workers trained and approved by product manufacturers and of an Architectural Hardware Consultant who is available during the course of the Work to consult Contractor, Architect, and Owner about door hardware and keying.
 - 1. Warehousing Facilities: In Project's vicinity.
 - 2. Scheduling Responsibility: Preparation of door hardware and keying schedule.
- B. Architectural Hardware Consultant Qualifications: A person who is experienced in providing consulting services for door hardware installations that are comparable in material, design, and extent to that indicated for this Project and who is currently certified by DHI as an Architectural Hardware Consultant (AHC).

1.8 DELIVERY, STORAGE, AND HANDLING

- A. Inventory door hardware on receipt and provide secure lock-up for door hardware delivered to Project site.
- B. Tag each item or package separately with identification coordinated with the final door hardware schedule, and include installation instructions, templates, and necessary fasteners with each item or package.
- C. Deliver keys and permanent cores to Owner by registered mail or overnight package service.

1.9 WARRANTY

- A. Special Warranty: Manufacturer agrees to repair or replace components of door hardware that fail in materials or workmanship within specified warranty period.
 - 1. Failures include, but are not limited to, the following:
 - a. Structural failures including excessive deflection, cracking, or breakage.
 - b. Faulty operation of doors and door hardware.
 - c. Deterioration of metals, metal finishes, and other materials beyond normal weathering and use.
 - 2. Warranty Period: Three years from date of Substantial Completion unless otherwise indicated below:
 - a. Exit Devices: Two years from date of Substantial Completion.
 - b. Manual Closers: 10 years from date of Substantial Completion.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

- A. Source Limitations: Obtain each type of door hardware from single manufacturer.
- B. Approval of manufacturers and/or products other than those listed as "Scheduled Manufacturer" or "Acceptable Manufacturers" in the individual article for the product category shall be in accordance with QUALITY ASSURANCE article, herein.
 - 1. Basis-of-Design Product: The design for accessories is based on products indicated. Subject to compliance with requirements, provide the named product or a comparable product by one of the following:
 - a. Allegion plc.
 - b. Baldwin Hardware Corporation.
 - c. Dorma (dormakaba Group).
 - d. Hager Companies.
 - e. Stanley Commercial Hardware; a division of Stanley Security Solutions.
- C. Approval of products from manufacturers indicated in "Acceptable Manufacturers" is contingent upon those products providing all functions and features and meeting all requirements of scheduled manufacturer's product.

2.2 PERFORMANCE REQUIREMENTS

- A. Fire-Rated Door Assemblies: Where fire-rated doors are indicated, provide door hardware complying with NFPA 80 that is 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.
- B. Smoke- and Draft-Control Door Assemblies: Where smoke- and draft-control door assemblies are required, provide door hardware that complies with requirements of assemblies tested according to UL 1784 and installed in compliance with NFPA 105.
 - 1. Air Leakage Rate: Maximum air leakage of 0.3 cfm/sq. ft. (3 cu. m per minute/sq. m) at the tested pressure differential of 0.3-inch wg (75 Pa) of water.
- C. Means of Egress Doors: Latches do not require more than 15 lbf (67 N) to release the latch. Locks do not require use of a key, tool, or special knowledge for operation.
- D. Accessibility Requirements: For door hardware on doors in an accessible route, comply with ICC A117.1.
 - 1. Provide operating devices that do not require tight grasping, pinching, or twisting of the wrist and that operate with a force of not more than 5 lbf (22.2 N).
 - 2. Comply with the following maximum opening-force requirements:
 - a. Interior, Non-Fire-Rated Hinged Doors: 5 lbf (22.2 N) applied perpendicular to door.
 - b. Sliding or Folding Doors: 5 lbf (22.2 N) applied parallel to door at latch.
 - c. Fire Doors: Minimum opening force allowable by authorities having jurisdiction.
 - 3. Bevel raised thresholds with a slope of not more than 1:2. Provide thresholds not more than 1/2 inch (13 mm) high.
 - 4. Adjust door closer sweep periods so that, from an open position of 90 degrees, the door will take at least 5 seconds to move to a position of 12 degrees from the latch.
 - 5. Adjust spring hinges so that, from an open position of 70 degrees, the door will take at least 1.5 seconds to move to the closed position.

2.3 SCHEDULED DOOR HARDWARE

- A. Provide products for each door that comply with requirements indicated in Part 2 and door hardware schedule.

- 1. Door hardware is scheduled in Part 3.

2.4 HINGES

- A. Hinges: BHMA A156.1. Provide template-produced hinges for hinges installed on hollow-metal doors and hollow-metal frames.

2.5 SELF-CLOSING HINGES AND PIVOTS

- A. Self-Closing Hinges and Pivots: BHMA A156.17.

2.6 MECHANICAL LOCKS AND LATCHES

- A. Lock Functions: As indicated in door hardware schedule.
- B. Lock Throw: Comply with testing requirements for length of bolts required for labeled fire doors, and as follows:
 - 1. Bored Locks: Minimum 1/2-inch (13-mm) latchbolt throw.
 - 2. Mortise Locks: Minimum 3/4-inch (19-mm) latchbolt throw.
 - 3. Deadbolts: Minimum 1.25-inch (32-mm) bolt throw.
- C. Lock Backset: 2-3/4 inches (70 mm) unless otherwise indicated.
- D. Lock Trim:
 - 1. Description: As scheduled in Part 3.
 - 2. Levers: Solid cast, without plastic inserts.
 - 3. Escutcheons (Roses): Wrought.
 - 4. Dummy Trim: Match lever lock trim and escutcheons.
- E. 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.
- F. Bored Locks: BHMA A156.2; Grade 1; Series 4000.

2.7 AUXILIARY LOCKS

- A. Bored Auxiliary Locks: BHMA A156.36; Grade 1; with strike that suits frame.

2.8 EXIT DEVICES AND AUXILIARY ITEMS

- A. Exit Devices and Auxiliary Items: BHMA A156.3.

2.9 LOCK CYLINDERS

- A. Lock Cylinders: Tumbler type, constructed from brass or bronze, stainless steel, or nickel silver. Provide cylinder from same manufacturer of locking devices.
- B. Standard Lock Cylinders: BHMA A156.5; Grade 1 permanent cores; face finished to match lockset.
 - 1. Core Type: Interchangeable.

2.10 KEYING

- A. Keying System: Factory registered, complying with guidelines in BHMA A156.28, appendix. Provide one extra key blank for each lock.
 - 1. Master Key System: Change keys and a master key operate cylinders.
 - a. Provide 15 cylinder change keys and five master keys.
- B. Keys: Nickel silver.

2.11 KEY CONTROL SYSTEM

- A. Key Control Cabinet: BHMA A156.28; metal cabinet with baked-enamel finish; containing key-holding hooks, labels, two sets of key tags with self-locking key holders, key-gathering envelopes, and temporary and permanent markers; with key capacity of 50 percent of the number of locks.
 - 1. Wall-Mounted Cabinet: Grade 1 cabinet with hinged-panel door equipped with key-holding panels and pin-tumbler cylinder door lock.
- B. Key Lock Boxes: Designed for storage of two keys.

2.12 OPERATING TRIM

- A. Operating Trim: BHMA A156.6; stainless steel unless otherwise indicated.

2.13 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 instructions 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.

2.14 OVERHEAD STOPS AND HOLDERS

- A. Overhead Stops and Holders: BHMA A156.8.

2.15 DOOR GASKETING

- A. Door Gasketing: BHMA A156.22; with resilient or flexible seal strips that are easily replaceable and readily available from stocks maintained by manufacturer.

- B. Maximum Air Leakage: When tested according to ASTM E 283 with tested pressure differential of 0.3-inch wg (75 Pa), as follows:

1. Smoke-Rated Gasketing: 0.3 cfm/sq. ft. (3 cu. m per minute/sq. m) of door opening.
2. Gasketing on Single Doors: 0.3 cfm/sq. ft. (3 cu. m per minute/sq. m) of door opening.
3. Gasketing on Double Doors: 0.50 cfm per foot (0.000774 cu. m/s per m) of door opening.

2.16 THRESHOLDS

- A. Thresholds: BHMA A156.21; fabricated to full width of opening indicated.

2.17 METAL PROTECTIVE TRIM UNITS

- A. Metal Protective Trim Units: BHMA A156.6; fabricated from 0.050-inch- (1.3-mm-) thick stainless steel; with manufacturer's standard machine or self-tapping screw fasteners.

2.18 FABRICATION

- A. Base Metals: Produce door hardware units of base metal indicated, fabricated by forming method indicated, using manufacturer's standard metal alloy, composition, temper, and hardness. Furnish metals of a quality equal to or greater than that of specified door hardware units and BHMA A156.18.
- B. Fasteners: Provide door hardware manufactured to comply with published templates prepared for machine, wood, and sheet metal screws. Provide screws that comply with commercially recognized industry standards for application intended, except aluminum fasteners are not permitted. Provide Phillips flat-head screws with finished heads to match surface of door hardware unless otherwise indicated.
1. Concealed Fasteners: For door hardware units that are exposed when door is closed, except for units already specified with concealed fasteners. Do not use through bolts for installation where bolt head or nut on opposite face is exposed unless it is the only means of securely attaching the door hardware. Where through bolts are used on hollow door and frame construction, provide sleeves for each through bolt.

2.19 FINISHES

- A. Provide finishes complying with BHMA A156.18 as indicated in door hardware schedule.
- B. Protect mechanical finishes on exposed surfaces from damage by applying a strippable, temporary protective covering before shipping.
- C. Appearance of Finished Work: Variations in appearance of abutting or adjacent pieces are acceptable if they are within one-half of the range of approved Samples. Noticeable variations in the same piece are not acceptable. Variations in appearance of other components are acceptable if they are within the range of approved Samples and are assembled or installed to minimize contrast.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine doors and frames, with Installer present, for compliance with requirements for installation tolerances, labeled fire-rated door assembly construction, wall and floor construction, and other conditions affecting performance of the Work.
- B. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 PREPARATION

- A. Steel Doors and Frames: For surface-applied door hardware, drill and tap doors and frames according to ANSI/SDI A250.6.

3.3 INSTALLATION

- A. Mounting Heights: Mount door hardware units at heights to comply with the following unless otherwise indicated or required to comply with governing regulations.
 - 1. Standard Steel Doors and Frames: ANSI/SDI A250.8.
 - 2. Custom Steel Doors and Frames: HMMA 831.
 - 3. Wood Doors: DHI's "Recommended Locations for Architectural Hardware for Wood Flush Doors."
- B. Install each door hardware item to comply with manufacturer's written instructions. Where cutting and fitting are required to install door hardware onto or into surfaces that are later to be painted or finished in another way, coordinate removal, storage, and reinstallation of surface protective trim units with finishing work. Do not install surface-mounted items until finishes have been completed on substrates involved.
 - 1. Set units level, plumb, and true to line and location. Adjust and reinforce attachment substrates as necessary for proper installation and operation.
 - 2. Drill and countersink units that are not factory prepared for anchorage fasteners. Space fasteners and anchors according to industry standards.
- C. Hinges: Install types and in quantities indicated in door hardware schedule, but not fewer than the number recommended by manufacturer for application indicated or one hinge for every 30 inches (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.
- E. Key Control System:
 - 1. Key Control Cabinet: Tag keys and place them on markers and hooks in key control system cabinet, as determined by final keying schedule.
 - 2. Key Lock Boxes: Install where indicated or approved by Architect to provide controlled access for fire and medical emergency personnel.
- 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.

1. Do not notch perimeter gasketing to install other surface-applied hardware.

- I. Door Bottoms: Apply to bottom of door, forming seal with threshold when door is closed.

3.4 FIELD QUALITY CONTROL

- A. Independent Architectural Hardware Consultant: Engage a qualified independent Architectural Hardware Consultant to perform inspections and to prepare inspection reports.
 1. Independent Architectural Hardware Consultant will inspect door hardware and state in each report whether installed work complies with or deviates from requirements, including whether door hardware is properly installed and adjusted.

3.5 ADJUSTING

- A. Initial Adjustment: Adjust and check each operating item of door hardware and each door to ensure proper operation or function of every unit. Replace units that cannot be adjusted to operate as intended. Adjust door control devices to compensate for final operation of heating and ventilating equipment and to comply with referenced accessibility requirements.
 1. Door Closers: Adjust sweep period to comply with accessibility requirements and requirements of authorities having jurisdiction.
- B. Occupancy Adjustment: Approximately three months after date of Substantial Completion, Installer's Architectural Hardware Consultant shall examine and readjust each item of door hardware, including adjusting operating forces, as necessary to ensure function of doors, door hardware, and electrified door hardware.

3.6 CLEANING AND PROTECTION

- A. Clean adjacent surfaces soiled by door hardware installation.
- B. Clean operating items as necessary to restore proper function and finish.
- C. Provide final protection and maintain conditions that ensure that door hardware is without damage or deterioration at time of Substantial Completion.

3.7 MAINTENANCE SERVICE

- A. Maintenance Tools and Instructions: Furnish a complete set of specialized tools and maintenance instructions for Owner's continued adjustment, maintenance, and removal and replacement of door hardware.

3.8 DOOR HARDWARE SCHEDULE

- A. Abbreviation:
 1. GLY Glynn-Johnson Corp
 2. IVE H.B. Ives
 3. LCN LCN Commercial Division
 4. SCH Schlage Lock Company
 5. ZER Zero International Inc

B. Hardware Group No. 01

1. For use on Door #(s): 202.2
2. Provide each SGL door(s) with the following:

QTY		DESCRIPTION	CATALOG NUMBER		FINISH	MFR
3	EA	HINGE	5BB1 4.5 X 4.5	☰	652	IVE
1	EA	ENTRANCE LOCK	ND53HD SPA	☰	626	SCH
1	EA	SFIC EVEREST CORE	80-037 CKC EV29 R	☰	626	SCH
1	EA	OH STOP	100S	☰	630	GLY
3	EA	SILENCER	SR64	☰	GRY	IVE

C. Hardware Group No. 02

1. For use on Door #(s): 105.1
2. Provide each SGL door(s) with the following:

QTY		DESCRIPTION	CATALOG NUMBER		FINISH	MFR
3	EA	HINGE	5BB1 4.5 X 4.5	☰	652	IVE
1	EA	STOREROOM LOCK	ND80HD SPA	☰	626	SCH
1	EA	SFIC EVEREST CORE	80-037 CKC EV29 R	☰	626	SCH
1	EA	SURFACE CLOSER	4050 REG	☰	689	LCN
1	EA	KICK PLATE	8400 10" X 2" LDW B-CS	☰	630	IVE
1	EA	WALL STOP	WS406/407CVX	☰	626	IVE
3	EA	SILENCER	SR64	☰	GRY	IVE









D. Hardware Group No. 02A

1. For use on Door #(s): 110.1
2. Provide each SGL door(s) with the following:

QTY		DESCRIPTION	CATALOG NUMBER		FINISH	MFR
3	EA	HINGE	5BB1 4.5 X 4.5	☰	652	IVE
1	EA	STOREROOM LOCK	ND80HD SPA	☰	626	SCH
1	EA	SFIC EVEREST CORE	80-037 CKC EV29 R	☰	626	SCH
1	EA	SURFACE CLOSER	4050 REG	☰	689	LCN
1	EA	KICK PLATE	8400 10" X 2" LDW B-CS	☰	630	IVE
1	EA	WALL STOP	WS406/407CVX	☰	626	IVE
1	EA	GASKETING	188SBK PSA	☰	BK	ZER
1	EA	DOOR BOTTOM	355AA	☰	AA	ZER









E. Hardware Group No. 02B

1. For use on Door #(s): 111.1
2. Provide each SGL door(s) with the following:

QTY		DESCRIPTION	CATALOG NUMBER		FINISH	MFR
3	EA	HINGE	5BB1 4.5 X 4.5		652	IVE
1	EA	STOREROOM LOCK	ND80HD SPA		626	SCH
1	EA	SFIC EVEREST CORE	80-037 CKC EV29 R		626	SCH
1	EA	OH STOP	100S		630	GLY
1	EA	SURFACE CLOSER	4050 RW/PA ST-5003		689	LCN
1	EA	MOUNTING PLATE	4050-18		689	LCN
1	EA	KICK PLATE	8400 10" X 2" LDW B-CS		630	IVE
3	EA	SILENCER	SR64		GRY	IVE












F. Hardware Group No. 02C

1. For use on Door #(s): 112.1
2. Provide each SGL door(s) with the following:

QTY		DESCRIPTION	CATALOG NUMBER		FINISH	MFR
3	EA	HINGE	5BB1 4.5 X 4.5		652	IVE
1	EA	PASSAGE LOCK	ND10HD SPA		626	SCH
1	EA	SFIC EVEREST CORE	80-037 CKC EV29 R		626	SCH
1	EA	SURFACE CLOSER	4050 REG		689	LCN
1	EA	KICK PLATE	8400 10" X 2" LDW B-CS		630	IVE
1	EA	WALL STOP	WS406/407CVX		626	IVE
1	EA	GASKETING	188SBK PSA		BK	ZER
1	EA	DOOR BOTTOM	355AA		AA	ZER

G. Hardware Group No. 03

1. For use on Door #(s): 104.1
2. Provide each SGL door(s) with the following:

QTY		DESCRIPTION	CATALOG NUMBER		FINISH	MFR
3	EA	HINGE	5BB1 4.5 X 4.5		652	IVE
1	EA	CLASSROOM LOCK	ND70HD SPA		626	SCH
1	EA	SFIC EVEREST CORE	80-037 CKC EV29 R		626	SCH
1	EA	SURFACE CLOSER	4050 REG		689	LCN
1	EA	KICK PLATE	8400 10" X 2" LDW B-CS		630	IVE
1	EA	MOP PLATE	8400 4" X 1" LDW B-CS		630	IVE
1	EA	WALL STOP	WS406/407CVX		626	IVE
1	EA	RAIN DRIP	142AA		AA	ZER
1	EA	GASKETING	328AA-S		AA	ZER
1	EA	DOOR SWEEP	328AA		AA	ZER
1	EA	THRESHOLD	655A-223		A	ZER

H. Hardware Group No. 04

1. For use on Door #(s): 109.1
2. Provide each SGL door(s) with the following:

VILLAGE/TOWN OF MOUNT KISCO
 WATER DEPT. BUILDING ADDITION
 CONTRACT #2022-09



QTY		DESCRIPTION	CATALOG NUMBER		FINISH	MFR
3	EA	HINGE	5BB1 4.5 X 4.5		652	IVE
1	EA	PRIVACY LOCK	L9040 17A 09-544 L283-722		626	SCH
1	EA	KICK PLATE	8400 10" X 2" LDW B-CS		630	IVE
1	EA	MOP PLATE	8400 4" X 1" LDW B-CS		630	IVE
1	EA	WALL STOP	WS406/407CCV		626	IVE
1	EA	GASKETING	188SBK PSA		BK	ZER
1	EA	COAT AND HAT HOOK	582		626	IVE

END OF SECTION 087100

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SECTION 088000 - GLAZING

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General Conditions and Special Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. Section includes:
 - 1. Glass for windows and storefront framing.
 - 2. Glazing sealants and accessories.

1.3 DEFINITIONS

- A. Glass Manufacturers: Firms that produce primary glass, fabricated glass, or both, as defined in referenced glazing publications.
- B. Glass Thicknesses: Indicated by thickness designations in millimeters according to ASTM C 1036.
- C. IBC: International Building Code.
- D. Interspace: Space between lites of an insulating-glass unit.

1.4 COORDINATION

- A. Coordinate glazing channel dimensions to provide necessary bite on glass, minimum edge and face clearances, and adequate sealant thicknesses, with reasonable tolerances.

1.5 ACTION SUBMITTALS

- A. Product Data: For each type of product.
- B. Glass Samples: For each type of glass product other than clear monolithic vision glass; 12 inches (300 mm) square.

1.6 INFORMATIONAL SUBMITTALS

- A. Qualification Data: For Installer.
- B. Product Certificates: For glass.
- C. Product Test Reports: For insulating glass and glazing sealants, for tests performed by a qualified testing agency.

1. For glazing sealants, provide test reports based on testing current sealant formulations within previous 36-month period.

D. Sample Warranties: For special warranties.

1.7 QUALITY ASSURANCE

- A. Manufacturer Qualifications for Insulating-Glass Units with Sputter-Coated, Low-E Coatings: A qualified insulating-glass manufacturer who is approved and certified by coated-glass manufacturer.
- B. Installer Qualifications: A qualified installer who employs glass installers for this Project who are certified under the National Glass Association's Certified Glass Installer Program.

1.8 DELIVERY, STORAGE, AND HANDLING

- A. Protect glazing materials according to manufacturer's written instructions. Prevent damage to glass and glazing materials from condensation, temperature changes, direct exposure to sun, or other causes.

1.9 FIELD CONDITIONS

- A. Environmental Limitations: Do not proceed with glazing when ambient and substrate temperature conditions are outside limits permitted by glazing material manufacturers and when glazing channel substrates are wet from rain, frost, condensation, or other causes.

1. Do not install glazing sealants when ambient and substrate temperature conditions are outside limits permitted by sealant manufacturer or are below 40 deg F (4.4 deg C).

1.10 WARRANTY

- A. Manufacturer's Special Warranty for Coated-Glass Products: Manufacturer agrees to replace coated-glass units that deteriorate within specified warranty period. Deterioration of coated glass is defined as defects developed from normal use that are not attributed to glass breakage or to maintaining and cleaning coated glass contrary to manufacturer's written instructions. Defects include peeling, cracking, and other indications of deterioration in coating.

1. Warranty Period: 10 years from date of Substantial Completion.

- B. Manufacturer's Special Warranty for Insulating Glass: Manufacturer agrees to replace insulating-glass units that deteriorate within specified warranty period. Deterioration of insulating glass is defined as failure of hermetic seal under normal use that is not attributed to glass breakage or to maintaining and cleaning insulating glass contrary to manufacturer's written instructions. Evidence of failure is the obstruction of vision by dust, moisture, or film on interior surfaces of glass.

1. Warranty Period: 10 years from date of Substantial Completion.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

- A. Basis-of-Design Product: Subject to compliance with requirements, provide Guardian Industries Corp.; SunGuard or a comparable product by one of the following:

1. AGC Glass Company, North America.
2. Vetrotech Saint-Gobain.
3. Viracon, Inc.

- B. Source Limitations for Glass: Obtain from single source from single manufacturer for each glass type.
- C. Source Limitations for Glazing Accessories: Obtain from single source from single manufacturer for each product and installation method.

2.2 PERFORMANCE REQUIREMENTS

- A. General: Installed glazing systems shall withstand normal thermal movement and wind and impact loads (where applicable) without failure, including loss or glass breakage attributable to the following: defective manufacture, fabrication, or installation; failure of sealants or gaskets to remain watertight and airtight; deterioration of glazing materials; or other defects in construction.
- B. Structural Performance: Glazing shall withstand the following design loads within limits and under conditions indicated determined according to the IBC and ASTM E 1300.
1. Design Wind Pressures: As indicated on Drawings.
 2. Maximum Lateral Deflection: For glass supported on all four edges, limit center-of-glass deflection at design wind pressure to not more than 1/50 times the short-side length or 1 inch (25 mm), whichever is less.
- C. Safety Glazing: Where safety glazing is indicated, provide glazing that complies with 16 CFR 1201, Category II.
- D. Thermal and Optical Performance Properties: Provide glass with performance properties specified, as indicated in manufacturer's published test data, based on procedures indicated below:
1. For insulating-glass units, properties are based on units of thickness indicated for overall unit and for each lite.
 2. U-Factors: Center-of-glazing values, according to NFRC 100 and based on LBL's WINDOW 5.2 computer program, expressed as Btu/sq. ft. x h x deg F (W/sq. m x K).
 3. Solar Heat-Gain Coefficient and Visible Transmittance: Center-of-glazing values, according to NFRC 200 and based on LBL's WINDOW 5.2 computer program.
 4. Visible Reflectance: Center-of-glazing values, according to NFRC 300.

2.3 GLASS PRODUCTS, GENERAL

- A. Glazing Publications: Comply with published recommendations of glass product manufacturers and organizations below unless more stringent requirements are indicated. See these publications for glazing terms not otherwise defined in this Section or in referenced standards.
1. GANA Publications: "Glazing Manual."
 2. IGMA Publication for Insulating Glass: SIGMA TM-3000, "North American Glazing Guidelines for Sealed Insulating Glass Units for Commercial and Residential Use."
- B. Safety Glazing Labeling: Where safety glazing is indicated, permanently mark glazing with certification label of the SGCC or another certification agency acceptable to authorities having jurisdiction. Label shall indicate manufacturer's name, type of glass, thickness, and safety glazing standard with which glass complies.
- C. Insulating-Glass Certification Program: Permanently marked either on spacers or on at least one component lite of units with appropriate certification label of IGCC.
- D. Thickness: Where glass thickness is indicated, it is a minimum. Provide glass that complies with performance requirements and is not less than the thickness indicated.

- E. Strength: Where fully tempered float glass is indicated, provide fully tempered float glass.

2.4 GLASS PRODUCTS

- A. Fully Tempered Float Glass: ASTM C 1048, Kind FT (fully tempered), Condition A (uncoated) unless otherwise indicated, Type I, Class 1 (clear) as indicated, Quality-Q3.

2.5 LAMINATED GLASS

- A. Laminated Glass: ASTM C 1172. Use materials that have a proven record of no tendency to bubble, discolor, or lose physical and mechanical properties after fabrication and installation.
 - 1. Construction: Laminate glass with polyvinyl butyral interlayer to comply with interlayer manufacturer's written instructions.
 - 2. Interlayer Thickness: Provide thickness not less than that indicated and as needed to comply with requirements.
 - 3. Interlayer Color: Clear unless otherwise indicated.

2.6 INSULATING GLASS

- A. Insulating-Glass Units: Factory-assembled units consisting of sealed lites of glass separated by a dehydrated interspace, qualified according to ASTM E 2190.
 - 1. Sealing System: Dual seal, with polyisobutylene and polysulfide primary and secondary sealants.
 - 2. Spacer: Manufacturer's standard spacer material and construction.
 - 3. Desiccant: Molecular sieve or silica gel, or a blend of both.

2.7 MISCELLANEOUS GLAZING MATERIALS

- A. General: Provide products of material, size, and shape complying with referenced glazing standard, with requirements of manufacturers of glass and other glazing materials for application indicated, and with a proven record of compatibility with surfaces contacted in installation.
- B. Cleaners, Primers, and Sealers: Types recommended by sealant or gasket manufacturer.
- C. Setting Blocks: Elastomeric material with a Shore, Type A durometer hardness of 85, plus or minus 5.
- D. Spacers: Elastomeric blocks or continuous extrusions of hardness required by glass manufacturer to maintain glass lites in place for installation indicated.
- E. Edge Blocks: Elastomeric material of hardness needed to limit glass lateral movement (side walking).

2.8 FABRICATION OF GLAZING UNITS

- A. Fabricate glazing units in sizes required to fit openings indicated for Project, with edge and face clearances, edge and surface conditions, and bite complying with written instructions of product manufacturer and referenced glazing publications, to comply with system performance requirements.
 - 1. Allow for thermal movements from ambient and surface temperature changes acting on glass framing members and glazing components.
 - a. Temperature Change: 120 deg F (67 deg C), ambient; 180 deg F (100 deg C), material surfaces.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine framing, glazing channels, and stops, with Installer present, for compliance with the following:
 - 1. Manufacturing and installation tolerances, including those for size, squareness, and offsets at corners.
 - 2. Presence and functioning of weep systems.
 - 3. Minimum required face and edge clearances.
 - 4. Effective sealing between joints of glass-framing members.
- B. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 PREPARATION

- A. Clean glazing channels and other framing members receiving glass immediately before glazing. Remove coatings not firmly bonded to substrates.
- B. Examine glazing units to locate exterior and interior surfaces. Label or mark units as needed so that exterior and interior surfaces are readily identifiable. Do not use materials that leave visible marks in the completed Work.

3.3 GLAZING, GENERAL

- A. Comply with combined written instructions of manufacturers of glass, sealants, gaskets, and other glazing materials, unless more stringent requirements are indicated, including those in referenced glazing publications.
- B. Protect glass edges from damage during handling and installation. Remove damaged glass from Project site and legally dispose of off Project site. Damaged glass includes glass with edge damage or other imperfections that, when installed, could weaken glass, impair performance, or impair appearance.
- C. Apply primers to joint surfaces where required for adhesion of sealants, as determined by preconstruction testing.
- D. Install setting blocks in sill rabbets, sized and located to comply with referenced glazing publications, unless otherwise required by glass manufacturer. Set blocks in thin course of compatible sealant suitable for heel bead.
- E. Do not exceed edge pressures stipulated by glass manufacturers for installing glass lites.
- F. Provide spacers for glass lites where length plus width is larger than 50 inches (1270 mm).
 - 1. Locate spacers directly opposite each other on both inside and outside faces of glass. Install correct size and spacing to preserve required face clearances, unless gaskets and glazing tapes are used that have demonstrated ability to maintain required face clearances and to comply with system performance requirements.
 - 2. Provide 1/8-inch (3-mm) minimum bite of spacers on glass and use thickness equal to sealant width. With glazing tape, use thickness slightly less than final compressed thickness of tape.
- G. Provide edge blocking where indicated or needed to prevent glass lites from moving sideways in glazing channel, as recommended in writing by glass manufacturer and according to requirements in referenced glazing publications.

- H. Set glass lites in each series with uniform pattern, draw, bow, and similar characteristics.
- I. Set glass lites with proper orientation so that coatings face exterior or interior as specified.

3.4 GASKET GLAZING (DRY)

- A. Cut compression gaskets to lengths recommended by gasket manufacturer to fit openings exactly, with allowance for stretch during installation.
- B. Insert soft compression gasket between glass and frame or fixed stop so it is securely in place with joints miter cut and bonded together at corners.
- C. Installation with Drive-in Wedge Gaskets: Center glass lites in openings on setting blocks, and press firmly against soft compression gasket by inserting dense compression gaskets formed and installed to lock in place against faces of removable stops. Start gasket applications at corners and work toward centers of openings. Compress gaskets to produce a weathertight seal without developing bending stresses in glass. Seal gasket joints with sealant recommended by gasket manufacturer.
- D. Installation with Pressure-Glazing Stops: Center glass lites in openings on setting blocks, and press firmly against soft compression gasket. Install dense compression gaskets and pressure-glazing stops, applying pressure uniformly to compression gaskets. Compress gaskets to produce a weathertight seal without developing bending stresses in glass. Seal gasket joints with sealant recommended by gasket manufacturer.
- E. Install gaskets so they protrude past face of glazing stops.

3.5 CLEANING AND PROTECTION

- A. Immediately after installation remove nonpermanent labels and clean surfaces.
- B. Protect glass from contact with contaminating substances resulting from construction operations. Examine glass surfaces adjacent to or below exterior concrete and other masonry surfaces at frequent intervals during construction, but not less than once a month, for buildup of dirt, scum, alkaline deposits, or stains.
 - 1. If, despite such protection, contaminating substances do come into contact with glass, remove substances immediately as recommended in writing by glass manufacturer. Remove and replace glass that cannot be cleaned without damage to coatings.
- C. Remove and replace glass that is damaged during construction period.
- D. Wash glass on both exposed surfaces not more than four days before date scheduled for inspections that establish date of Substantial Completion. Wash glass as recommended in writing by glass manufacturer.

3.6 LAMINATED GLASS SCHEDULE

- A. Glass Type GL-1: Clear laminated glass with two plies of fully tempered float glass.
 - 1. Minimum Thickness of Each Glass Ply: 6 mm.
 - 2. Interlayer Thickness: 0.060 inch (1.52 mm).

3.7 INSULATING GLASS SCHEDULE

- A. Glass Type GL-2: Low-E-coated, clear insulating glass.
 - 1. Basis-of-Design Product: Guardian Industries Corp.; SNX 62/27.

2. Overall Unit Thickness: 1 inch (25 mm).
3. Minimum Thickness of Each Glass Lite: 6 mm.
4. Outdoor Lite: Fully tempered float glass.
5. Interspace Content: Argon.
6. Indoor Lite: Fully tempered float glass.
7. Low-E Coating: Pyrolytic on second surface.
8. Winter Nighttime U-Factor: 0.24 maximum.
9. Visible Light Transmittance: 64 percent minimum.
10. Solar Heat Gain Coefficient: 0.27 maximum.

B. Glass Type GL-3: Low-E-coated, obscure insulating glass.

1. Basis-of-Design Product: Guardian Industries Corp.; SN 54.
2. Overall Unit Thickness: 1 inch (25 mm).
3. Minimum Thickness of Each Glass Lite: 6 mm.
4. Outdoor Lite: Fully tempered float glass.
5. Interspace Content: Argon.
6. Indoor Lite: SatinDeco fully tempered float glass.
7. Low-E Coating: Pyrolytic on second surface.
8. Winter Nighttime U-Factor: 0.25 maximum.
9. Visible Light Transmittance: 52 percent minimum.
10. Solar Heat Gain Coefficient: 0.28 maximum.

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SECTION 092216 - NON-STRUCTURAL METAL FRAMING

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Special Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. Section Includes:
 - 1. Non-load-bearing steel framing systems for interior gypsum board assemblies.

1.3 ACTION SUBMITTALS

- A. Product Data: For each type of product.

PART 2 - PRODUCTS

2.1 FRAMING SYSTEMS

- A. Framing Members, General: Comply with ASTM C 754 for conditions indicated.
 - 1. Steel Sheet Components: Comply with ASTM C 645 requirements for metal unless otherwise indicated.
 - 2. Protective Coating: ASTM A 653/A 653M, G40 (Z120) hot-dip galvanized unless otherwise indicated.
- B. Studs and Runners: ASTM C 645.
 - 1. Steel Studs and Runners:
 - a. Minimum Base-Metal Thickness: 0.033 inch (0.84 mm) (20 gage).
 - b. Depth: As indicated on Drawings.

2.2 AUXILIARY MATERIALS

- A. General: Provide auxiliary materials that comply with referenced installation standards.
 - 1. Fasteners for Metal Framing: Of type, material, size, corrosion resistance, holding power, and other properties required to fasten steel members to substrates.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine areas and substrates, with Installer present, and including welded hollow-metal frames, cast-in anchors, and structural framing, for compliance with requirements and other conditions affecting performance of the Work.
- B. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 INSTALLATION, GENERAL

- A. Installation Standard: ASTM C 754.
 - 1. Gypsum Board Assemblies: Also comply with requirements in ASTM C 840 that apply to framing installation.
- B. Install supplementary framing, and blocking to support fixtures, equipment services, heavy trim, grab bars, toilet accessories, furnishings, or similar construction.
- C. Install bracing at terminations in assemblies.
- D. Do not bridge building control and expansion joints with non-load-bearing steel framing members. Frame both sides of joints independently.

3.3 INSTALLING FRAMED ASSEMBLIES

- A. Install framing system components according to spacings indicated, but not greater than spacings required by referenced installation standards for assembly types.
- B. Install studs so flanges within framing system point in same direction.
- C. Install tracks (runners) at floors and overhead supports. Extend framing full height to structural supports or substrates above suspended ceilings except where partitions are indicated to terminate at suspended ceilings. Continue framing around ducts penetrating partitions above ceiling.
 - 1. Door Openings: Screw vertical studs at jambs to jamb anchor clips on door frames; install runner track section (for cripple studs) at head and secure to jamb studs.
 - a. Install two studs at each jamb unless otherwise indicated.
 - 2. Other Framed Openings: Frame openings other than door openings the same as required for door openings unless otherwise indicated. Install framing below sills of openings to match framing required above door heads.

END OF SECTION 092216

SECTION 092900 - GYPSUM BOARD

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Special Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. Section Includes:
 - 1. Interior gypsum board.

1.3 ACTION SUBMITTALS

- A. Product Data: For each type of product.

1.4 DELIVERY, STORAGE AND HANDLING

- A. Store materials inside under cover and keep them dry and protected against weather, condensation, direct sunlight, construction traffic, and other potential causes of damage. Stack panels flat and supported on risers on a flat platform to prevent sagging.

1.5 FIELD CONDITIONS

- A. Environmental Limitations: Comply with ASTM C 840 requirements or gypsum board manufacturer's written recommendations, whichever are more stringent.
- B. Do not install paper-faced gypsum panels until installation areas are enclosed and conditioned.
- C. Do not install panels that are wet, those that are moisture damaged, and those that are mold damaged.
 - 1. Indications that panels are wet or moisture damaged include, but are not limited to, discoloration, sagging, or irregular shape.
 - 2. Indications that panels are mold damaged include, but are not limited to, fuzzy or splotchy surface contamination and discoloration.

PART 2 - PRODUCTS

2.1 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.

2.2 GYPSUM BOARD, GENERAL

- A. Size: Provide maximum lengths and widths available that will minimize joints in each area and that correspond with support system indicated.

2.3 INTERIOR GYPSUM BOARD

- 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. National Gypsum Company.
 - 2. USG Corporation.
 - 3. Georgia-Pacific Gypsum.
- B. Gypsum Board, Type X: ASTM C 1396/C 1396M.
 - 1. Thickness: 5/8 inch (15.9 mm).
 - 2. Long Edges: Tapered and featured (rounded or beveled) for prefilling.

2.4 TRIM ACCESSORIES

- A. Interior Trim: ASTM C 1047.
 - 1. Material: Galvanized or aluminum-coated steel sheet, rolled zinc, plastic, or paper-faced galvanized steel sheet.
 - 2. Shapes:
 - a. Cornerbead.
 - b. Expansion (control) joint.

2.5 JOINT TREATMENT MATERIALS

- A. General: Comply with ASTM C 475/C 475M.
- B. Joint Tape:
 - 1. Interior Gypsum Board: Paper.
 - 2. Exterior Gypsum Soffit Board: Paper.
 - 3. Glass-Mat Gypsum Sheathing Board: 10-by-10 glass mesh.
 - 4. Tile Backing Panels: As recommended by panel manufacturer.
- 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. Prefilling: At open joints, rounded or beveled panel edges, and damaged surface areas, use setting-type taping compound.
 - 2. Embedding and First Coat: For embedding tape and first coat on joints, fasteners, and trim flanges, use setting-type taping compound.
 - a. Use setting-type compound for installing paper-faced metal trim accessories.
 - 3. Fill Coat: For second coat, use setting-type, sandable topping compound.
 - 4. Finish Coat: For third coat, use setting-type, sandable topping compound.
 - 5. Skim Coat: For final coat of Level 5 finish, use setting-type, sandable topping compound.

2.6 AUXILIARY MATERIALS

- A. General: Provide auxiliary materials that comply with referenced installation standards and manufacturer's written recommendations.
- B. Steel Drill Screws: ASTM C 1002, unless otherwise indicated.
 - 1. Use screws complying with ASTM C 954 for fastening panels to steel members from 0.033 to 0.112 inch (0.84 to 2.84 mm) thick.
 - 2. For fastening cementitious backer units, use screws of type and size recommended by panel manufacturer.
- C. Sound Attenuation Blankets: ASTM C 665, Type I (blankets without membrane facing) produced by combining thermosetting resins with mineral fibers manufactured from glass, slag wool, or rock wool.
 - 1. Fire-Resistance-Rated Assemblies: Comply with mineral-fiber requirements of assembly.
- D. Acoustical Joint Sealant: Manufacturer's standard nonsag, paintable, nonstaining latex sealant complying with ASTM C 834. Product effectively reduces airborne sound transmission through perimeter joints and openings in building construction as demonstrated by testing representative assemblies according to ASTM E 90.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine areas and substrates including welded hollow-metal frames and framing, with Installer present, for compliance with requirements and other conditions affecting performance.
- B. Examine panels before installation. Reject panels that are wet, moisture damaged, and mold damaged.
- C. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 APPLYING AND FINISHING PANELS, GENERAL

- A. Comply with ASTM C 840.
- B. Install ceiling panels across framing to minimize the number of abutting end joints and to avoid abutting end joints in central area of each ceiling. Stagger abutting end joints of adjacent panels not less than one framing member.
- C. Install panels with face side out. Butt panels together for a light contact at edges and ends with not more than 1/16 inch (1.5 mm) of open space between panels. Do not force into place.
- D. Locate edge and end joints over supports, except in ceiling applications where intermediate supports or gypsum board back-blocking is provided behind end joints. Do not place tapered edges against cut edges or ends. Stagger vertical joints on opposite sides of partitions. Do not make joints other than control joints at corners of framed openings.
- E. Form control and expansion joints with space between edges of adjoining gypsum panels.
- F. Cover both faces of support framing with gypsum panels in concealed spaces (above ceilings, etc.), except in chases braced internally.

1. Unless concealed application is indicated or required for sound, fire, air, or smoke ratings, coverage may be accomplished with scraps of not less than 8 sq. ft. (0.7 sq. m) in area.
2. Fit gypsum panels around ducts, pipes, and conduits.
3. Where partitions intersect structural members projecting below underside of floor/roof slabs and decks, cut gypsum panels to fit profile formed by structural members; allow 1/4- to 3/8 inch- (6.4- to 9.5-mm-) wide joints to install sealant.

- G. Attachment to Steel Framing: Attach panels so leading edge or end of each panel is attached to open (unsupported) edges of stud flanges first.
- H. Install sound attenuation blankets before installing gypsum panels unless blankets are readily installed after panels have been installed on one side.

3.3 APPLYING INTERIOR GYPSUM BOARD

- A. Install interior gypsum board in the following locations:

1. Wallboard Type: As indicated on Drawings.

- B. Single-Layer Application:

1. On ceilings, apply gypsum panels before wall/partition board application to greatest extent possible and at right angles to framing unless otherwise indicated.
2. On partitions/walls, apply gypsum panels vertically (parallel to framing) unless otherwise indicated or required by fire-resistance-rated assembly, and minimize end joints.
 - a. Stagger abutting end joints not less than one framing member in alternate courses of panels.
3. Fastening Methods: Apply gypsum panels to supports with steel drill screws.

3.4 INSTALLING TRIM ACCESSORIES

- A. General: For trim with back flanges intended for fasteners, attach to framing with same fasteners used for panels. Otherwise, attach trim according to manufacturer's written instructions.
- B. Control Joints: Install control joints according to ASTM C 840 and in specific locations approved by Architect for visual effect.
- C. Interior Trim: Install in the following locations:
1. Cornerbead: Use at outside corners.

3.5 FINISHING GYPSUM BOARD

- A. General: Treat gypsum board joints, interior angles, edge trim, control joints, penetrations, fastener heads, surface defects, and elsewhere as required to prepare gypsum board surfaces for decoration. Promptly remove residual joint compound from adjacent surfaces.
- B. Prefill open joints, rounded or beveled edges, and damaged surface areas.
- C. Apply joint tape over gypsum board joints, except for trim products specifically indicated as not intended to receive tape.
- D. Gypsum Board Finish Levels: Finish panels to levels indicated below and according to ASTM C 840:
1. Level 1: Ceiling plenum areas, concealed areas, and where indicated.
 2. Level 4: At panel surfaces that will be exposed to view unless otherwise indicated.

- a. Primer and its application to surfaces are specified in Section 099123 "Interior Painting."

3.6 PROTECTION

- A. Protect adjacent surfaces from drywall compound and promptly remove from floors and other non-drywall surfaces. Repair surfaces stained, marred, or otherwise damaged during drywall application.
- B. Protect installed products from damage from weather, condensation, direct sunlight, construction, and other causes during remainder of the construction period.
- C. Remove and replace panels that are wet, moisture damaged, and mold damaged.
 - 1. Indications that panels are wet or moisture damaged include, but are not limited to, discoloration, sagging, or irregular shape.
 - 2. Indications that panels are mold damaged include, but are not limited to, fuzzy or splotchy surface contamination and discoloration.

END OF SECTION 092900

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SECTION 093013 - CERAMIC TILING

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Special Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. Section Includes:
 - 1. Glazed wall tile.
 - 2. Metal edge strips.

1.3 DEFINITIONS

- A. General: Definitions in the ANSI A108 series of tile installation standards and in ANSI A137.1 apply to Work of this Section unless otherwise specified.
- B. ANSI A108 Series: ANSI A108.01, ANSI A108.02, ANSI A108.1A, ANSI A108.1B, ANSI A108.1C, ANSI A108.4, ANSI A108.5, ANSI A108.6, ANSI A108.8, ANSI A108.9, ANSI A108.10, ANSI A108.11, ANSI A108.12, ANSI A108.13, ANSI A108.14, ANSI A108.15, ANSI A108.16, and ANSI A108.17, which are contained in its "Specifications for Installation of Ceramic Tile."
- C. Module Size: Actual tile size plus joint width indicated.
- D. Face Size: Actual tile size, excluding spacer lugs.

1.4 ACTION SUBMITTALS

- A. Product Data: For each type of product.
- B. Samples for Initial Selection: For tile, grout, and accessories involving color selection.
- C. Samples for Verification:
 - 1. Full-size units of each type and composition of tile and for each color and finish required.
 - 2. Assembled samples mounted on a rigid panel, with grouted joints, for each type and composition of tile and for each color and finish required. Make samples at least 24 inches (600 mm) square, but not fewer than four tiles. Use grout of type and in color or colors approved for completed Work.
 - 3. Full-size units of each type of trim and accessory for each color required.
 - 4. Metal edge strips in 6-inch (150-mm) lengths.

1.5 INFORMATIONAL SUBMITTALS

- A. Qualification Data: For Installer.
- B. Product Certificates: For each type of product.

- C. Product Test Reports: For tile-setting and -grouting products.

1.6 MAINTENANCE MATERIAL SUBMITTALS

- A. Furnish extra materials that match and are from same production runs as products installed and that are packaged with protective covering for storage and identified with labels describing contents.
 - 1. Tile and Trim Units: Furnish quantity of full-size units equal to 3 percent of amount installed for each type, composition, color, pattern, and size indicated.
 - 2. Grout: Furnish quantity of grout equal to 3 percent of amount installed for each type, composition, and color indicated.

1.7 QUALITY ASSURANCE

- A. Installer Qualifications:
 - 1. Installer employs Ceramic Tile Education Foundation Certified Installers.

1.8 DELIVERY, STORAGE, AND HANDLING

- A. Deliver and store packaged materials in original containers with seals unbroken and labels intact until time of use. Comply with requirements in ANSI A137.1 for labeling tile packages.
- B. Store tile and cementitious materials on elevated platforms, under cover, and in a dry location.
- C. Store aggregates where grading and other required characteristics can be maintained and contamination can be avoided.
- D. Store liquid materials in unopened containers and protected from freezing.

1.9 FIELD CONDITIONS

- A. Environmental Limitations: Do not install tile until construction in spaces is complete and ambient temperature and humidity conditions are maintained at the levels indicated in referenced standards and manufacturer's written instructions.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

- A. Source Limitations for Tile: Obtain from single source or producer.
 - 1. Obtain tile of each type and color or finish from same production run and of consistent quality in appearance and physical properties for each contiguous area.
- B. Source Limitations for Setting and Grouting Materials: Obtain ingredients of a uniform quality for each mortar, adhesive, and grout component from single manufacturer and each aggregate from single source or producer.

2.2 PRODUCTS, GENERAL

- A. ANSI Ceramic Tile Standard: Provide tile that complies with ANSI A137.1 for types, compositions, and other characteristics indicated.
 - 1. Provide tile complying with Standard grade requirements.
- B. ANSI Standards for Tile Installation Materials: Provide materials complying with ANSI A108.02, ANSI standards referenced in other Part 2 articles, ANSI standards referenced by TCNA installation methods specified in tile installation schedules, and other requirements specified.
- C. Factory Blending: For tile exhibiting color variations within ranges, blend tile in factory and package so tile units taken from one package show same range in colors as those taken from other packages and match approved Samples.
- D. Mounting: For factory-mounted tile, provide back- or edge-mounted tile assemblies as standard with manufacturer unless otherwise indicated.
 - 1. Where tile is indicated for installation in wet areas, do not use back- or edge-mounted tile assemblies unless tile manufacturer specifies in writing that this type of mounting is suitable for installation indicated and has a record of successful in-service performance.

2.3 TILE PRODUCTS

- A. Ceramic Tile Type (CWT-1): Glazed wall tile.
 - 1. Basis-of-Design Product: Subject to compliance with requirements, provide MOSA USA, Inc.; '4x12' or comparable product by one of the following
 - a. Daltile 'Color Wheel Collection – Linear'.
 - b. American Olean 'Color Story Wall'.
 - 2. Module Size: 4 by 12 inches (97 by 297 mm).
 - 3. Thickness: 5/16 inch (8 mm).
 - 4. Face: Pattern of design indicated, with manufacturer's standard edges.
 - 5. Finish: Bright, opaque glaze.
 - 6. Tile Color and Pattern: As selected by Architect from manufacturer's full range.
 - 7. Grout Color: As selected by Architect from manufacturer's full range.
 - 8. Mounting: Factory, back mounted.
 - 9. Trim Units: Coordinated with sizes and coursing of adjoining flat tile where applicable and matching characteristics of adjoining flat tile. Provide shapes as follows, selected from manufacturer's standard shapes:
 - a. Base for Thinset Mortar Installations: Straight, module size 6 by 6 inches (146 by 146 mm).
 - b. Wainscot Cap for Thinset Mortar Installations: Surface bullnose, module size 2-3/4 by 11-5/8 inches (70 by 296 mm).
 - c. External Corners for Thinset Mortar Installations: Surface bullnose, same size as adjoining flat tile.
 - d. Internal Corners: Field-buttet square corners. For coved base and cap use angle pieces designed to fit with stretcher shapes.

2.4 SETTING MATERIALS

- A. Latex-Portland Cement Mortar (Thinset): ANSI A118.4.
 - 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. Laticrete International.
 - b. Custom Building Products.
 - c. MAPEI Corporation.
2. Provide prepackaged, dry-mortar mix containing dry, redispersible, vinyl acetate or acrylic additive to which only water must be added at Project site.
 3. For wall applications, provide mortar that complies with requirements for nonsagging mortar in addition to the other requirements in ANSI A118.4.

2.5 GROUT MATERIALS

A. Standard Cement Grout: ANSI A118.6.

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. Laticrete International.
 - b. Custom Building Products.
 - c. MAPEI Corporation.

2.6 MISCELLANEOUS MATERIALS

- A. Metal Edge Strips: Angle or L-shaped, height to match tile and setting-bed thickness, metallic or combination of metal and PVC or neoprene base, designed specifically for flooring applications; stainless-steel, ASTM A 666, 300 Series exposed-edge material.
- B. Tile Cleaner: A neutral cleaner capable of removing soil and residue without harming tile and grout surfaces, specifically approved for materials and installations indicated by tile and grout manufacturers.
- C. Grout Sealer: Manufacturer's standard product for sealing grout joints and that does not change color or appearance of grout.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine substrates, areas, and conditions where tile will be installed, with Installer present, for compliance with requirements for installation tolerances and other conditions affecting performance of the Work.
 1. Verify that substrates for setting tile are firm; dry; clean; free of coatings that are incompatible with tile-setting materials, including curing compounds and other substances that contain soap, wax, oil, or silicone; and comply with flatness tolerances required by ANSI A108.01 for installations indicated.
- B. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 PREPARATION

- A. Blending: For tile exhibiting color variations, verify that tile has been factory blended and packaged so tile units taken from one package show same range of colors as those taken from other packages and match approved Samples. If not factory blended, either return to manufacturer or blend tiles at Project site before installing.

3.3 CERAMIC TILE INSTALLATION

- A. Comply with TCNA's "Handbook for Ceramic, Glass, and Stone Tile Installation" for TCNA installation methods specified in tile installation schedules. Comply with parts of the ANSI A108 series "Specifications for Installation of Ceramic Tile" that are referenced in TCNA installation methods, specified in tile installation schedules, and apply to types of setting and grouting materials used.
- B. Extend tile work into recesses and under or behind equipment and fixtures to form complete covering without interruptions unless otherwise indicated. Terminate work neatly at obstructions, edges, and corners without disrupting pattern or joint alignments.
- C. Accurately form intersections and returns. Perform cutting and drilling of tile without marring visible surfaces. Carefully grind cut edges of tile abutting trim, finish, or built-in items for straight aligned joints. Fit tile closely to electrical outlets, piping, fixtures, and other penetrations so plates, collars, or covers overlap tile.
- D. Provide manufacturer's standard trim shapes where necessary to eliminate exposed tile edges.
- E. Jointing Pattern: Lay tile in grid pattern unless otherwise indicated. Lay out tile work and center tile fields in both directions in each space or on each wall area. Lay out tile work to minimize the use of pieces that are less than half of a tile. Provide uniform joint widths unless otherwise indicated.
 - 1. Where adjoining tiles on base, walls, or trim are specified or indicated to be same size, align joints.
- F. Joint Widths: Unless otherwise indicated, install tile with the following joint widths:
 - 1. Glazed Wall Tile: 1/16 inch (1.6 mm).
- G. Lay out tile wainscots to dimensions indicated or to next full tile beyond dimensions indicated.
- H. Metal Edge Strips: Install at exposed edges of wall tile.
- I. Grout Sealer: Apply grout sealer to grout joints according to grout-sealer manufacturer's written instructions. As soon as grout sealer has penetrated grout joints, remove excess sealer and sealer from tile faces by wiping with soft cloth.

3.4 ADJUSTING AND CLEANING

- A. Remove and replace tile that is damaged or that does not match adjoining tile. Provide new matching units, installed as specified and in a manner to eliminate evidence of replacement.
- B. Cleaning: On completion of placement and grouting, clean all ceramic tile surfaces so they are free of foreign matter.
 - 1. Remove grout residue from tile as soon as possible.
 - 2. Clean grout smears and haze from tile according to tile and grout manufacturer's written instructions but no sooner than 10 days after installation. Use only cleaners recommended by tile and grout manufacturers and only after determining that cleaners are safe to use by testing on samples of tile and other surfaces to be cleaned. Protect metal surfaces and plumbing fixtures from effects of cleaning. Flush surfaces with clean water before and after cleaning.

3.5 PROTECTION

- A. Protect installed tile work with kraft paper or other heavy covering during construction period to prevent staining, damage, and wear. If recommended by tile manufacturer, apply coat of neutral protective cleaner to completed tile walls and floors.
- B. Prohibit foot and wheel traffic from tiled floors for at least seven days after grouting is completed.

- C. Before final inspection, remove protective coverings and rinse neutral protective cleaner from tile surfaces.

3.6 INTERIOR CERAMIC TILE INSTALLATION SCHEDULE

- A. Interior Wall Installations, Masonry or Concrete:

- 1. Ceramic Tile Installation: TCNA W202; thinset mortar.
 - a. Ceramic Tile Type: CT-1.
 - b. Thinset Mortar: Latex- portland cement mortar.
 - c. Grout: Standard unsanded cement grout.

END OF SECTION 09 30 13

SECTION 096519 - RESILIENT TILE FLOORING

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General Conditions and Special Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. Section Includes:
 - 1. Solid vinyl floor tile.

1.3 ACTION SUBMITTALS

- A. Product Data: For each type of product indicated.
- B. Shop Drawings: For each type of floor tile. Include floor tile layouts, edges, columns, doorways, enclosing partitions, built-in furniture, cabinets, and cutouts.
- C. Samples for Initial Selection: For each type of floor tile indicated.
- D. Samples for Verification: Full-size units of each color and pattern of floor tile required.

1.4 INFORMATIONAL SUBMITTALS

- A. Qualification Data: For qualified Installer.

1.5 CLOSEOUT SUBMITTALS

- A. Maintenance Data: For each type of floor tile to include in maintenance manuals.

1.6 MATERIALS MAINTENANCE 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. Floor Tile: Furnish 1 box for every 25 boxes or fraction thereof, of each type, color, and pattern of floor tile installed.

1.7 QUALITY ASSURANCE

- A. Installer Qualifications: A qualified installer who employs workers for this Project who are competent in techniques required by manufacturer for floor tile installation indicated.

1.8 DELIVERY, STORAGE, AND HANDLING

- A. Store floor tile and installation materials in dry spaces protected from the weather, with ambient temperatures maintained within range recommended by manufacturer, but not less than 50 deg F (10 deg C) or more than 90 deg F (32 deg C). Store floor tiles on flat surfaces.

1.9 PROJECT CONDITIONS

- A. Maintain ambient temperatures within range recommended by manufacturer, but not less than 70 deg F (21 deg C) or more than 95 deg F (35 deg C), in spaces to receive floor tile during the following time periods:
 - 1. 48 hours before installation.
 - 2. During installation.
 - 3. 48 hours after installation.
- B. Until Substantial Completion, maintain ambient temperatures within range recommended by manufacturer, but not less than 55 deg F (13 deg C) or more than 95 deg F (35 deg C).
- C. Close spaces to traffic during floor tile installation.
- D. Close spaces to traffic for 48 hours after floor tile installation.
- E. Install floor tile after other finishing operations, including painting, have been completed.

PART 2 - PRODUCTS

2.1 SOLID VINYL FLOOR TILE <Insert drawing designation>

- A. Basis-of-Design Product: Subject to compliance with requirements, provide Patcraft; 'CMYK' or comparable product by one of the following
 - 1. Armstrong World Industries, Inc.
 - 2. Johnsonite.
 - 3. Tarkett, Inc.
- B. Tile Standard: ASTM F 1700.
 - 1. Class: Class III, printed film vinyl tile.
 - 2. Type: Type B, embossed surface.
- C. Thickness: 0.100 inch (2.5 mm).
- D. Size: 12 by 24 inches (305 by 610 mm).
- E. Seaming Method: Standard.
- F. Colors and Patterns: As selected by Architect from manufacturer's full range.

2.2 THERMOSET-RUBBER BASE

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

1. Burke Mercer Flooring Products.
2. Johnsonite; a Tarkett company.
3. Roppe Corporation, USA.

B. Product Standard: ASTM F 1861, Type TS (rubber, vulcanized thermoset), Group I (solid, homogeneous).

1. Style and Location:
 - a. Style B, Cove: Interior partitions.

C. Thickness: 0.125 inch (3.2 mm).

D. Height: 4 inches (102 mm).

E. Lengths: Cut lengths 48 inches (1219 mm) long or coils in manufacturer's standard length.

F. Outside Corners: Preformed.

G. Inside Corners: Preformed.

H. Colors: As selected by Architect from full range of industry colors.

2.3 INSTALLATION MATERIALS

- A. Trowelable Leveling and Patching Compounds: Latex-modified, portland cement based or blended hydraulic-cement-based formulation provided or approved by manufacturer for applications indicated.
- B. Adhesives: Water-resistant type recommended by manufacturer to suit floor tile and substrate conditions indicated.
- C. Floor Polish: Provide protective liquid floor polish products as recommended by manufacturer.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine substrates, with Installer present, for compliance with requirements for maximum moisture content and other conditions affecting performance of the Work.
- B. Verify that finishes of substrates comply with tolerances and other requirements specified in other Sections and that substrates are free of cracks, ridges, depressions, scale, and foreign deposits that might interfere with adhesion of floor tile.
- C. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 PREPARATION

- A. Prepare substrates according to manufacturer's written instructions to ensure adhesion of resilient products.
- B. Concrete Substrates: Prepare according to ASTM F 710.
 1. Verify that substrates are dry and free of curing compounds, sealers, and hardeners.
 2. Remove substrate coatings and other substances that are incompatible with adhesives and that contain soap, wax, oil, or silicone, using mechanical methods recommended by manufacturer. Do not use solvents.

3. Alkalinity and Adhesion Testing: Perform tests recommended by manufacturer. Proceed with installation only after substrates pass testing.
 4. Moisture Testing: Perform tests recommended by manufacturer. Proceed with installation only after substrates pass testing.
- C. Fill cracks, holes, and depressions in substrates with trowelable leveling and patching compound and remove bumps and ridges to produce a uniform and smooth substrate.
- D. Do not install floor tiles until they are same temperature as space where they are to be installed.
1. Move resilient products and installation materials into spaces where they will be installed at least 48 hours in advance of installation.
- E. Sweep and vacuum clean substrates to be covered by resilient products immediately before installation.

3.3 FLOOR TILE INSTALLATION

- A. Comply with manufacturer's written instructions for installing floor tile.
- B. Lay out floor tiles from center marks established with principal walls, discounting minor offsets, so tiles at opposite edges of room are of equal width. Adjust as necessary to avoid using cut widths that equal less than one-half tile at perimeter.
1. Lay tiles square with room axis.
- C. Match floor tiles for color and pattern by selecting tiles from cartons in the same sequence as manufactured and packaged, if so numbered. Discard broken, cracked, chipped, or deformed tiles.
1. Lay tiles with grain running in one direction, staggering seams.
- D. Scribe, cut, and fit floor tiles to butt neatly and tightly to vertical surfaces and permanent fixtures including built-in furniture, cabinets, pipes, outlets, and door frames.
- E. Extend floor tiles into toe spaces, door reveals, closets, and similar openings. Extend floor tiles to center of door openings.
- F. Adhere floor tiles to flooring substrates using a full spread of adhesive applied to substrate to produce a completed installation without open cracks, voids, raising and puckering at joints, telegraphing of adhesive spreader marks, and other surface imperfections.

3.4 CLEANING AND PROTECTION

- A. Comply with manufacturer's written instructions for cleaning and protection of floor tile.
- B. Perform the following operations immediately after completing floor tile installation:
1. Remove adhesive and other blemishes from exposed surfaces.
 2. Sweep and vacuum surfaces thoroughly.
 3. Damp-mop surfaces to remove marks and soil.
- C. Protect floor tile products from mars, marks, indentations, and other damage from construction operations and placement of equipment and fixtures during remainder of construction period.
- D. Floor Polish: Remove soil, visible adhesive, and surface blemishes from floor tile surfaces before applying liquid floor polish.
1. Apply two coat(s).

E. Cover floor tile until Substantial Completion.

END OF SECTION 096519

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SECTION 096723 - RESINOUS FLOORING

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General Conditions and Special Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. Section Includes:
 - 1. Resinous flooring.

1.3 PREINSTALLATION MEETINGS

- A. Preinstallation Conference: Conduct conference at Project site.
 - 1. Review manufacturer's written instructions for substrate preparation and environmental conditions affecting resinous flooring installation.
 - 2. Review manufacturer's written instructions for installing resinous flooring systems.
 - 3. Review protection measures for adjacent construction and installed flooring, floor drainage requirements, curbs, base details, and so forth.

1.4 ACTION SUBMITTALS

- A. Product Data: For each type of product.
 - 1. Include manufacturer's technical data, installation instructions, and recommendations for each resinous flooring component required.
- B. Samples: 2-3/4 inches (70 mm) square for each type of exposed finish required.

1.5 INFORMATIONAL SUBMITTALS

- A. Qualification Data: For Installer.
- B. Material Certificates: For each resinous flooring component.
- C. Material Test Reports: For each resinous flooring system, by a qualified testing agency.

1.6 CLOSEOUT SUBMITTALS

- A. Maintenance Data: For resinous flooring to include in maintenance manuals.

1.7 QUALITY ASSURANCE

- A. Installer Qualifications: A qualified installer who is approved, authorized, or licensed by resinous flooring manufacturer for installation of systems indicated
- B. Manufacturer Field Technical Service Representatives: Resinous flooring manufacture shall retain the services of Field Technical Service Representatives who are trained specifically on installing the system to be used on the project.
 - 1. Field Technical Services Representatives shall be employed by the system manufacture to assist in the quality assurance and quality control process of the installation and shall be available to perform field problem solving issues with the installer.

1.8 DELIVERY, STORAGE, AND HANDLING

- A. Deliver materials in original packages and containers, with seals unbroken, bearing manufacturer's labels indicating brand name and directions for storage and mixing with other components.
- B. Store, handle, and apply hazardous materials in accordance with CA Prop 65 and 29 CFR 1910 OSHA rules.

1.9 FIELD CONDITIONS

- A. Environmental Limitations: Comply with resinous flooring manufacturer's written instructions for substrate temperature, ambient temperature, moisture, ventilation, and other conditions affecting resinous flooring installation.
 - 1. Low-Temperature Application Rating: 35 deg F (1.67 deg C) and rising.
- B. Close spaces to traffic during resinous flooring installation; for 24 hours for pedestrians and 72 hours for vehicular, after installation unless manufacturer recommends a longer period.

PART 2 - PRODUCTS

2.1 RESINOUS FLOORING

- A. Resinous Flooring System: Abrasion-, impact-, and chemical-resistant, resin-based monolithic floor surfacing designed to produce a seamless floor.
 - 1. Basis-of-Design Product: Subject to compliance with requirements, provide StonCor Group Inc.; 'Stonclad GS' or comparable product by one of the following:
 - a. Tennant Coatings.
 - b. Westcoat.
- B. Source Limitations: Obtain primary resinous flooring materials, including primers, resins, hardening agents, grouting coats, and topcoats, from single source from single manufacturer. Obtain secondary materials, including patching and fill material, joint sealant, and repair materials, of type and from manufacturer recommended in writing by manufacturer of primary materials.
- C. System Characteristics:
 - 1. Color and Pattern: As selected by Architect from manufacturer's full range.
 - 2. Wearing Surface: Trowel.
 - 3. Overall System Thickness: 1/4 inch (0.6 mm).

- D. System Physical Properties: Provide resinous flooring system with the following minimum physical property requirements when tested in accordance with test methods indicated:
1. Compressive Strength: 10,000 psi after 7 days per ASTM C 579.
 2. Tensile Strength: 1,750 psi per ASTM C 307.
 3. Flexural Strength: 4,000 psi per ASTM C 580.
 4. Water Absorption: < 1% per ASTM C 413.
 5. Impact Resistance: > 160 in. lbs. per ASTM D 2794.
 6. Flammability: Class 1 per ASTM E-648.
 7. Hardness: .85 to .90, Shore D per ASTM D 2240.
 8. Flexural Modulus of Elasticity: 2.0×10^6 psi per ASTM C-580
 9. Thermal Coefficient of Linear Expansion: 1.4×10^{-5} in./in. °F per ASTM C-531
- E. System Chemical Resistance: Test specimens of cured resinous flooring system are unaffected when tested in accordance with ASTM D543, Procedure A, for immersion in the following reagents for no fewer than seven days:
- F. Primer: Type recommended in writing by resinous flooring manufacturer for substrate and resinous flooring system indicated.
1. Basis-of-Design Product: Stonhard 'Standard Primer'.
 2. Formulation Description: Low-VOC and low-viscosity epoxy; 100 percent solids.
- G. Body Coat:
1. Basis-of-Design Product: Stonhard, 'Stonclad GS'.
 2. Formulation Description: Epoxy, three component 100% solids.
 3. Installation Method: Troweled or screeded.
 4. Number of Coats: One.
- H. Top Coat:
1. Basis-of-Design Product: Stonhard, 'Stankote GS4'.
 2. Formulation Description: Epoxy, two component 100% solids.
 3. Type: Pigmented.
 4. Number of Coats: One.
- I. Sealer:
1. Basis-of-Design: Stonhard, 'Stonseal SK6'.
 2. Formulation Description: Urethane, two-component.
 3. Finish: Texture 3.

2.2 ACCESSORY MATERIALS

- A. Patching, Leveling and Fill Material: Resinous product of or approved by resinous flooring manufacturer and recommended by manufacturer for application indicated.
- B. Joint Sealant: Type recommended or produced by resinous flooring manufacturer for type of service and joint condition indicated.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine substrates, with Installer present, for compliance with requirements for maximum moisture content and other conditions affecting performance of the Work.
 - 1. Verify that finishes of substrates comply with tolerances and other requirements specified in other Sections and that substrates are free of cracks, ridges, depressions, scale, and foreign deposits that might interfere with adhesion of resinous flooring systems.
- B. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 PREPARATION

- A. Prepare and clean substrates in accordance with resinous flooring manufacturer's written instructions for substrate indicated to ensure adhesion.
- B. Concrete Substrates: Provide sound concrete surfaces free of laitance, glaze, efflorescence, curing compounds, form-release agents, dust, dirt, grease, oil, and other contaminants incompatible with resinous flooring.
 - 1. Roughen concrete substrates as follows:
 - a. Comply with requirements in SSPC-SP 13/NACE No. 6, with a Concrete Surface Profile of 5 to 9 in accordance with ICRI Technical Guideline No. 310.2R, unless manufacturer's written instructions are more stringent.
 - 2. Repair damaged and deteriorated concrete in accordance with resinous flooring manufacturer's written instructions.
- C. Resinous Materials: Mix components and prepare materials in accordance with resinous flooring manufacturer's written instructions.

3.3 INSTALLATION

- A. Apply components of resinous flooring system in accordance with manufacturer's written instructions to produce a uniform, monolithic wearing surface of thickness specified.
 - 1. Coordinate installation of components to provide optimum adhesion of resinous flooring system to substrate, and optimum intercoat adhesion.
 - 2. Cure resinous flooring components in accordance with manufacturer's written instructions. Prevent contamination during installation and curing processes.
- B. Primer: Apply primer over prepared substrate at spreading rate recommended in writing by manufacturer. Wait until tacky to the touch to apply next system component.
- C. Troweled and Back-Rolled Body Coats: Apply troweled and back-rolled body coats in thickness specified for flooring system.
- D. Topcoats: Apply topcoats in number indicated for flooring system specified, at spreading rates recommended in writing by manufacturer, and to produce wearing surface specified.
 - 1. Working Time: Two-component products have short pot lives of 45 minutes to two hours depending on site conditions.

3.4 PROTECTION

- A. Protect resinous flooring from damage and wear during the remainder of construction period. Use protective methods and materials, including temporary covering, recommended in writing by resinous flooring manufacturer.

END OF SECTION 096723

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SECTION 099123 - INTERIOR PAINTING

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Special Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. Section includes surface preparation and the application of paint systems on the following interior substrates:
 - 1. Concrete masonry units (CMUs).
 - 2. Steel and iron.
 - 3. Gypsum board.
- B. Related Requirements:
 - 1. Section 055113 "Metal Pan Stairs" for shop priming metal pan stairs.
 - 2. Section 055213 "Pipe and Tube Railings" for shop priming pipe and tube railings.

1.3 DEFINITIONS

- A. MPI Gloss Level 1: Not more than five units at 60 degrees and 10 units at 85 degrees, according to ASTM D 523.
- B. MPI Gloss Level 2: Not more than 10 units at 60 degrees and 10 to 35 units at 85 degrees, according to ASTM D 523.
- C. MPI Gloss Level 3: 10 to 25 units at 60 degrees and 10 to 35 units at 85 degrees, according to ASTM D 523.
- D. MPI Gloss Level 4: 20 to 35 units at 60 degrees and not less than 35 units at 85 degrees, according to ASTM D 523.
- E. MPI Gloss Level 5: 35 to 70 units at 60 degrees, according to ASTM D 523.
- F. MPI Gloss Level 6: 70 to 85 units at 60 degrees, according to ASTM D 523.
- G. MPI Gloss Level 7: More than 85 units at 60 degrees, according to ASTM D 523.

1.4 ACTION SUBMITTALS

- A. Product Data: For each type of product. Include preparation requirements and application instructions.
 - 1. Include Printout of current "MPI Approved Products List" for each product category specified, with the proposed product highlighted.
 - 2. Indicate VOC content.
- B. Samples for Initial Selection: For each type of topcoat product.
- C. Samples for Verification: For each type of paint system and in each color and gloss of topcoat.

1. Submit Samples on rigid backing, 8 inches (200 mm) square.
2. Apply coats on Samples in steps to show each coat required for system.
3. Label each coat of each Sample.
4. Label each Sample for location and application area.

- D. Product List: Cross-reference to paint system and locations of application areas. Use same designations indicated on Drawings and in schedules. Include color designations.

1.5 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. Paint: 5 percent, but not less than 1 gal. (3.8 L) of each material and color applied.

1.6 QUALITY ASSURANCE

- A. Installer Qualifications: A firm or individual experienced in applying paints and coatings similar in material, design, and extent to those indicated for this Project, whose work has resulted in applications with a record of successful in-service performance.

1.7 DELIVERY, STORAGE, AND HANDLING

- A. Store materials not in use in tightly covered containers in well-ventilated areas with ambient temperatures continuously maintained at not less than 45 deg F (7 deg C).

1. Maintain containers in clean condition, free of foreign materials and residue.
2. Remove rags and waste from storage areas daily.

1.8 FIELD CONDITIONS

- A. Apply paints only when temperature of surfaces to be painted and ambient air temperatures are between 50 and 95 deg F (10 and 35 deg C).
- B. Do not apply paints when relative humidity exceeds 85 percent; at temperatures less than 5 deg F (3 deg C) above the dew point; or to damp or wet surfaces.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

- A. Basis-of-Design Product: Subject to compliance with requirements, provide Sherwin-Williams Company (The); products as designated in the Elastomeric Coating Schedule or a comparable product by one of the following:

1. Behr Process Corporation.
2. Benjamin Moore & Co.
3. Dunn-Edwards Corporation.
4. Glidden Professional.

2.2 PAINT, GENERAL

- A. MPI Standards: Products shall comply with MPI standards indicated and shall be listed in its "MPI Approved Products Lists."
- B. Material Compatibility:
 - 1. Materials for use within each paint system shall be compatible with one another and substrates indicated, under conditions of service and application as demonstrated by manufacturer, based on testing and field experience.
 - 2. For each coat in a paint system, products shall be recommended in writing by topcoat manufacturers for use in paint system and on substrate indicated.
- C. Colors: As selected by Architect from manufacturer's full range.

2.3 SOURCE QUALITY CONTROL

- A. Testing of Paint Materials: Owner reserves the right to invoke the following procedure:
 - 1. Owner will engage the services of a qualified testing agency to sample paint materials. Contractor will be notified in advance and may be present when samples are taken. If paint materials have already been delivered to Project site, samples may be taken at Project site. Samples will be identified, sealed, and certified by testing agency.
 - 2. Testing agency will perform tests for compliance with product requirements.
 - 3. Owner may direct Contractor to stop applying paints if test results show materials being used do not comply with product requirements. Contractor shall remove noncomplying paint materials from Project site, pay for testing, and repaint surfaces painted with rejected materials. Contractor will be required to remove rejected materials from previously painted surfaces if, on repainting with complying materials, the two paints are incompatible.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine substrates and conditions, with Applicator present, for compliance with requirements for maximum moisture content and other conditions affecting performance of the Work.
- B. Maximum Moisture Content of Substrates: When measured with an electronic moisture meter as follows:
 - 1. Masonry (Clay and CMUs): 12 percent.
 - 2. Gypsum Board: 12 percent.
- C. Gypsum Board Substrates: Verify that finishing compound is sanded smooth.
- D. Verify suitability of substrates, including surface conditions and compatibility, with existing finishes and primers.
- E. Proceed with coating application only after unsatisfactory conditions have been corrected.
 - 1. Application of coating indicates acceptance of surfaces and conditions.

3.2 PREPARATION

- A. Comply with manufacturer's written instructions and recommendations in "MPI Architectural Painting Specification Manual" applicable to substrates and paint systems indicated.
- B. Remove hardware, covers, plates, and similar items already in place that are removable and are not to be painted. If removal is impractical or impossible because of size or weight of item, provide surface-applied protection before surface preparation and painting.
 - 1. After completing painting operations, use workers skilled in the trades involved to reinstall items that were removed. Remove surface-applied protection if any.
- C. Clean substrates of substances that could impair bond of paints, including dust, dirt, oil, grease, and incompatible paints and encapsulants.
 - 1. Remove incompatible primers and reprime substrate with compatible primers or apply tie coat as required to produce paint systems indicated.
- D. Masonry Substrates: Remove efflorescence and chalk. Do not paint surfaces if moisture content or alkalinity of surfaces or mortar joints exceeds that permitted in manufacturer's written instructions.
- E. Shop-Primed Steel Substrates: Clean field welds, bolted connections, and areas where shop paint is abraded. Paint exposed areas with the same material as used for shop priming to comply with SSPC-PA 1 for touching up shop-primed surfaces.
- F. Galvanized-Metal Substrates: Remove grease and oil residue from galvanized sheet metal by mechanical methods to produce clean, lightly etched surfaces that promote adhesion of subsequently applied paints.

3.3 APPLICATION

- A. Apply paints according to manufacturer's written instructions and to recommendations in "MPI Manual."
 - 1. Use applicators and techniques suited for paint and substrate indicated.
 - 2. Paint surfaces behind movable equipment and furniture same as similar exposed surfaces. Before final installation, paint surfaces behind permanently fixed equipment or furniture with prime coat only.
 - 3. Paint front and backsides of access panels, removable or hinged covers, and similar hinged items to match exposed surfaces.
 - 4. Do not paint over labels of independent testing agencies or equipment name, identification, performance rating, or nomenclature plates.
 - 5. Primers specified in painting schedules may be omitted on items that are factory primed or factory finished if acceptable to topcoat manufacturers.
- B. If undercoats or other conditions show through topcoat, apply additional coats until cured film has a uniform paint finish, color, and appearance.
- C. Apply paints to produce surface films without cloudiness, spotting, holidays, laps, brush marks, roller tracking, runs, sags, ropiness, or other surface imperfections. Cut in sharp lines and color breaks.
- D. Painting Fire Suppression, Plumbing, HVAC, Electrical, Communication, and Electronic Safety and Security Work:
 - 1. Paint the following work where exposed in occupied spaces:
 - a. Uninsulated metal piping.
 - b. Uninsulated plastic piping.
 - c. Pipe hangers and supports.
 - d. Metal conduit.
 - e. Plastic conduit.
 - f. Duct, equipment, and pipe insulation having cotton or canvas insulation covering or other paintable jacket material.

- g. Other items as directed by Architect.

3.4 FIELD QUALITY CONTROL

- A. Dry Film Thickness Testing: Owner may engage the services of a qualified testing and inspecting agency to inspect and test paint for dry film thickness.
 - 1. Contractor shall touch up and restore painted surfaces damaged by testing.
 - 2. If test results show that dry film thickness of applied paint does not comply with paint manufacturer's written instructions, Contractor shall pay for testing and apply additional coats as needed to provide dry film thickness that complies with paint manufacturer's written instructions.

3.5 CLEANING AND PROTECTION

- A. At end of each workday, remove rubbish, empty cans, rags, and other discarded materials from Project site.
- B. After completing paint application, clean spattered surfaces. Remove spattered paints by washing, scraping, or other methods. Do not scratch or damage adjacent finished surfaces.
- C. Protect work of other trades against damage from paint application. Correct damage to work of other trades by cleaning, repairing, replacing, and refinishing, as approved by Architect, and leave in an undamaged condition.
- D. At completion of construction activities of other trades, touch up and restore damaged or defaced painted surfaces.

3.6 INTERIOR PAINTING SCHEDULE

- A. Steel Substrates: Miscellaneous and Ornamental Iron, and Ferrous Metal.
 - 1. Epoxy System; Solvent Based:
 - a. Semi-Gloss Finish:
 - 1) 1st Coat: S-W Macropoxy 646 Fast Cure Epoxy, B58-600 Series (MPI#177)
 - 2) 2nd Coat: S-W Macropoxy 646 Fast Cure Epoxy, B58-600 Series. (7.0-13.5 mils wet, 5.0-10.0 mils dry per coat) (MPI#177)
- B. Steel Substrates: Metal Exposed Deck, Joists, Trusses, and Beams
 - 1. Multi-Surface Acrylic Coating:
 - a. Eg-Shel Finish:
 - 1) 1st Coat: S-W Pro Industrial Multi-Surface Acrylic Eg-Shel, B66-1560 Series (MPI#51)
 - 2) 2nd Coat: S-W Pro Industrial Multi-Surface Acrylic Eg-Shel, B66-1560 Series (3.75-5.0 mils wet, 1.5-2.0 mils dry per coat) (MPI#51)
- C. Galvanized-Metal Substrates:
 - 1. Epoxy Systems; Waterbased:
 - a. Eg-Shel Finish:
 - 1) 1st Coat: S-W Pro Industrial Pro-Cryl Universal Primer, B66-1310 Series (5.0 mils wet, 2.0 mils dry) (MPI#134)
 - 2) 2nd Coat: S-W Pro Industrial Waterbased Catalyzed Epoxy Eg-Shel, B73-360 Series (MPI#254)
 - 3) 3rd Coat: S-W Pro Industrial Waterbased Catalyzed Epoxy Eg-Shel, B73-360 Series (5.0-10 mils wet, 2.0-4.0 mils dry per coat) (MPI#254)

D. Gypsum Board Substrates:

1. Institutional Low-Odor/VOC Latex System [MPI INT 9.2M]:
 - a. Eg-Shel Finish:
 - 1) 1st Coat: S-W ProMar 200 Zero VOC Latex Primer, B28W02600 (4.0 mils wet, 1.0 mils dry) (MPI#50)
 - 2) 2nd Coat: S-W ProMar 200 HP Zero VOC Eg-Shel, B20W01951 (MPI#145)
 - 3) 3rd Coat: Match second coat.

END OF SECTION 099123

SECTION 099653 - ELASTOMERIC COATINGS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Special Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. Section includes surface preparation and application of elastomeric coatings to the following exterior substrates:
 - 1. Concrete unit masonry (exterior).

1.3 ACTION SUBMITTALS

- A. Product Data: For each type of product.
 - 1. Include printout of current "MPI Approved Products List" for each product category specified, with the proposed product highlighted.
 - 2. Indicate VOC content.
- B. Samples for Initial Selection: For each type of elastomeric coating.
- C. Samples for Verification: For each type of elastomeric coating indicated and in each color and gloss.
 - 1. Submit Samples on same type of substrate as that to receive application, 8 inches (200-mm) square.
 - 2. Apply coats on Samples in steps to show each separate coat, including primers and block fillers as applicable.
 - 3. Label each coat of each Sample.
 - 4. Label each Sample for location and application area.
- D. Product List: Cross-reference to paint system and locations of application areas. Use same designations indicated on Drawings and in schedules. Include color designations.

1.4 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. Quantity: Furnish an additional 5 percent but not less than 1 gal. (3.8 L) of each material, color, and texture applied.

1.5 DELIVERY, STORAGE, AND HANDLING

- A. Store materials not in use in tightly covered containers in well-ventilated areas with ambient temperatures continuously maintained at not less than 45 deg F (7 deg C).
 - 1. Maintain containers in clean condition, free of foreign materials and residue.

2. Remove rags and waste from storage areas daily.

1.6 FIELD CONDITIONS

- A. Apply coatings only when temperature of surfaces to be coated and ambient air temperatures are between 50 and 90 deg F (10 and 32 deg C) unless otherwise permitted by manufacturer's written instructions.
- B. Do not apply coatings in snow, rain, fog, or mist; when relative humidity exceeds 85 percent; at temperatures less than 5 deg F (3 deg C) above the dew point; or to damp or wet surfaces.
- C. Allow wet surfaces to dry thoroughly and attain temperature and conditions specified before starting or continuing coating operation.

1.7 WARRANTY

- A. Special Warranty: Manufacturer's standard form in which manufacturer agrees to repair or replace elastomeric coatings that fail within specified warranty period.
 1. Failures include, but are not limited to, the following:
 - a. Water penetration through the coating.
 - b. Deterioration of coating beyond normal weathering.
 2. Warranty Period: Five years from date of Substantial Completion.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

- A. Basis-of-Design Product: Subject to compliance with requirements, provide Sherwin-Williams Company (The); products as designated in the Elastomeric Coating Schedule or a comparable product by one of the following:
 1. BASF Corporation.
 2. Coronado Paint; Benjamin Moore Company.

2.2 MATERIALS

- A. MPI Standards: Products shall comply with MPI standards indicated and shall be listed in its "MPI Approved Products List."
- B. Moisture-Vapor Transmission: Minimum 16.9 perms, based on testing in accordance with ASTM D1653.
- C. Material Compatibility:
 1. Materials for use within each paint system shall be compatible with one another and substrates indicated, under conditions of service and application as demonstrated by manufacturer, based on testing and field experience.
 2. For each coat in a paint system, products shall be recommended in writing by manufacturers of topcoat for use in paint system and on substrate indicated.
- D. Colors: As selected by Architect from manufacturer's full range.
 1. 100 percent of surface area will be painted with deep tones.

- E. Crack Fillers: Elastomeric coating manufacturer's recommended, factory-formulated crack fillers or sealants, including crack filler primers, compatible with substrate and other materials indicated.
- F. Primer: Elastomeric coating manufacturer's recommended, factory-formulated, alkali-resistant primer compatible with substrate and other materials indicated.
- G. Concrete Unit Masonry Block Filler: Elastomeric coating manufacturer's recommended, factory-formulated, high-performance latex block filler compatible with substrate and other materials indicated.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine substrates and conditions, with Applicator present, for compliance with manufacturer's requirements for maximum moisture content, alkalinity, and other conditions affecting performance of work.
- B. Begin coating only when moisture content of substrate is 12 percent or less when measured with an electronic moisture meter.
- C. Verify that substrate is within the range of alkalinity recommended by manufacturer.
- D. Verify suitability of substrates, including surface conditions and compatibility with existing finishes and primers.
- E. Begin coating application only after unsatisfactory conditions have been corrected and surfaces are dry.

3.2 PREPARATION

- A. Comply with manufacturer's written instructions and recommendations in the "MPI Architectural Painting Specification Manual" applicable to substrates and coating systems indicated.
- B. Clean substrates of substances that could impair bond of coatings, including dirt, oil, grease, and incompatible paints and encapsulants. Do not coat surfaces if moisture content or alkalinity of surfaces to be coated exceeds that permitted in manufacturer's written instructions.
 - 1. Remove incompatible primers and reprime substrate with compatible primers as required to produce coating systems indicated.
 - 2. Perform cleaning and coating application so dust and other contaminants from cleaning process will not fall on wet, newly coated surfaces.
- C. Crack Repair: Fill cracks in accordance with manufacturer's written instructions before coating surfaces.

3.3 APPLICATION

- A. Apply elastomeric coatings in accordance with manufacturer's written instructions.
 - 1. Use equipment and techniques best suited for substrate and type of material being applied.
 - 2. Coat surfaces behind movable items the same as similar exposed surfaces.
 - 3. Apply each coat separately in accordance with manufacturer's written instructions.
- B. Primers: Apply at a rate to ensure complete coverage.
- C. Block Fillers: Apply at a rate to ensure complete coverage with pores filled.

- D. Elastomeric Finish Coat(s): Minimum two coats with a total dry film thickness of 16 to 18 mils (0.41 to 0.45 mm).
- E. Tint each undercoat a lighter shade to facilitate identification of each coat if multiple coats of same material are to be applied. Tint undercoats similar to color of topcoat, but provide sufficient difference in shade of undercoats to distinguish each separate coat.
- F. If undercoats or other conditions show through topcoat, apply additional coats until cured film has a uniform finish, color, and appearance.
- G. Apply coatings to produce surface films without cloudiness, spotting, holidays, laps, brush marks, roller tracking, runs, sags, ropiness, or other surface imperfections. Cut in sharp lines and color breaks.
- H. Apply coatings to prepared surfaces as soon as practicable after preparation and before subsequent surface soiling or deterioration.
- I. Spray Application: Use spray equipment for application only when permitted by authorities having jurisdiction. Wherever spray application is used, do not double back with spray equipment to build up film thickness of two coats in one pass.

3.4 FIELD QUALITY CONTROL

- A. Testing of Paint Materials: Owner reserves the right to invoke the following testing procedures:
 - 1. Owner will engage the services of a qualified testing agency to sample materials being used. Samples of material delivered to Project site will be taken, identified, sealed, and certified in presence of Contractor.
 - 2. Testing agency will perform tests for compliance of materials with product requirements.
 - 3. Owner may direct Contractor to stop coating application if test results show materials being used do not comply with requirements. Remove noncomplying materials from Project site, pay for testing, and recoat surfaces that were coated with rejected materials. Remove rejected materials from previously coated surfaces if, on recoating with complying materials, the two coatings are incompatible.
- B. Field Testing and Inspection: Owner reserves the right to engage the services of a qualified testing agency to verify installed thickness of elastomeric coatings.

3.5 CLEANING AND PROTECTION

- A. At end of each workday, remove rubbish, empty cans, rags, and other discarded materials from Project site.
- B. After completing coating application, clean spattered surfaces. Remove spattered coatings by washing, scraping, or other methods. Do not scratch or damage adjacent finished surfaces.
- C. Protect work of other trades against damage from coating application. Correct damage to work of other trades by cleaning, repairing, replacing, and refinishing, as approved by Architect, and leave in an undamaged condition.
- D. At completion of construction activities, touch up and restore damaged or defaced coated surfaces.

3.6 ELASTOMERIC COATING SCHEDULE

- A. Concrete Unit Masonry Substrates:
 - 1. Elastomeric Coating System MPI EXT 4.2D:
 - a. Prime Coat:



- 1) New CMU: S-W Loxon BlockSurfacer, LX01W200 (16.0 mils wet, 8.8 mils dry).
 - 2) Previously Painted CMU: S-W Loxon Acrylic Surfacer LX03 Series.
-
- b. Intermediate Coat: S-W Conflex SherLastic Elastomeric Masonry Coating, CF16W50 Series.
 - c. Topcoat: S-W Conflex SherLastic Elastomeric Masonry Coating, CF16W50 Series (10.0-14.0 mils wet, 4.0-6.0 mils dry per coat).

END OF SECTION 099653

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SECTION 102113.19 - PLASTIC TOILET COMPARTMENTS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Special Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. Section Includes:
 - 1. Solid-plastic toilet compartments configured as toilet enclosures.
- B. Related Requirements:
 - 1. Section 102800 "Toilet, Bath, and Laundry Accessories" for toilet tissue dispensers, grab bars, purse shelves, and similar accessories mounted on toilet compartments.

1.3 ACTION SUBMITTALS

- A. Product Data: For each type of product.
 - 1. Include construction details, material descriptions, dimensions of individual components and profiles, and finishes for toilet compartments.
- B. Shop Drawings: For toilet compartments.
 - 1. Include plans, elevations, sections, details, and attachment details.
- C. Samples for Initial Selection: For each type of toilet compartment material indicated.
 - 1. Include Samples of hardware and accessories involving material and color selection.
- D. Samples for Verification: For the following products, in manufacturer's standard sizes unless otherwise indicated:
 - 1. Each type of material, color, and finish required for toilet compartments, prepared on 6-inch- (152-mm-) square Samples of same thickness and material indicated for Work.
 - 2. Each type of hardware and accessory.

1.4 CLOSEOUT SUBMITTALS

- A. Maintenance Data: For toilet compartments to include in maintenance manuals.

1.5 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 and source.

1. Door Hinges: Two hinge(s) with associated fasteners.
2. Latch and Keeper: One latch(es) and keeper(s) with associated fasteners.
3. Door Bumper: One bumper(s) with associated fasteners.
4. Door Pull: One door pull(s) with associated fasteners.
5. Fasteners: Ten fasteners of each size and type.

1.6 PROJECT CONDITIONS

- A. Field Measurements: Verify actual locations of toilet fixtures, walls, columns, ceilings, and other construction contiguous with toilet compartments by field measurements before fabrication.

PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

- A. Surface-Burning Characteristics: Comply with ASTM E 84; testing by a qualified testing agency. Identify products with appropriate markings of applicable testing agency.
 1. Flame-Spread Index: 25 or less.
 2. Smoke-Developed Index: 450 or less.
- B. Regulatory Requirements: Comply with applicable provisions in ICC A117.1 for toilet compartments designated as accessible.

2.2 SOLID-PLASTIC TOILET COMPARTMENTS

- A. Basis-of-Design Product: Subject to compliance with requirements, provide Bobrick Washroom Equipment, Inc.; 'DuraLine® 1080 Series' or comparable product by one of the following:
 1. ASI Global Partitions.
 2. Bradley Corporation.
 3. Scranton Products.
- B. Toilet-Enclosure Style: Floor anchored.
- C. Door, Panel, and Pilaster Construction: Solid, high-density polyethylene (HDPE) panel material, not less than 1 inch (25 mm) thick, seamless, with eased edges, and with homogenous color and pattern throughout thickness of material.
 1. Heat-Sink Strip: Manufacturer's standard continuous, stainless-steel strip fastened to exposed bottom edges of solid-plastic components to hinder malicious combustion.
 2. Color and Pattern: One color and pattern in each room as selected by Architect from manufacturer's full range.
- D. Pilaster Shoes and Sleeves (Caps): Manufacturer's standard design; stainless steel.
- E. Brackets (Fittings):
 1. Stirrup Type: Ear or U-brackets, stainless steel.

2.3 HARDWARE AND ACCESSORIES

- A. Hardware and Accessories: Manufacturer's heavy-duty operating hardware and accessories.

1. Hinges: Manufacturer's minimum 0.062-inch- (1.59-mm-) thick stainless-steel paired, self-closing type that can be adjusted to hold doors open at any angle up to 90 degrees, allowing emergency access by lifting door. Mount with through-bolts.
 2. Latch and Keeper: Manufacturer's heavy-duty surface-mounted cast-stainless-steel latch unit designed to resist damage due to slamming, with combination rubber-faced door strike and keeper, and with provision for emergency access. Provide units that comply with regulatory requirements for accessibility at compartments designated as accessible. Mount with through-bolts.
 3. Coat Hook: Manufacturer's heavy-duty combination cast-stainless-steel hook and rubber-tipped bumper, sized to prevent in-swinging door from hitting compartment-mounted accessories. Mount with through-bolts.
 4. Door Bumper: Manufacturer's heavy-duty rubber-tipped cast-stainless-steel bumper at out-swinging doors. Mount with through-bolts.
 5. Door Pull: Manufacturer's heavy-duty cast-stainless-steel pull at out-swinging doors that complies with regulatory requirements for accessibility. Provide units on both sides of doors at compartments designated as accessible. Mount with through-bolts.
- B. Anchorages and Fasteners: Manufacturer's standard exposed fasteners of stainless steel, finished to match the items they are securing, with theft-resistant-type heads. Provide sex-type bolts for through-bolt applications. For concealed anchors, use stainless-steel, hot-dip galvanized-steel, or other rust-resistant, protective-coated steel compatible with related materials.

2.4 MATERIALS

- A. Stainless-Steel Sheet: ASTM A 666, Type 304, stretcher-leveled standard of flatness.
- B. Stainless-Steel Castings: ASTM A 743/A 743M.

2.5 FABRICATION

- A. Fabrication, General: Fabricate toilet compartment components to sizes indicated. Coordinate requirements and provide cutouts for through-partition toilet accessories where required for attachment of toilet accessories.
- B. Floor-Anchored Units: Provide manufacturer's standard corrosion-resistant anchoring assemblies with leveling adjustment nuts at pilasters for structural connection to floor. Provide shoes at pilasters to conceal anchorage.
- C. Door Size and Swings: Unless otherwise indicated, provide 24-inch- (610-mm-) wide, in-swinging doors for standard toilet compartments and 36-inch- (914-mm-) wide, out-swinging doors with a minimum 32-inch- (813-mm-) wide, clear opening for compartments designated as accessible.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine areas and conditions, with Installer present, for compliance with requirements for fastening, support, alignment, operating clearances, and other conditions affecting performance of the Work.
1. Confirm location and adequacy of blocking and supports required for installation.
- B. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 INSTALLATION

- A. General: Comply with manufacturer's written installation instructions. Install units rigid, straight, level, and plumb. Secure units in position with manufacturer's recommended anchoring devices.
 - 1. Maximum Clearances:
 - a. Pilasters and Panels: 1/4 inch (6.5 mm).
 - b. Panels and Walls: 1/2 inch (12.5 mm).
 - 2. Stirrup Brackets: Secure panels to walls and to pilasters with no fewer than three brackets attached at midpoint and near top and bottom of panel.
 - a. Locate wall brackets so holes for wall anchors occur in masonry or tile joints.
 - b. Align brackets at pilasters with brackets at walls.
- B. Floor-Anchored Units: Set pilasters with anchors penetrating not less than 2 inches (51 mm) into structural floor unless otherwise indicated in manufacturer's written instructions. Level, plumb, and tighten pilasters. Hang doors and adjust so tops of doors are level with tops of pilasters when doors are in closed position.

3.3 ADJUSTING

- A. Hardware Adjustment: Adjust and lubricate hardware according to hardware manufacturer's written instructions for proper operation. Set hinges on in-swinging doors to hold doors open approximately 30 degrees from closed position when unlatched. Set hinges on out-swinging doors to return doors to fully closed position.

END OF SECTION 102113.19

SECTION 102800 - TOILET, BATH, AND LAUNDRY ACCESSORIES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Special Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. Section Includes:
 - 1. Public-use washroom accessories.
 - 2. Public-use shower room accessories.

1.3 COORDINATION

- A. Coordinate accessory locations with other work to prevent interference with clearances required for access by people with disabilities, and for proper installation, adjustment, operation, cleaning, and servicing of accessories.
- B. Deliver inserts and anchoring devices set into concrete or masonry as required to prevent delaying the Work.

1.4 ACTION SUBMITTALS

- A. Product Data: For each type of product.
 - 1. Include construction details, material descriptions, dimensions of individual components and profiles, and finishes.
 - 2. Include anchoring and mounting requirements, including requirements for cutouts in other work and substrate preparation.

1.5 INFORMATIONAL SUBMITTALS

- A. Sample Warranty: For manufacturer's special warranty.

1.6 CLOSEOUT SUBMITTALS

- A. Maintenance Data: For accessories to include in maintenance manuals.

1.7 WARRANTY

- A. Manufacturer's Special Warranty for Mirrors: Manufacturer agrees to repair or replace mirrors that fail in materials or workmanship within specified warranty period.
 - 1. Failures include, but are not limited to, visible silver spoilage defects.
 - 2. Warranty Period: 15 years from date of Substantial Completion.

PART 2 - PRODUCTS

2.1 PUBLIC-USE WASHROOM ACCESSORIES

- A. Source Limitations: Obtain public-use washroom accessories from single source from single manufacturer.
- B. Basis-of-Design Product: The design for accessories is based on products indicated. Subject to compliance with requirements, provide the named product or a comparable product by one of the following:
 - a. Bobrick Washroom Equipment, Inc.
 - b. Bradley Corporation.
 - c. Brey-Krause Manufacturing Co.
- C. Toilet Tissue (Roll) Dispenser (TD):
 - 1. Basis-of-Design Product: Bobrick Washroom Equipment, Inc.; 'B-540'.
 - 2. Description: Double-roll dispenser with shelf.
 - 3. Mounting: Surface mounted.
 - 4. Operation: Noncontrol delivery with standard spindle.
 - 5. Capacity: Designed for 4-1/4-inch- (110-mm-) diameter tissue rolls.
 - 6. Material and Finish: Stainless steel, No. 4 finish (satin).
- D. Combination Towel (Folded) Dispenser/Waste Receptacle (TWD):
 - 1. Basis-of-Design Product: Bobrick Washroom Equipment, Inc.; 'B-3949'.
 - 2. Description: Combination unit for dispensing C-fold or multifold towels, with removable waste receptacle.
 - 3. Mounting: Surface mounted.
 - 4. Minimum Towel-Dispenser Capacity: 600 C-fold or 800 multifold paper towels.
 - 5. Minimum Waste-Receptacle Capacity: 12 gal. (45.4 L).
 - 6. Material and Finish: Stainless steel, No. 4 finish (satin).
 - 7. Liner: Reusable, vinyl waste-receptacle liner.
 - 8. Lockset: Tumbler type for towel-dispenser compartment.
- E. Liquid-Soap Dispenser (SD):
 - 1. Basis-of-Design Product: Bobrick Washroom Equipment, Inc.; '818615'.
 - 2. Description: Designed for dispensing antibacterial soap in liquid or lotion form.
 - 3. Mounting: Vertically oriented, surface mounted.
 - 4. Capacity: 40 oz. (1.2 L).
 - 5. Materials: Stainless Steel.
 - 6. Refill Indicator: Window type.
- F. Grab Bar (GBXX):
 - 1. Basis-of-Design Product: Bobrick Washroom Equipment, Inc.; 'B-5800 Series'.
 - 2. Mounting: Flanges with concealed fasteners.
 - 3. Material: Stainless steel, 0.05 inch (1.3 mm) thick.
 - a. Finish: Smooth, No. 4 finish (satin) on ends and slip-resistant texture in grip area.
 - 4. Outside Diameter: 1-1/4 inches (32 mm).
 - 5. Configuration and Length: As indicated on Drawings.
- G. Mirror Unit (MIR):
 - 1. Basis-of-Design Product: Bobrick Washroom Equipment, Inc.; 'B-292 Series'.
 - 2. Frame: Stainless-steel angle, 0.05 inch (1.3 mm) thick.
 - a. Corners: Welded and ground smooth.
 - 3. Integral Shelf: 5 inches (127 mm) deep.

4. Hangers: Produce rigid, tamper- and theft-resistant installation, using method indicated below.
 - a. One-piece, galvanized-steel, wall-hanger device with spring-action locking mechanism to hold mirror unit in position with no exposed screws or bolts.
5. Size: 18" x 36" (457.2 mm x 914.4 mm).

2.2 PUBLIC-USE SHOWER ROOM ACCESSORIES

- A. Source Limitations: Obtain public-use shower room accessories from single source from single manufacturer.
- B. Basis-of-Design Product: The design for accessories is based on products indicated. Subject to compliance with requirements, provide the named product or a comparable product by one of the following:
 - a. Bobrick Washroom Equipment, Inc.
 - b. Bradley Corporation.
 - c. Brey-Krause Manufacturing Co.
- C. Shower Curtain Rod (SHR):
 1. Basis-of-Design Product: Bobrick Washroom Equipment, Inc.; 'B-6047'.
 2. Description: 1-1/4-inch (32-mm) OD; fabricated from nominal 0.047-inch- (1.2-mm-) thick stainless steel.
 3. Mounting Flanges: Stainless-steel flanges designed for exposed fasteners.
 4. Finish: Stainless steel, No. 4 finish (satin).
- D. Shower Curtain (SHR):
 1. Basis-of-Design Product: Bobrick Washroom Equipment, Inc.; '204-3'.
 2. Size: Minimum 6 inches (152 mm) wider than opening by 72 inches (1828 mm) high.
 3. Material: Vinyl, minimum 0.008 inch (0.20 mm) thick, opaque, matte.
 4. Color: White.
 5. Grommets: Corrosion resistant at minimum 6 inches (152 mm) o.c. through top hem.
 6. Shower Curtain Hooks: Stainless-steel, spring wire curtain hooks with snap fasteners, sized to accommodate specified curtain rod. Provide one hook per curtain grommet.
- E. Folding Shower Seat (SHS):
 1. Basis-of-Design Product: Bobrick Washroom Equipment, Inc.; 'B-5181'.
 2. Configuration: L-shaped seat, designed for wheelchair access.
 3. Seat: Phenolic or polymeric composite of slat-type or one-piece construction in color as selected by Architect; 0.50-inch (13-mm) minimum nominal thickness.
 4. Mounting Mechanism: Stainless steel, No. 4 finish (satin).
- F. Robe Hook (CH):
 1. Basis-of-Design Product: Bobrick Washroom Equipment, Inc.; 'B-232 x 24'.
 2. Description: Double-prong unit.
 3. Material and Finish: Stainless steel, No. 4 finish (satin).

2.3 INSULATING COVERS FOR ACCESSIBLE LAVATORY PIPING

- A. Insulating Covers for Underlavatory Exposed Trap and Drainage Piping, Hot-Water Supplies, Cold-Water Supplies, <Insert drawing designation>:
 1. Basis-of-Design Product: Subject to compliance with requirements, provide Plumberex Specialty Products, Inc.; 'HANDI-SHIELD MAXX' or a comparable product by one of the following:
 - a. Plumberex Specialty Products, Inc.

b. IPS Corporation.

2. Description: Manufactured plastic insulating covers for trap and drainage piping, hot-water supplies, and cold-water supplies. Thermal insulating properties protect from burns, cold temperature thermal shock, abrasions, or other physical harm from contact with exposed piping under accessible lavatories and sinks. Comply with Americans with Disabilities Act (ADA) and ANSI A117.1 accessibility requirements.
3. Comply with IBC Chapter 7 - Thermal- and Sound-Insulating Materials. Insulating cover material tested according to ASTM E84 or UL 723, and NFPA 255, resulting in a flame-spread index of 25 and smoke-developed index of 450, Class A, and ASTM C1822 Type I.
4. Comply with IBC Chapter 11 - Accessibility - General.
5. Comply with IPC Chapter 3 - General Regulations - Section: Washroom and Toilet Room Requirements - Subsection: Interior finish. Interior finish surfaces of toilet rooms shall comply with the International Building Code.
6. Comply with IPC Chapter 4 - Fixtures, Faucets and Fixture Fittings – Section: Accessible Plumbing Facilities - Subsection: Exposed Pipes and Surfaces.
7. Comply with UPC Chapter 4 - Plumbing Fixtures and Fixture Fittings – Section: Fixtures and Fixture Fittings for Persons with Disabilities - Subsection: Exposed Pipes and Surfaces.
8. Comply with ASTM Standard C1822 Insulating Covers on Accessible Lavatory Piping.
9. The insulating cover shall be manufactured in a form suitable for application, no adhesive tapes shall be allowed as method for covering exposed piping.

2.4 MATERIALS

- A. Stainless Steel: ASTM A 666, Type 304, 0.031-inch (0.8-mm) minimum nominal thickness unless otherwise indicated.
- B. Fasteners: Screws, bolts, and other devices of same material as accessory unit and tamper-and-theft resistant where exposed, and of galvanized steel where concealed.
- C. Chrome Plating: ASTM B 456, Service Condition Number SC 2 (moderate service).
- D. Mirrors: ASTM C 1503, Mirror Glazing Quality, clear-glass mirrors, nominal 6.0 mm thick.

2.5 FABRICATION

- A. General: Fabricate units with tight seams and joints, and exposed edges rolled. Hang doors and access panels with full-length, continuous hinges. Equip units for concealed anchorage and with corrosion-resistant backing plates.
- B. Keys: Provide universal keys for internal access to accessories for servicing and resupplying. Provide minimum of six keys to Owner's representative.

PART 3 - EXECUTION

3.1 INSTALLATION

- A. Install accessories according to manufacturers' written instructions, using fasteners appropriate to substrate indicated and recommended by unit manufacturer. Install units level, plumb, and firmly anchored in locations and at heights indicated.
- B. Grab Bars: Install to withstand a downward load of at least 250 lbf (1112 N), when tested according to ASTM F 446.

- C. Installation of Insulating Covers for Accessible Lavatory Piping: Install insulating covers on underlavatory exposed trap and drainage piping, hot-water supplies, and cold-water supplies.
 - 1. Install manufactured pre-formed insulating cover around trap and tubing, including all drainage piping, butted up to bottom surface of lavatory and over escutcheon wall trim. Ensure a straight precision cut fit and finish.
 - 2. Install manufactured pre-formed insulating covers around hot-water supplies, and cold-water supplies including supply stops, butted up to bottom surface of lavatory, or up inside between wall and upper lavatory cavity. Ensure a straight precision cut fit and finish.
 - 3. Secure all covers with fasteners provided. Do not use cable tie fasteners, adhesives, or adhesive tapes for attachments. Do not use adhesives as a component to support the fastening system.
 - 4. Do not use adhesives in any part of the method of construction of the insulation coverings.
 - 5. Insulation is specified in Section 220719 "Plumbing Piping Insulation."

3.2 ADJUSTING AND CLEANING

- A. Adjust accessories for unencumbered, smooth operation. Replace damaged or defective items.
- B. Remove temporary labels and protective coatings.
- C. Clean and polish exposed surfaces according to manufacturer's written instructions.

END OF SECTION 102800

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SECTION 104413 - FIRE PROTECTION CABINETS

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. Fire-protection cabinets for the following:
 - a. Portable fire extinguishers.

1.3 ACTION SUBMITTALS

- A. Product Data: For each type of product. Show door hardware, cabinet type, trim style, and panel style.

1.4 CLOSEOUT SUBMITTALS

- A. Maintenance Data: For fire-protection cabinets to include in maintenance manuals.

PART 2 - PRODUCTS

2.1 FIRE-PROTECTION CABINET

- A. Cabinet Type: Suitable for fire extinguisher.
 - 1. Basis-of-Design Product: Subject to compliance with requirements, provide Potter Roemer LLC; Alta 7062 or comparable product by one of the following:
 - a. Larsens Manufacturing Company.
 - b. Nystrom, Inc.
 - c. JL Industries Inc.
- B. Cabinet Construction: Nonrated.
- C. Cabinet Material: Cold-rolled steel sheet.
- D. Semirecessed Cabinet (New Construction): One-piece combination trim and perimeter door frame overlapping surrounding wall surface with exposed trim face and wall return at outer edge (backbend).
- E. Square-Edge Trim: 1-1/4- to 1-1/2-inch (32- to 38-mm) backbend depth.
- F. Surface-Mounted Cabinet (Existing Construction): Cabinet box fully exposed and mounted directly on wall with no trim.
- G. Cabinet Trim Material: Same material and finish as door.

- H. Door Material: Stainless steel.
- I. Door Style: Fully glazed panel with frame
- J. Door Hardware: Manufacturer's standard door-operating hardware of proper type for cabinet type, trim style, and door material and style indicated.
 - 1. Provide projecting lever handle with cam-action latch.
 - 2. Provide continuous hinge, of same material and finish as trim, permitting door to open 180 degrees.
- K. Door Glazing: Tempered float glass (clear).
- L. Materials:
 - 1. Stainless Steel: ASTM A 666, Type 304.
 - 2. Tempered Float Glass: ASTM C 1048, Kind FT, Condition A, Type I, Quality q3, 3 mm thick, Class 1 (clear).
 - a. Finish: No. 4 directional satin finish.

2.2 FABRICATION

- A. Fire-Protection Cabinets: Provide manufacturer's standard box (tub) with trim, frame, door, and hardware to suit cabinet type, trim style, and door style indicated.
 - 1. Weld joints and grind smooth.
 - 2. Provide factory-drilled mounting holes.
 - 3. Prepare doors and frames to receive locks.
 - 4. Install door locks at factory.
- B. Cabinet Doors: Fabricate doors according to manufacturer's standards, from materials indicated and coordinated with cabinet types and trim styles.
 - 1. Fabricate door frames with tubular stiles and rails and hollow-metal design, minimum 1/2 inch (13 mm) thick.
 - 2. Miter and weld perimeter door frames.
- C. Cabinet Trim: Fabricate cabinet trim in one piece with corners mitered, welded, and ground smooth.

2.3 GENERAL FINISH REQUIREMENTS

- A. Comply with NAAMM's AMP 500, "Metal Finishes Manual for Architectural and Metal Products," for recommendations for applying and designating finishes.
- B. Protect mechanical finishes on exposed surfaces of fire-protection cabinets from damage by applying a strippable, temporary protective covering before shipping.
- C. Finish fire-protection cabinets after assembly.
- D. 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.

PART 3 - EXECUTION

3.1 INSTALLATION

- A. General: Install fire-protection cabinets in locations and at mounting heights indicated or, if not indicated, at heights indicated below:
- B. Fire-Protection Cabinets: Fasten cabinets to structure, square and plumb.

3.2 ADJUSTING AND CLEANING

- A. Remove temporary protective coverings and strippable films, if any, as fire-protection cabinets are installed unless otherwise indicated in manufacturer's written installation instructions.
- B. Adjust fire-protection cabinet doors to operate easily without binding. Verify that integral locking devices operate properly.
- C. On completion of fire-protection cabinet installation, clean interior and exterior surfaces as recommended by manufacturer.
- D. Touch up marred finishes, or replace fire-protection cabinets that cannot be restored to factory-finished appearance. Use only materials and procedures recommended or furnished by fire-protection cabinet and mounting bracket manufacturers.
- E. Replace fire-protection cabinets that have been damaged or have deteriorated beyond successful repair by finish touchup or similar minor repair procedures.

END OF SECTION 104413

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SECTION 220000 - PLUMBING REQUIREMENTS

PART 1 - GENERAL

1.1 SCOPE

- A. This Section is subject to all applicable requirements of the Contract.
- B. Provide all items, articles, materials, operations, or methods listed, mentioned, or scheduled on the drawings, and/or specified herein, including all labor, materials, equipment and incidentals necessary and required for their completion.
- C. Scope of plumbing work includes, but is not limited to, the following:
 - 1. Plumbing removals.
 - 2. Plumbing fixtures.
 - 3. Sanitary drainage and vent piping.
 - 4. Storm piping.
 - 5. Domestic water piping.
 - 6. Electric water heater.
 - 7. Plumbing specialties including roof drains, floor drains and cleanouts.
 - 8. Natural gas piping.

1.2 CODES AND STANDARDS

- A. Conform to the 2020 Plumbing Code of New York State and local laws and regulations.

1.3 PERMITS AND FEES

- A. Secure all permits required by local authorities for performing this work.
- B. Pay fees levied by local authorities for issuing permits and inspecting the work of this Contract.

1.4 SUBMITTALS

- A. Furnish required submittals, which shall bear the Contractor's stamp of approval or review. Submittals not approved by the Contractor will be returned. Include the following where applicable:
 - 1. Include construction details, material descriptions, dimensions of individual components and profiles, and finishes for water softeners.
 - 2. Include rated capacities, operating characteristics, electrical characteristics, and furnished specialties and accessories.
 - 3. Wiring Diagrams: For power, signal, and control wiring.
 - 4. Field quality-control reports.
 - 5. Warranty.
 - 6. Operation and maintenance data.
- B. Required Submittals:
 - 1. Plumbing fixtures.
 - 2. Plumbing specialties.

3. Plumbing piping materials.
4. Natural gas pipe materials, specialty fittings and valves.
5. Water heater.

1.5 DESIGN CONDITIONS

- A. Contract drawings are in part diagrammatic, intended to convey to the Contractor for the Plumbing Work, the scope of work and indicate general arrangement of equipment and outlets. Follow drawings in laying out the work. Consult Contract Drawings to become familiar with conditions affecting the work, and verify spaces in which work will be installed.
- B. Where job conditions require reasonable changes in locations and arrangement, make such changes, as approved.

PART 2 - PRODUCTS

2.1 PLUMBING FIXTURES

- A. Available Manufacturers: Subject to compliance with requirements, manufacturers offering products that may be incorporated in the Work include, but are not limited to, the following:
 1. American Standard.
 2. Zurn.
 3. Kohler.

2.2 PLUMBING SPECIALTIES

- A. Floor Drains: Size outlets as indicated on drawings, ASME A112.21.1M, cast-iron body, with seepage flange and clamping device. Floor drains for installation in floors not having membrane waterproofing may have seepage flange without clamping device. Furnish floor drains as scheduled.
- B. Cleanouts: ASME A112.36.2M, cast-iron body with straight threads and gasket seal or taper threads for plug, and a brass closure plug. Cleanouts for installation in floors not having membrane waterproofing may be furnished without clamping ring.
 1. Deck Plate Cleanout (DPCO): Adjustable floor cleanout, round, heavy duty loading, polished bronze cover.
 2. Wall Plate Cleanout (WPCO): Round, stainless steel or polished chrome plated bronze cover plate with stainless steel vandal resistant fastener to secure to cleanout plug.
- C. Roof Drains: Cast iron sump with top set deck plate, as scheduled.
- D. Frost Proof Hose Bibbs (FPHB): ASME A112.21.3M, nonfreeze, key operation. Provide 1 operating key.
 1. Inlet: 3/4- or 1-inch threaded or solder joint.
 2. Outlet: ASME B1.20.7 garden-hose threads, and integral or field-installed, nonremovable and drainable hose-connection vacuum breaker having ASME B1.20.7 garden-hose threads on outlet.

2.3 WATER HEATER

- A. The water heaters(s) shall be Dura-Power™ Model as manufactured by A. O. Smith or an approved equal. Heater(s) shall be rated as scheduled on drawings, and listed by Underwriters' Laboratories. Models shall meet the standby loss requirements of the U.S. Department of energy and current edition of ASHRAE/IES 90.1. Heater(s) shall have 150 psi working pressure and be equipped with extruded high density anode rod. All internal surfaces of the heater(s) exposed to water shall be glass lined with an alkaline borosilicate composition that has been fused-to-steel by firing at a temperature range of 1400°F to 1600°F. Electric heating

elements shall be medium watt density with zinc plated copper sheath. Each element shall be controlled by an individually mounted thermostat and high temperature cutoff switch. The outer jacket shall be of backed enamel finish and shall enclose the tank with foam insulation. Electrical junction box with heavy duty terminal block shall be provided. The drain valve shall be located in the front for ease of servicing. Heater tank shall have a three-year limited warranty as outlined in the written warranty. Fully illustrated instruction manual to be included.

2.4 GAS PIPING

- A. Steel Pipe: ASTM A 53/A 53M, black steel, Schedule 40, Type E or S, Grade B.
 - 1. Malleable-Iron Threaded Fittings: ASME B16.3, Class 150, standard pattern.
 - 2. Wrought-Steel Welding Fittings: ASTM A 234/A 234M for butt welding and socket welding.
 - 3. Unions: ASME B16.39, Class 150, malleable iron with brass-to-iron seat, ground joint, and threaded ends.

2.5 SANITARY WASTE AND VENT PIPING

- A. Below Ground: Hub-and-spigot cast-iron soil pipe (ASTM A-74, Service Class), hub-and-spigot cast-iron soil pipe fittings, neoprene rubber gaskets, and compression joints.
- B. Above Ground: Hubless cast-iron soil pipe (CISPI 301); hubless cast-iron soil pipe fittings; cast-iron couplings for hubless cast-iron soil pipe and fittings; and hubless joints.

2.6 DOMESTIC WATER PIPING

- A. Hard Copper Tube: ASTM B 88, Type L, water tube, drawn temper; wrought-copper pressure fittings; copper unions; and mechanical press fittings or solder joints with Alloy Sn95 solder.

2.7 VALVES

- A. Ball Valves, 1-Inch and Smaller: Rated for 150 psi saturated steam pressure, 400 psi WOG pressure; two-piece construction, with bronze body conforming to ASTM B-62, standard (or regular) port, chrome-plated brass ball, replaceable "Teflon" or "TFE" seats and seals, blowout proof stem, and vinyl-covered steel handle. Provide solder ends for domestic hot and cold water service.

2.8 PIPE INSULATION

- A. Preformed rigid fiberglass pipe insulation (ASTM C 547, Class 1) with all-purpose, factory-applied, laminated glass-fiber-reinforced, flame-retardant kraft paper and aluminum foil having self-sealing lap.
 - 1. PVC Fitting Covers: Factory-fabricated fitting covers manufactured from 20-mil-thick, high-impact, ultra-violet-resistant PVC.
 - 2. Application: Insulate domestic hot and cold water supply piping.
 - a. Cold Water: 1/2-inch thick.
 - b. Hot Water: 1-inch thick.

PART 3 - EXECUTION

3.1 PLUMBING INSTALLATION - GENERAL

- A. All piping shall be concealed unless specified otherwise.
- B. Provide all necessary clamps, brackets, angles, miscellaneous steel and all other related items required for the proper support of piping and equipment.

- C. All plumbing fixtures furnished under this section shall be identified on the "New York State List of Water Saving Fixtures" where applicable.
- D. Provide all necessary excavation and backfill for the installation of underground piping.

3.2 DEMOLITION

- A. Disconnect, demolish, and remove piping and equipment as indicated and as required for a complete installation. Remove all items rendered unused by work indicated unless noted to be abandoned in place.
- B. Where pipe, insulation, or equipment to remain is damaged or disturbed, remove damaged portions and install new products of equal capacity and quality.
- C. Accessible Work: Remove indicated exposed pipe in its entirety.
- D. Abandoned Work: Cut and remove buried pipe abandoned in place, 2 inches beyond the face of adjacent construction. Cap and patch surface to match existing finish.
- E. Disposal: Remove and properly dispose of material off-site.
- F. Temporary Disconnection: Remove, store, clean, reinstall, reconnect, and make operational equipment indicated for relocation.

3.3 CUTTING AND PATCHING

- A. Cut, channel, chase, and drill floors, walls, partitions, ceilings, and other surfaces necessary for plumbing installations. Perform cutting by skilled mechanics of the trades involved.
- B. Repair cut surfaces to match adjacent surfaces.

3.4 NATURAL GAS PIPING INSTALLATION

- A. Comply with NFPA 54 for installation and purging of natural-gas piping.
- B. Notify utility company prior to start of work and arrange for final inspections by utility company.
- C. Install piping in concealed locations unless otherwise indicated and except in equipment rooms and service areas.
- D. Locate valves for easy access.
- E. Install piping free of sags and bends.
- F. Install fittings for changes in direction and branch connections.
- G. Install unions in pipes NPS 2 and smaller, adjacent to each valve, at final connection to each piece of equipment. Unions are not required at flanged connections.
- H. Test, inspect, and purge natural gas according to NFPA 54 and authorities having jurisdiction.
- I. Paint exposed, exterior metal piping, valves, and piping specialties.
 - 1. Prime Coat: Alkyd anticorrosive metal primer.
 - 2. Intermediate Coat: Exterior alkyd enamel matching topcoat.
 - 3. Topcoat: Exterior alkyd enamel (semigloss) .
 - 4. Color: Yellow.
- J. Paint interior metal piping, valves, and piping specialties.
 - 1. Prime Coat: Alkyd anticorrosive metal primer.
 - 2. Topcoat: Interior alkyd enamel (semigloss) .

3. Color: Yellow.

K. Pipe Identification:

1. Self-Adhesive Pipe Labels: Printed plastic with contact-type, permanent-adhesive backing.
2. Lettering Size: At least 1-1/2 inches high.
3. Locate pipe labels as follows:
 - a. Within 5 feet of penetrations through walls.
 - b. Spaced at maximum intervals of 25 feet along each run.

3.5 PIPE INSULATION INSTALLATION

- A. Apply insulation according to the manufacturer's printed instructions.
- B. Apply insulation with a minimum number of joints.
- C. Interior Walls and Partitions Penetrations: Apply insulation continuously through walls and partitions.

3.6 DRAINAGE AND VENT PIPING INSTALLATION

- A. Install cast-iron soil pipe and cast-iron soil pipe fittings according to CISPI 1990 revised and edited edition of "Cast Iron Soil Pipe and Fittings Handbook, Volume I," Chapter IV, "Installation of Cast Iron Soil Pipe and Fittings."
- B. Make changes in direction for drainage and vent piping using appropriate Y branches, Y branches with 1/8 bends, and long-sweep 1/4, 1/5, 1/6, 1/8, and 1/16 bends. Sanitary tees and short-sweep quarter bends may be used on vertical stacks of drainage lines where change in direction of flow is from horizontal to vertical. Straight tees, elbows, and crosses may be used on vent lines. Make no change in direction of flow greater than 90 degrees. Where different sizes of drainage pipes and fittings are connected, use proper size standard increasers and reducers.

3.7 JOINT CONSTRUCTION

- A. Cast-Iron Soil Pipe and Cast-Iron Soil Pipe Fitting Joints: Make joints according to recommendations in CISPI 1990 revised and edited edition of "Cast Iron Soil Pipe and Fittings Handbook, Volume I," Chapter IV, "Installation of Cast Iron Soil Pipe and Fittings."

END OF SECTION 220000

SECTION 230000 - MECHANICAL REQUIREMENTS

PART 1 - GENERAL

1.1 SCOPE

- A. This Section is subject to all applicable requirements of the Contract.
- B. Provide all labor, materials, tools, equipment, transportation and services necessary for and incidental to completion of all HVAC work as indicated on the Drawings and/or specified herein.
- C. Scope of heating, ventilation and air conditioning work includes, but is not limited to, the following:
 - 1. Removal of equipment indicated.
 - 2. Split system heat pump unit and controls.
 - 3. Intake louver and damper.
 - 4. Gas-fired unit heaters.
 - 5. Panel radiators.
 - 6. Exhaust fans.
 - 7. Exhaust grilles.
 - 8. Exhaust ductwork.
 - 9. Heating hot water piping.
 - 10. Pipe insulation.
 - 11. Condensate drain piping.

1.2 CODES AND STANDARDS

- A. Conform to the 2020 Mechanical Code of New York State.
- B. Comply with all federal, state and municipal laws and ordinances and NFPA, NEC and local utility company regulations that apply to this work.

1.3 QUALITY ASSURANCE

- A. Comply with applicable SMACNA standards for installation of ductwork and air moving equipment.
- B. UL Compliance: Equipment specified in this section shall be designed, manufactured, and tested in accordance with applicable UL standards and shall be UL Listed.
- C. NEMA Compliance: Motors and electrical accessories shall comply with NEMA standards.
- D. Electrical Component Standard: Components and installation shall comply with NFPA 70 "National Electrical Code."

1.4 DESIGN CONDITIONS

- A. The drawings are diagrammatic and indicate the general arrangement of systems and equipment unless indicated otherwise by dimensions or details. Install work substantially as indicated. Exact equipment locations and duct/pipe routing, etc. shall be governed by actual field conditions and/or instructions of the Engineer.

- B. Where job conditions require reasonable changes in locations and arrangement, make such changes, as approved.

1.5 COMPLETE SYSTEMS

- A. General: Furnish and install all materials as required for complete systems, including all parts and labor obviously or reasonably incidental to a complete installation, whether specifically indicated or not. All systems shall be completely assembled, tested, adjusted and demonstrated to be fully operational, prior to final acceptance.

1.6 SUBMITTALS

- A. Furnish required submittals, which shall bear the Contractor's stamp of approval or review. Submittals not approved by the Contractor will be returned.
- B. Required Submittals:
 - 1. Mini split system heat pump.
 - 2. Gas-fired unit heaters.
 - 3. Panel radiators.
 - 4. Exhaust fans.
 - 5. Exhaust grilles.
 - 6. Louver and damper.

1.7 PERMITS AND FEES

- A. Secure all permits required by local authorities for performing this work.
- B. Pay fees levied by local authorities for issuing permits and inspecting the work of this Contract.

PART 2 - PRODUCTS

2.1 MINI SPLIT HEAT PUMP SYSTEM

- A. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
 - 1. LG.
 - 2. Daikin.
 - 3. Samsung.
 - 4. Hitachi.
 - 5. Trane.
- B. Unit capacity shall be as scheduled on the Drawings.
- C. Wall mounted unit including fan, air filters, coil, and wired microprocessor controls.
- D. Outdoor Unit: Provide specified roof supports.
- E. Provide factory insulated line sets.

2.2 LOUVERS AND DAMPERS

- A. Provide drainable louver, 4" deep frame/blades, extruded aluminum construction with manufacturers standard enamel finish. Color and frame style as selected by Architect.

- B. Control damper shall be insulated ultra-low leakage type, aluminum construction, 120VAC two-position actuator, Belimo or approved equal.

2.3 HEATING HOT WATER PIPING AND ACCESSORIES

- A. Heating Hot Water Piping: Install ASTM B 88 Type L, drawn copper tubing with mechanical press fittings. Dielectric unions or fittings shall be installed at all copper to steel joints.
- B. Dielectric Unions: Threaded or soldered end connections, constructed to isolate dissimilar metals, prevent galvanic action, and prevent corrosion.
- C. Ball Valves, 2 Inches and Smaller: MSS SP-110, Class 150, 600-psi CWP, ASTM B 584 bronze body and bonnet, 2-piece construction; chrome-plated brass ball, conventional port; blowout proof; bronze or brass stem; teflon seats and seals; threaded or soldered end connections:
 - 1. Operator: Vinyl-covered steel lever handle.
 - 2. Stem Extension: For valves installed in insulated piping.
 - 3. Acceptable Manufacturers:
 - a. Conbraco Industries, Inc.; Apollo Division.
 - b. Milwaukee Valve Company, Inc.
 - c. NIBCO Inc.
- D. Balancing Valves: 250 psig water working pressure, 250°F maximum operating temperature, bronze body, engineered resin plug with multi-turn handwheel adjustment. Valves shall have a minimum of four full 360° handwheel turns with memory locking feature and micrometer type indicator. Valves shall be of the "Y" pattern, modified, equal percentage globe style and provide precise flow measurement, precision flow balancing, and positive drip tight shut-off. Provide with connections for portable differential pressure meter with integral check valves and seals. Provide analog differential pressure meter (0-60' differential) with case and two five foot hoses and connectors.
 - 1. Acceptable Manufacturers:
 - a. Armstrong Model CBV.
 - b. Tour & Anderson.
- E. Manual Air Vents: Bronze body and nonferrous internal parts; 150 psig working pressure, 225°F operating temperature; manually operated with screwdriver or thumbscrew; and having 1/8 inch discharge connection and 1/2 inch inlet connection.

2.4 PIPE INSULATION

- A. Fiberglass Pipe Insulation: ASTM C 547, Class 1, rigid pipe insulation, jacketed.
 - 1. Thermal Conductivity: 0.23 at 75°F.
 - 2. Maximum Service Temperature: 850°F.
 - 3. Vapor Retarder Jacket: White kraft paper reinforced with glass fiber yarn and bonded to aluminum foil, secure with self sealing longitudinal laps.
- B. PVC Fitting Covers: Factory-fabricated fitting covers manufactured from 20-mil-thick, high-impact, ultra-violet-resistant PVC.
 - 1. Adhesive: As recommended by insulation manufacturer.
- C. Flexible Elastomeric Cellular Pipe Insulation: Flexible expanded closed-cell structure with smooth skin on both sides.
 - 1. Tubular Materials: ASTM C 534, Type I.
 - 2. Thermal Conductivity: 0.30 average maximum at 75 deg F.
 - 3. Coating: Water based latex enamel coating recommended by insulation manufacturer.

- D. Piping Systems: Unless otherwise indicated, insulate the following piping systems:

1. Heating hot water piping: 1-1/2" thick fiberglass pipe insulation.
2. Refrigerant piping: 1" thick flexible elastomeric.

2.5 PANEL RADIATORS

- A. General: Provide panel radiators as scheduled in locations indicated on drawings. Provide thermostatic radiator valves, air vents and isolation valves at each connection. Provide manufacturer's standard mounting hardware.
- B. Finish: Baked enamel, white.

2.6 DUCTWORK AND ACCESSORIES

- A. Sheet Metal, General: Provide sheet metal in thicknesses indicated, packaged and marked as specified in ASTM A 700.
1. Galvanized Sheet Steel: Lock-forming quality, ASTM A 527, Coating Designation G 90. Provide mill phosphatized finish for exposed surfaces of ducts exposed to view.
 2. Aluminum Sheets: Comply with ASTM B 209 Alloy 3003, H14 temper; with mill finish for concealed ducts, and standard, one-side bright finish for duct surfaces exposed to view.
- B. Joint and Seam Sealant: One-part, nonsag, solvent-release-curing, polymerized butyl sealant complying with FS TT-S-001657, Type I; formulated with a minimum of 75 percent solids.
- C. Flanged Joint Mastics: One-part, acid-curing, silicone elastomeric joint sealants, complying with ASTM C 920, Type S, Grade NS, Class 25, Use O.
- D. Rectangular Duct Fabrication: Except as otherwise indicated, fabricate rectangular ducts and fittings with galvanized sheet steel, in accordance with SMACNA "HVAC Duct Construction Standards," Tables 1-3 through 1-19, including their associated details. Conform to the requirements in the referenced standard for metal thickness, reinforcing types and intervals, tie rod applications, and joint types and intervals.
1. Fabricate rectangular ducts in lengths appropriate to reinforcement and rigidity class required for pressure classification.
 2. Static Pressure Classifications: Except where otherwise indicated, construct duct systems to the following pressure classifications:
 - a. Exhaust Ducts: 2 inches water gage, negative pressure.

2.7 GRILLES, REGISTERS AND DIFFUSERS

- A. Submittals: Submit manufacturer's technical product data for air outlets and inlets including the following:
1. Schedule of air outlets and inlets indicating drawing designation, room location, number furnished, model number, size, and accessories furnished.
 2. Data sheet for each type of air outlet and inlet, and accessory furnished; indicating construction, finish, and mounting details.
 3. Performance data for each type of air outlet and inlet furnished, including aspiration ability, temperature and velocity traverses, throw and drop, and noise criteria ratings. Indicate selections on data.
- B. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
1. Nailor Industries Inc.
 2. Price Industries.
 3. Titus.
- C. ASHRAE Compliance: Test and rate diffusers, registers and grilles in accordance with ASHRAE Standard 70-2006, "Method of Testing for Rating the Performance of Air Outlets and Inlets."

2.8 ROOF EXHAUST FANS

- A. Submittals: Include the following in accordance with Division-1 specification sections:
 - 1. Product Data including rated capacities of each unit, fan curves, sound power ratings, motor ratings and electrical characteristics, weights, furnished specialties and accessories.
- B. Products furnished, but not installed, include roof curbs for roof-mounted exhaust fans.
- C. Manufacturers: Subject to compliance with requirements, provide roof exhaust fan by one of the following:
 - 1. Loren Cook Co.
 - 2. Greenheck Fan Corp.
- D. AMCA Compliance: Provide products that meet performance requirements and are licensed to use the AMCA Seal.
 - 1. Sound Power Level Ratings: Comply with AMCA 301, "Methods for Calculating Fan Sound Ratings From Laboratory Test Data." Test fans according to AMCA 300, "Reverberant Room Method for Sound Testing of Fans." Label fans with the AMCA Seal.
 - 2. Fan Performance Ratings: Establish flow rate, pressure, power, air density, speed of rotation, and efficiency by factory tests and ratings according to AMCA 210, "Laboratory Methods of Testing Fans for Rating."
- E. Accessories: Provide the following for each unit:
 - 1. Disconnect Switch: Nonfusible type, with thermal overload protection mounted inside fan housing, factory wired through an internal aluminum conduit.
 - 2. Bird Screens: Removable 1/2-inch mesh, aluminum or brass wire.
 - 3. Dampers: Counterbalanced, parallel-blade, backdraft dampers mounted in curb base; factory set to close when fan stops.
 - 4. Roof Curbs.

2.9 TEMPERATURE CONTROLS

- A. Mini-Split Heat Pump: Wall mounted controller by unit manufacturer. Provide power/control wiring harness between indoor and outdoor unit.
- B. Roof Exhaust Fans: Controlled manually by wall switch furnished by EC. Provide control relays as required to interlock intake damper to open when either EF-1 or EF-2 are on and close when both fans are off.
- C. Radiators: Space temperature regulated by self-contained thermostatic radiator valves.

PART 3 - EXECUTION

3.1 GENERAL

- A. Install equipment and material in strict accordance with manufacturer's instructions and generally accepted industry practice.

3.2 DEMOLITION

- A. Disconnect, demolish, and remove all mechanical work indicated to be removed. Dispose of materials off-site in accordance with local regulations.
- B. Where pipe, ductwork, insulation, or equipment to remain is damaged or disturbed, remove damaged portions and install new products of equal capacity and quality.
- C. Temporary Disconnection: Remove, store, clean, reinstall, reconnect, and make operational equipment indicated for relocation.

- D. Where piping is indicated to be abandoned in place, cap piping and attach a plasticized tag indicating date abandoned and original service.

3.3 CUTTING AND PATCHING

- A. Perform all cutting and patching work necessary for the installation of the mechanical work. Before cutting any structural elements (beams, joists, columns, etc.) secure approval of the Architect.
- B. Cut, channel, chase, and drill floors, walls, partitions, ceilings, and other surfaces necessary for mechanical installations. Perform cutting by skilled mechanics of the trades involved.
- C. Patch cuts made in building in course of installing mechanical work. Patching shall match surrounding finish and shall be subject to approval of the Architect.
- D. Cut from both sides of walls and/or floors to eliminate excessive splaying.
- E. Patch cuts, holes and damages to existing surfaces left by removal of existing equipment in approved manner.
- F. Cut, remove and legally dispose of selected mechanical equipment, components, and materials as indicated, including but not limited to removal of mechanical piping, heating units, plumbing fixtures and trim, and other mechanical items made obsolete by the new Work.
- G. Protect the structure, furnishings, finishes, and adjacent materials not indicated or scheduled to be removed.

3.4 DUCTLESS SPLIT SYSTEM INSTALLATION

- A. Install units level and plumb, in accordance with manufacturer's written instructions.
- B. Mount outdoor unit on wall bracket in accordance with manufacturer's written instructions.
- C. Install factory insulated line sets.
- D. Install copper or PVC condensate drain lines. Provide discharge piping from condensate pump to existing sump. Insulate drain line with flexible unicellular insulation, ½" thick.
- E. Install wired controllers where located.

END OF SECTION 230000

SECTION 260000 - ELECTRICAL REQUIREMENTS

PART 1 - GENERAL

1.1 SCOPE

- A. This Section is subject to all applicable requirements of the Contract.
- B. Provide all items, articles, materials, operations, or methods listed, mentioned, or scheduled on the drawings, and/or specified herein, including all labor, materials, tools, equipment, transportation and incidentals necessary and required for their completion.
- C. Scope of electrical work includes, but is not limited to, the following:
 - 1. Temporary power.
 - 2. Manual transfer switch.
 - 3. New underground electrical service and service entrance rated panelboard.
 - 4. Reconnect existing branch circuits to remain.
 - 5. Lighting and lighting controls.
 - 6. Branch circuit wiring.
 - 7. Mechanical equipment power connections.

1.2 DRAWING USE AND INTERPRETATION

- A. The drawings are diagrammatic and indicate the general arrangement of systems and equipment unless indicated otherwise by dimensions or details. Install work substantially as indicated. Exact equipment locations and raceway routing, etc. shall be governed by actual field conditions and/or instructions of the Architect/Engineer.

1.3 COMPLETE SYSTEMS

- A. General: Furnish and install all materials as required for complete systems, including all parts and labor obviously or reasonably incidental to a complete installation, whether specifically indicated or not. All systems shall be completely assembled, tested, adjusted and demonstrated to be fully operational, prior to Owner's acceptance.
- B. Wiring: The wiring specified and/or shown on the Drawings is for complete and workable systems. Any deviations from the wiring shown due to a particular manufacturer's or subcontractor's requirements shall be made at no cost to either the Contract or the Owner.

1.4 CODES AND REGULATIONS

- A. General: Comply with the National Electric Code (NEC) and all governing federal, state and local laws, ordinances, codes, rules and regulations. Where the Contract Documents exceed these requirements, the Contract Documents shall govern. In no case shall work be installed contrary to or below minimum legal standards.
- B. Non-Compliance: Should any work be performed which is found not to comply with any of the above codes and regulations, provided all work and pay all costs necessary to correct the deficiencies.

1.5 REFERENCE STANDARDS

- A. Comply with the latest published standards of the following associations and organizations, where applicable, as minimum requirements:

1. (ADA) Americans with Disabilities Act
2. (ANSI) American National Standards Institute
3. (ASTM) American Society for Testing and Materials
4. (ETL) Electrical Testing Laboratories
5. (ICEA) Insulated Cable Engineers Association
6. (IEEE) Inst. of Electrical and Electronics Engineers
7. (IES) Illuminating Engineering Society
8. (NBFU) National Board of Fire Underwriters
9. (NEMA) National Electrical Manufacturers Association
10. (NESC) National Electric Safety Code
11. (NFPA) National Fire Protection Association
12. (UL) Underwriters' Laboratories

1.6 PERMITS

- A. Obtain and pay for any and all permits required for the Project by all governing agencies having jurisdiction at the Project site, prior to commencing work.

1.7 QUALITY ASSURANCE

- A. Manufacturers' Qualifications: Not less than (3) years experience in the actual production of the specified (or similar) products.
- B. Installers' Qualifications: Firm having not less than (5) years experience in the installation of electrical systems and equipment similar in scope and complexity to those required for this Project, and having successfully completed at least ten comparable scale projects.
- C. Incidental Work: Painting, patching, welding, carpentry and the like related to or required for Division 26 work shall be performed by craftsmen skilled in the appropriate trade, and shall be provided for under Division 26, unless indicated otherwise.
- D. Third Party Inspection: Electrical Contractor shall hire a third party inspector to provide Certificate of Inspection prior to request for final payment.

1.8 SUBMITTALS

- A. Product Data: Submit for equipment, devices and materials to be used on the Project, as listed below. Product Data to consist of manufacturer's standard catalog cuts, descriptive literature and/or diagrams, in 8-1/2" x 11" format, and in sufficient detail so as to clearly indicate compliance with all specified requirements and applicable standards. Mark each copy to clearly indicate proposed product, included options, accessories, finish, size, type, etc. Submit all Product Data of the Project in a single submission initially. Submit Product Data for the following:
 1. Wiring Devices.
 2. Panelboards.
 3. Lighting Fixtures.
 4. Lighting Controls.

1.9 INSPECTIONS

- A. General: During and upon completion of the work, arrange and pay all associated costs for inspections of all electrical work installed for the Project, in accordance with the Conditions of the Contract.

- B. Inspections Required: As per the laws and regulations of the local and/or state agencies having jurisdiction at the Project site.
- C. Inspection Agency: Approved by the local and/or state agencies having jurisdiction at the Project site.
- D. Certificates: Submit all required inspection certificates.

PART 2 - PRODUCTS

2.1 GENERAL REQUIREMENTS

- A. Where Specified: Division 26 materials and equipment shall be as specified in this Section and/or as indicated on the Drawings.
- B. General Requirements: All materials and equipment shall be in accordance with the Contract Documents and to the extent possible, standard products (except where special construction or performance features are called for) of the specified or acceptable manufacturers. All materials and equipment shall be new, clean, undamaged, and free of defects and corrosion.
- C. Acceptable Products: The product of a specified or acceptable manufacturer will be acceptable only when that product complies with or is modified as necessary to comply with all requirements of the Contract Documents.
- D. Common Items: Where more than one of any specific item is required, all shall be of the same type and manufacturer.
- E. UL Listing: All electrical materials and equipment shall be Underwriters' Laboratories (UL) listed and labeled, where UL standards and listings exist for such materials or equipment.

2.2 RACEWAY SYSTEMS

- A. General: All raceways shall meet applicable NEMA standards and be UL-listed with each length so labeled.
- B. Rigid Steel Conduit: Manufactured from mild steel, hot dip galvanized, both inside and out, including threads, conforming to ANSI C80.1 and UL-6.
- C. Electrical Metallic Tubing (EMT): Manufactured from mild steel, hot dip galvanized both inside and out, conforming to ANSI C80.3 and UL-797.
- D. Flexible Metal Conduit: Spirally wound and interlocked steel strip, zinc galvanized both inside and out, conforming to UL-1.
- E. Liquid-Tight Flexible Metal Conduit: Same as flexible metal conduit, with extruded liquid-tight PVC jacket, conforming to UL-360.
- F. Fittings: All fittings shall be UL-listed for the intended application, and conform to ANSI/NEMA FB-1. All metal conduit fittings to be steel or malleable iron. Do not use die-cast, pressure cast or set-screw type fittings.
- G. Outlet Boxes (Concealed in Walls): Non-gangable, galvanized steel, with square cornered tile (or masonry) type extension rings or covers. Minimum box size: two-gang masonry box or 4" square box with single-gang extension ring. Minimum box depth: 1-1/2". Minimum box capacity: 21 cubic inches.
- H. Outlet Boxes (Surface Mounted): Galvanized steel for dry locations; cast aluminum for damp or wet locations.
- I. Pull Boxes and Junction Boxes: Use as indicated and required. Junction and Pull boxes for general use (dry locations) to be code gauge galvanized steel construction, minimum 4" square by 1-1/2" deep, with screw-on covers. For exterior and damp or wet locations, use boxes acceptable for such use.

2.3 BUILDING WIRE

- A. General: All wiring systems to consist of individual wires installed in conduit or other indicated raceway, unless specifically specified or indicated otherwise. Type "MC" Cable may be used in lieu of individual wires in conduit, where permitted later under this section.
- B. 600 Volt Class Wire: Single-conductor, uncoated copper conductors with type THHN/THWN insulation. Conductors size #10 AWG and smaller may be solid or stranded. Conductors size #8 AWG and larger shall be Class B stranded.
- C. Insulation Colors: As required for color coding requirements in Part 3. Wires #10 AWG and smaller to have color impregnated in insulation. Wires #8 and larger may use color impregnated insulation, or conductor ends may be taped.
- D. Restrictions: Do not use aluminum, or copper-clad aluminum alloy conductors.
- E. Acceptable Manufacturers: American Insulated Wire Corp, General Cable Corporation, Southwire Company and Okonite Company.

2.4 CONDUCTOR CONNECTORS

- A. General: UL-listed, factory fabricated, designed for the intended application, conductor type(s) and size(s), etc.
- B. Connectors (#10 AWG and Smaller): Nylon shell insulated metallic crew-on connectors.
- C. Termination (#10 AWG and Smaller, Stranded): Use nylon insulated crimp ring or fork type connectors for connecting conductors to screw terminals.
- D. Connectors (#8 AWG and Larger): Mechanical (bolted pressure) or compression type, with molded plastic insulators.
- E. Lugs (#8 AWG and Larger): Mechanical (bolted pressure) or compression type.
- F. Acceptable Manufacturers: AFC Cable Systems, Hubbell Power Systems, O-Z/Gedney, 3M, Tyco Electronics Corp, and Crouse Hinds.

2.5 WIRING DEVICES

- A. Note: All types may not be required for Project.
- B. Device Color: Match existing.
- C. Switches: 20 amp, 120-277 volt, A.C. only, toggle type, single-pole, double-pole, three-way or four-way as indicated and required. Acceptable Manufacturers: Hubbell #HBL1221 series; Leviton #1221-S series; Pass & Seymour #20AC1 series; and Cooper AH1201 Series.
- D. Receptacles (General Use): NEMA 5-20R configuration, 20 amp, 125 volt, A.C., duplex type, with nylon face, heavy duty specification grade. Acceptable Manufacturers: Hubbell #5352 series; Leviton #5362 series; Pass & Seymour #5362AW series; and Cooper AH5362 (duplex).
- E. GFI Receptacles: Ground fault circuit interrupter, feed-through, duplex receptacle, NEMA 5-20R configuration, 20 amp, 125 volt A.C. with solid-state ground-fault sensing and 5 MA trip level. Acceptable Manufacturers: Hubbell # GFTR20 series; Leviton # W7899-TR series; Pass & Seymour #2095HGNTLTR series; and Cooper TWRVGF20.
- F. Coverplates (Interior Devices): With number of gangs and openings to suit the number and type of wiring devices, struck-up type, minimum .032" thick, Type 430 stainless steel. Acceptable Manufacturers: Same as for Wiring Devices.

2.6 EQUIPMENT CONNECTIONS

- A. Materials as specified in this Section, and as required.

2.7 HANGERS AND SUPPORTS

- A. Materials and Design: All hangers, supports, fasteners and hardware shall be zinc-coated or of equivalent corrosion resistance by treatment or inherent property, and shall be manufactured products designed for the application. Products for outdoor use shall be hot dip galvanized.
- B. Types: Hangers, straps, riser supports, clamps, U-channel, threaded rods, etc. as indicated and required.

2.8 ELECTRICAL IDENTIFICATION

- A. Marking Pens: Permanent, waterproof, quick drying, black ink. Acceptable Manufacturers: Sanford's No. 3000 "Sharpie", or equal.
- B. Engraved Nameplates: 3-layer laminated plastic with minimum 3/16" high white engraved characters on black background, fastened with screws.

2.9 GROUNDING

- A. General: Conductors, clamps and connectors, etc. as indicated and required.

2.10 PANELBOARDS

- A. Acceptable Manufacturers: Subject to compliance with requirements provide products of one of the following:
 - 1. Eaton Corporation
 - 2. General Electric Corp.
 - 3. Square D Company
 - 4. Siemens
- B. Except as otherwise indicated, provide panelboards, enclosures and ancillary components, of types, sizes, and ratings indicated, which comply with manufacturer's standard materials, and which are designed and constructed in accordance with published product information. Provide solderless lugs, or connectors, in the correct number and size for conductors on mains, on the load side of each branch, circuit, and on ground and neutral bars. Provide tin plated copper busses. Provide an insulated neutral bus (equal in size to the phase bussing) and a bonded equipment ground bus mounted at the opposite end of the structure from the mains, and having numbered screw or lug terminals for connection of wires. Equip panels with the number of unit devices as required for a complete installation. Where more than one type of component meets the indicated requirements, selection is installer's option. Where types, sizes or ratings are not indicated, comply with NEC, UL and established industry standards for applications indicated.
- C. Provide ground fault circuit interrupting type circuit breakers for all devices noted with a "GFI" subscript on the panelboard schedules for this project.
- D. Provide UL listed HACR or approved equal type circuit breakers for all devices which serve heating, ventilating, or air conditioning equipment.
- E. Panelboards shall be provided with covers for surface or flush mounting as shown on the drawings, or as required for actual project conditions.
- F. Panelboards shall be constructed for top or bottom feeder service, as required by actual project conditions.
- G. LIGHTING AND APPLIANCE PANELS
 - 1. Lighting and appliance panelboards shall be General Electric A Series (or equal). All branch circuit breakers are to be quick-make, quick-break, trip indicating and common trip on all multi-pole breakers, and shall be bolt-on type. Trip indication shall be clearly shown by breaker handle located between the "ON" and the "OFF" positions. Panelboards shall have distributed phase copper bussing throughout.
 - 2. Provide fully rated main circuit breaker type panelboards, where the short circuit rating of the complete panelboard assembly is determined by the lowest rated branch device. Provide panelboard interrupting ratings as noted on the drawings. The Contractor may, at his option, (if acceptable to the local Code

Authority) provide main circuit breaker type panelboards where the short circuit rating of the complete panelboard is determined by the use of UL approved combinations of main and branch circuit breaker devices, and the rating of the complete panelboard assembly is as shown on the drawings.

3. Provide fully rated main lug only type panelboards where the short circuit rating of the complete panelboard assembly is determined by the lowest rated branch device. Provide panelboard interrupting ratings as noted on the drawings. The Contractor may, at his option, (if acceptable to the local Code Authority) provide main lug only type panelboards where the short circuit rating of the complete panelboard assembly is determined by the use of UL approved combinations of upstream devices and branch circuit breaker devices, and the rating of the complete panelboard assembly is as shown on the drawings.
4. Panelboard boxes shall have 6-inch minimum gutters. Fronts are to be complete with door and cylinder lock, with all locks keyed alike. Fronts shall have adjustable trim clamps, directory frames, and shall be equipped with a typewritten directory that identifies each circuit breaker by number and the equipment that the breaker serves. One additional blank directory card for each panel shall be furnished to the Owner.
5. Two section panels shall be equipped with boxes of equal dimensions
6. Panelboards shall be Underwriters' Laboratory listed and shall bear the UL label. The size of the panelboard main disconnect device or main lugs, the rating and number of branch circuits, and the type of mounting shall be as shown on the drawings.
7. All factory installed devices shall be re-torqued prior to energizing.

2.11 SAFETY SWITCHES

- A. General: NEMA heavy duty, horsepower rated, fully enclosed, fusible or non-fused as indicated, quick-make/quick-break switching mechanism interlocked with cover and integral handles that accept a minimum of three padlocks.
- B. Neutral and Ground: Include insulated solid neutral terminal and/or solid grounding terminal where circuits include these conductors.
- C. Enclosures: NEMA types as specified below or as indicated. Provide NEMA-1 unless indicated otherwise.
- D. In the fused configuration, switches shall have an interrupting capacity of at least 100,000 amps symmetrical at six hundred (600) volts when used with Class RK-5 time delay current limiting fuses and 200,000 amperes symmetrical at 600 volts when used with Class RK-1 current limiting fuses.
- E. Manufacturers: Eaton, General Electric; Siemens; Square D.

2.12 LED LIGHTING FIXTURES

- A. EXTRA MATERIALS: At substantial completion of the project, furnish the following extra materials that match specified and installed products to the Owner for future use after completion of project warranty periods. Extra materials shall be delivered and stored at a location or locations directed by the Owner. Products shall be packaged with protective covering for storage and shall be suitably labeled by product type.
 1. Provide one extra driver for each type installed on the project.
- B. WARRANTY: Provide a five (5) year manufacturer warranty for all LED drivers, and LED light boards (light engines) from date of substantial completion of the project. This warranty to cover all product defects, performance criteria, and parts.
- C. All fixtures shall be UL or other qualified third party listed for the environment where they will be installed including: damp, wet, extreme temperature, or hazardous locations.
- D. Polycarbonate lenses shall be used as standard. Lenses shall be 100% virgin acrylic thermoplastic with a minimum thickness of 1/8" of an inch.
- E. MANUFACTURER: Manufacturers of lighting fixtures are noted on the drawings by notes and/or by the light fixture schedule. Subject to compliance with the specification, acceptable manufacturers include:

1. Acuity Brands;
2. Eaton;
3. Hubbell Lighting.

F. LED LIGHTING FIXTURES

1. Complete LED lighting fixtures for general illumination shall have been tested by IES LM-79 and LM-80 requirements.
2. LED light fixtures shall be fabricated, assembled, and manufactured as a complete fixture unit, including housing, mounting hardware, driver, light boards (light engines), and lens.
3. LED lighting fixtures shall allow for separate replacement of the light boards and driver. In other words, 'throw away' fixtures with non-replaceable components are not permitted.
4. LED lighting fixtures shall be capable of continuous dimming as a standard offering. Dimming range to be from 100% to at least 20% of rated lumen output. Dimming control shall be 0-10VDC.
5. All LED fixture control devices shall be compatible with the type of drivers and dimming requirements of the particular project, and coordinated with the lighting fixture submittals prior to ordering.
6. Universal input voltage (120-277 VAC) drivers shall be provided for all LED applications.

G. LED DRIVERS

1. Drivers shall operate from a 60Hz input AC voltage from 120V-277V. Unit shall have an input voltage tolerance range of at least +/- 10%.
2. The Total Harmonic Distortion (THD) of the driver input current shall be no more than 20% when operating at nominal input voltage.
3. Drivers shall have a minimum Power Factor (PF) of 0.90.
4. Drivers shall comply with IEEE/ANSI C62.41 Category B3 (high) for transient voltage protection. This shall include a 6kV rating, and 3kA rating per the standard 8x20us combo wave testing parameters.
5. Drivers shall comply with the requirements of the FCC rules and regulations, Title 47 CFR Part 18, Non-consumer (Class A) for EMI & EMF (conducted and radiated) interference.

H. LED BOARDS

1. Rated minimum life of 60,000 hours minimum per IES LM-70 testing requirements.
2. Provide a TM21 report on LED boards to be used which tests LED life and lumen maintenance per the IES LM-80 standard, and LED light output and efficacy per the IES LM-70 standard.
3. The correlated color temperature (CCT) of the LEDs shall be 3500K unless noted otherwise. The CCT shall be uniform for all LED modules within like luminaire types and luminaires within a given project. The LED CCT measurements shall have a maximum of three standard deviations (three SDCM, +/-90K) tolerance on the MacAdam Ellipse.
4. Provide LED boards such that any individual LED failure on a section of LED board within the fixture will not result in significant output loss of the overall fixture.

2.13 LIGHTING CONTROLS

1. Provide room based lighting controls as required to provide control functions indicated including wall stations, occupancy/vacancy sensors, switch packs, dimmer modules and associated wiring and accessories required for a complete system.
2. Submit wiring diagrams and product data for all components and accessories furnished.
3. Manufacturers: Acceptable manufacturers include:
 - a. Acuity Brands.
 - b. Eaton.

PART 3 - EXECUTION

3.1 GENERAL

- A. Letter and Intent: The installation of all electrical work shall be in accordance with the letter and intent of the Contract Documents, as determined by the Architect/Engineer.
- B. Installation Requirements: All materials and equipment shall be installed as recommended by the respective manufacturers, by mechanics skilled in the particular trade, in a neat and workmanlike manner, in accordance with the standards of the trade, and so as not to void any warranty or UL listing.
- C. Administration and Supervision: All electrical work shall be performed under the Contractor's direct supervision, using sufficient and qualified personnel as necessary to complete the work in accordance with the project progress and completion schedule. The Contractor shall assign one or more competent supervisors who shall have authority to accept and execute orders and instructions, and who shall cooperate with the other contractors and subcontractors, the Architect/Engineer and the Owner in all matters to resolve conflicts, avoid delays and complete the Project as efficiently as possible.

3.2 DELIVERY, STORAGE AND HANDLING

- A. Packing and Shipping: Deliver products to the Project site in original, unopened packaging, properly identified with the manufacturer's identification and shipping and handling instructions, and compliance labels.
- B. Storage and Protection: Comply with all manufacturer's written instructions and recommendations. Store all products in a manner which shall protect them from damage, weather, and entry of debris.
- C. Damaged Products: Do not install damaged products. Arrange for prompt undamaged replacement.

3.3 EXAMINATION

- A. Conditions Verification: Examine the areas where, and conditions under which the work is to be performed, and identify and conditions detrimental to the proper and timely completion of the work. Do not proceed until the unsatisfactory conditions have been corrected or are no longer present.

3.4 COORDINATION

- A. General: Sequence, coordinate and integrate the installation of all electrical materials and equipment for efficient flow of work, in conjunction with the other trades. Review the Drawings for work of the other trades, and report and cooperate to resolve any discovered discrepancies, prior to commencing work.
- B. Cooperation: Cooperate with the other Contractors and individual disciplines for placement, anchorage and accomplishment of the work. Resolve and minimize possible interferences in the work, prior to commencing installation.
- C. Chases, Slots and Openings: Arrange for chases, slots and openings during the progress of construction, as required to allow for installation of the electrical work.
- D. Supports and Sleeves: Coordinate the installation of required supporting devices and sleeves to be set in poured-in-place concrete and other structural components, as they are constructed.
- E. Obstacles and Interferences: When installing equipment and raceways, provide offsets, fittings, accessories and changes in elevation or location as necessary to avoid obstacles and interferences, per actual field conditions.

3.5 DIMENSIONS

- A. Building Dimensions: For exact locations of building elements, refer to dimensioned drawings. However, field measurements take precedence over dimensioned drawings.

- B. Limiting Dimensions: Equipment outlines show on drawings or details of 1/4" = 1'-0" scale or larger, and dimensions indicated on the Drawings are limiting dimensions. Do not install equipment exceeding these dimensions unless specifically accepted by the Architect/Engineer.

3.6 EQUIPMENT PROTECTION

- A. Protect all electrical equipment, materials and work from the weather elements, paint, concrete, mortar, construction debris and damage, until the project is substantially complete. Clean, repair or replace all electrical work so affected, as required to restore to first class condition.

3.7 ELECTRICAL INSTALLATION (GENERAL)

- A. Unfinished and Finished Areas: For the purposes of these electrical specifications, "unfinished" areas shall include electrical and mechanical equipment rooms, and storage rooms. All other areas of the building shall be considered "finished" spaces, unless indicated or acceptable otherwise.
- B. In Unfinished Areas: Raceways, equipment and devices may be installed concealed or exposed, unless indicated otherwise.
- C. In Finished Areas: Conceal all raceway and flush mount all electrical boxes, equipment, and devices unless specifically indicated or acceptable otherwise. The space above suspended ceilings or behind furred spaces is considered outside finished areas and electrical materials installed within these areas are considered concealed.
- D. Approval Required: Where approval is given for an exposed installation within a finished space, exact conduit routing and outlet box placement, etc. shall be as accepted by the Architect/Engineer. Do not proceed without such approval.
- E. Minimum Mounting Height: Install exposed raceway and all other electrical equipment (e.g., lighting fixtures) with not less than 7'-6" clear to finished floor, unless indicated or accepted otherwise, excluding raceway and equipment mounted on walls.
- F. Dimensions and Clearances: Field measure all dimensions and clearances affecting the installation of electrical work, in relation to established datum, building openings and clearances, and the work of other trades, as construction progresses.
- G. Rough-In Locations: Verify final locations for rough-ins with field measurements and requirements of actual equipment being installed.
- H. Door Swings: Verify the swings of all doors before switch outlet boxes and other electrical device boxes are installed. If necessary, revise outlet box locations so that devices are not obstructed by doors when doors are open.
- I. Ceiling Mounted Devices: The locations indicated on the architectural reflected ceiling plans take precedence over the electrical documents, in the event of conflict.

3.8 LAYOUT

- A. General: Install electrical systems, materials and equipment level and plumb, and parallel and perpendicular to building surfaces, and other building systems components, wherever possible.
- B. Serviceability: Install electrical equipment and raceways, etc. so as to readily facilitate servicing, maintenance and repair or replacement of the equipment or its components, and so as to minimize interference with other equipment and installations.
- C. Clearances: Prior to commencing work, verify that all electrical equipment will adequately fit and conform to the indicated and NEC required clearances, in the spaces indicated on the Drawings. If rearrangement is required, submit plan and elevation drawings or sketches indicating proposed rearrangement, for Architect/Engineer approval. Do not rearrange equipment layouts without the written permission of the Engineer.

- D. Right-of-Way: When laying out electrical work, give priority in available spaces to steam and condensate lines, sanitary lines, drain lines, fire protection piping and sheet metal duct work. Provide offsets as necessary to avoid conflicts. Resolve all conflicts before commencing installation.

3.9 MOUNTING HEIGHTS

- A. General: Indicated heights are measured from the center of the device outlet box to the finished floor or grade, unless indicated otherwise. Request instructions for mounting heights not indicated.
- B. Architectural Elevations: Heights and locations for outlets and equipment indicated on architectural elevations take precedence over mounting heights and locations indicated on the electrical drawings, in the event of conflict. If outlets and equipment are not indicated on the architectural elevations, the electrical documents govern.

3.10 HOLES, SLEEVES AND OPENINGS

- A. General: Provide all holes, sleeves and openings required for the completion of Division 26 work and restore all surfaces damaged, to match surrounding surfaces. Maintain integrity of all new and existing fire and smoke rated barriers, using acceptable firestopping systems. When cutting holes or openings, or installing sleeves, do not cut, damage or disturb structural elements or reinforcing steel, unless accepted, in writing, by the Project Architect.
- B. Conduit Penetrations: Size core drilled holes so that an annular space of 1/4" to 1" is left around the circumference of the conduit. When openings are cut in lieu of core drilled, provide sleeve in rough opening. Size sleeves to provide an annular space of 1/4" to 1" around the circumference of the conduit. Patch around sleeve to match surrounding surfaces.
- C. Fire stop all joints, penetrations within rated construction in compliance with the DASNY Standard Fire Stopping Specification 078400. Provide fire stop coated board to protect existing electrical equipment (such as Hilti CFS-CT B Fire Stop Coated Board) as indicated on drawings. Following DASNY Specification 078400 and all manufacturer instructions for installation.

3.11 CUTTING AND PATCHING

- A. General: Provide all cutting, drilling, chasing, fitting and patching necessary for accomplishing the work of Division 26. This includes any and all work necessary: to uncover materials to provide for the installation of ill-timed work; to remove and replace defective work and work not conforming to the Contract Documents; to install equipment and materials in existing buildings and structures; in addition to that required during the normal course of construction.
- B. Building Structure: Do not endanger the integrity of any building structure by cutting, drilling or otherwise modifying any structural member, without specific approval. Do not proceed with any modifications to building structure without written permission of the Project Architect.
- C. Repairs: Repair any and all damage to work of any other trade on the Project caused by cutting and patching operations, using skilled mechanics of the trade(s) involved.

3.12 ELECTRICAL DEMOLITION

- A. General: Provide electrical demolition work as indicated and as required for removal and/or abandonment of systems, equipment and devices, etc. made obsolete by this Project, and as required for demolition and remodeling work by the other trades. Remove existing electrical equipment, devices, raceways, wiring and related materials within the Project work limits, as indicated or required.
- B. Electrical Devices to Be Removed and Replaced to Accommodate Asbestos Abatement Work: Carefully disconnect and remove existing electrical devices indicated, prior to commencement of asbestos abatement work, so as to prevent damage due these devices during the asbestos abatement work (i.e. ceiling removals). Safely store these devices, and after the asbestos abatement work is complete, reinstall these devices at their original locations, and reconnect per original conditions.

- C. Existing Conditions: In general, existing electrical systems and devices are not shown on the Drawings unless pertinent to the remodeling work. Existing electrical conditions, where indicated, are based on casual field observations and/or drawings for previous construction, and must be field verified. Report any discrepancies to the Architect/Engineer before disturbing the existing installation.
- D. Examination: Prior to bidding, examine the Project site to determine all actual observable conditions. No additional compensation will be granted on account of extra work made necessary by the Contractor's failure to investigate such existing conditions.
- E. Inspection: Carefully inspect the Project site and become familiar with the existing systems and conditions, before proceeding with the work.
- F. Coordination: Coordinate all demolition and changeover work with all other trades on the Project, utility companies where applicable, and the Owner.
- G. Protection of Adjacent Materials: During execution of demolition work, give primary consideration to protecting from damage, the building structure, furnishings, finishes and the like, unless specifically indicated to be removed. Existing items or surfaces to remain, which are damaged as a result of this work shall be refinished, repaired or replaced to the satisfaction of the Owner, at no cost to the Contract.
- H. Patching: When electrical materials are removed, patch and finish walls, ceilings, floors and other surfaces to match surrounding surfaces. Provide blank coverplates, etc. as required. Materials used for patching shall be in conformance with the applicable sections of the Project Manual. Where materials are not specifically described, but required for proper completion of the work, they shall be as selected by the Contractor, subject to the Architect/Engineer's approval.
- I. Items to be Salvaged: Before commencing demolition work, verify with the Engineer and Owner, all systems, materials, equipment and devices which are to be salvaged, and those which must be removed. The Owner reserves the right to salvage any or all existing electrical or other such items at the Project site. Carefully remove and store on site where directed by the Owner, all material and equipment which is indicated (or directed by the Owner) to be salvaged.
- J. Shutdowns: All shutdowns to existing electrical services and systems to be scheduled and acceptable, in writing, by the Owner.
- K. Disconnections: Disconnect all electrical devices and equipment located in walls, ceilings or floors scheduled for removal, and other equipment as indicated. Disconnect electrical connections to mechanical and other equipment being removed by other trades.
- L. Wiring Removals: Where existing electrical devices or equipment are indicated or required to be removed, remove all associated wiring. Remove all abandoned or dead wiring back to source.
- M. Raceway Removals: Remove all abandoned raceways, boxes, supports, etc. where exposed (including those located above existing or new suspended ceilings), and where they interfere with new work of any trade.
- N. Reconnections: Where existing electrical circuits serving existing lighting fixtures, wiring devices, etc. which are to remain (i.e. not indicated to be removed) become disconnected or otherwise disrupted as a result of demolition work, reroute and reconnect circuits, provide new circuiting, etc. as required to restore original operation to the existing fixtures and devices remaining. Reconnection work to comply with requirements for new work.
- O. Existing Electrical Work to Remain: Protect and maintain access to existing electrical work which must remain. Reinstall any such existing electrical work disturbed.
- P. Existing Electrical Work to be Relocated: Carefully disconnect, remove, store on site, reinstall and reconnect existing devices and equipment indicated to be reused or relocated, and also where required to accommodate remodeling or new construction. Thoroughly clean, and make any necessary minor repairs to such equipment, prior to installation. Extend existing installations as required. Materials and methods used for relocations to conform to requirements for new work.
- Q. Items to be Removed: Remove and legally dispose of all materials (except salvage or relocation items) and debris resulting from demolition work.

- R. Cleaning: Remove from the Project site all dirt, dust and debris, etc. resulting from demolition work, on a daily basis. Do not block or otherwise impair circulation in corridors, stairs, sidewalks, roadways or other traffic areas.

3.13 RACEWAY SYSTEMS

- A. Sizing: Size raceway as required by the National Electrical Code (minimum) with oversize conduits as indicated and where required for ease of pulling wire or cable.
- B. Minimum Conduit Size: 3/4" unless indicated otherwise.
- C. Types: Unless indicated otherwise, use raceway types as follows:
- D. Indoors, Concealed in Walls or Above Ceilings: EMT.
- E. Indoors, Exposed: Use rigid galvanized steel conduit below four feet above finished floor. EMT may be used above four feet.
- F. Flexible Metal Conduit: Use in dry locations only, for connections to vibrating equipment, and equipment requiring minor adjustments in positions, for final connections to recessed lighting fixtures, and between outlet boxes in stud partitions.
- G. Liquid-Tight Flexible Metal Conduit: Use where flexible metal conduit connections are required in damp, wet or oily locations, and for final connection to all motors and motorized equipment.
- H. Routing: As required by job conditions unless specific routes or dimensioned positions are indicated on the Drawings. Install tight to slabs, beams and joists wherever possible. Verify exact locations of all raceways, pull boxes, and junction boxes. Resolve any potential conflicts before commencing installation. Route exposed conduit, and conduit installed above ceilings, parallel or perpendicular to walls, ceilings and structural members. Install to maintain maximum possible headroom and to present a neat appearance.
- I. Installation: In accordance with the NEC and NECA's "Standards of Installation". Cut conduit ends square using saw or pipecutter and ream each cut end smooth. Carefully make all conduit bends and offsets so that the inside diameter of pipe is not reduced. Make bends so that legs are in the same plane. Make offsets so that legs are in the same plane and parallel. Protect stub-ups from damage, and carefully re-bend when necessary.
- J. Fittings: Make up all raceway fittings tight so that final installation of raceway, fittings and enclosures constitutes a firm mechanical assembly and a continuous electrical conductor. Where required, provide bonding jumpers to assure electrical continuity.
- K. Protection: Protect all raceways, enclosures and equipment during construction to prevent entry of concrete, mortar, debris and other foreign matter. Free clogged conduits of all obstructions, or replace, prior to pulling wire.
- L. Boxes: Install all outlet, pull and junction boxes rigidly, plumb and level. Support and secure boxes independently from conduits terminating at box. Install boxes so as to be accessible and so that covers may be easily removed.

3.14 BUILDING WIRE

- A. Minimum Wire Size: All branch circuit wiring shall be minimum #12 AWG. All control circuit wiring shall be minimum #14 AWG. Provide larger sizes as indicated or required.
- B. Branch Circuit Wire Sizes: Provide branch circuit wire sizes as indicated. Neutral wire sizes to match respective phase wire sizes unless indicated otherwise.
- C. Common Neutral: For branch circuit homeruns with two or three single-pole circuits (of different phases) common neutral may be not used, unless indicated otherwise. Provide separate neutral for each phase.
- D. Combining Homeruns: Do not combine separately indicated homeruns in single conduit unless specifically accepted by the Engineer.

- E. Switch Legs: Provide branch circuit switch legs and travelers as required for the switching indicated.
- F. Equipment Grounding Conductor Required: For each branch circuit run, provide an equipment grounding conductor, sized per NEC 250-95 (minimum, larger if so indicated) whether indicated or not.

3.15 WIRING METHODS

- A. All wiring systems to be composed of individual 600 volt class wires installed in specified raceway systems, except as below.
- B. Type "MC" Cable is not allowed.

3.16 WIRE INSTALLATION

- A. General: Install all wires, cables and associated items in compliance with all applicable requirements of the NEC, NEMA, UL and NECA's "Standards of Installation", and in accordance with the respective manufacturer's recommendations.
- B. Terminations: Furnish and install terminations, including lugs if necessary, to make all electrical connections indicated or required. Enclose all strands of stranded conductors in connectors and lugs.
- C. Tightening: Tighten all connectors, lugs, screws, bolts, Allen-heads and other electrical fasteners to torque values per manufacturer's written instructions.
- D. Restrictions: Do not substitute smaller wires with higher temperature rated insulations in lieu of the wires shown on the Drawings.
- E. Color Code: Color code all branch circuit wires as follows:
 - 1. Colors for 208/120-V Circuits:
 - a. Phase A: Black.
 - b. Phase B: Red.
 - c. Phase C: Blue.
 - 2. Colors for 480/277-V Circuits:
 - a. Phase A: Brown.
 - b. Phase B: Orange.
 - c. Phase C: Yellow.
 - 3. Field-Applied, Color-Coding Conductor Tape: Apply in half-lapped turns for a minimum distance of 6 inches from terminal points and in boxes where splices or taps are made. Apply last two turns of tape with no tension to prevent possible unwinding. Locate bands to avoid obscuring factory cable markings.
 - a. Equipment Grounding Conductors: Green.

3.17 WIRING DEVICES

- A. Switches and Receptacles: Install single-pole and double-pole switches so that the circuit is on when the switch handle is up. Install receptacles with ground pin down when mounted vertically.
- B. Coverplates: Provide coverplate for each wiring device or group of devices. Where devices are shown adjacent (e.g. bank of light switches), mount all such adjacent devices under on multi-gang coverplate, unless indicated otherwise.

3.18 EQUIPMENT CONNECTIONS

- A. General: Connect complete, all equipment requiring electrical connections, furnished as part of this Contract or by others, unless indicated otherwise.
- B. Equipment Variations: Note that equipment sizes and capacities as shown on the Contract Documents are for bidding purposes and as such may not be the exact unit actually furnished. Contractor shall anticipate

minor variations in equipment and shall include in his Bid all costs required to properly connect the equipment actually furnished.

- C. Verification: Obtain and review product data, shop drawings, and manufacturer's written installation instructions for equipment furnished by others. Examine actual equipment to verify proper connection locations and requirements.
- D. Coordination: Sequence electrical rough-in and final connections to coordinate with the installation and start-up schedule and work by other trades.
- E. Rough-In: Provide all required conduit, boxes, fittings, wire, connectors and miscellaneous accessories, etc. as necessary to rough-in and make final connections to all equipment requiring electrical connections.
- F. Motors and Equipment: In general, motors and motorized equipment shall be wired in conduit to a junction box (or safety switch) near the unit and from there to the unit in liquid-tight flexible metal conduit.
- G. Connections: Provide properly sized overload and short circuit protection for all equipment connected, whether furnished under this Contract or by others. Verify proper connections with manufacturer's published diagrams and comply with same. Report any discrepancies between the Contract Documents and actual equipment requirements. Do not proceed with connections until resolved. Verify that equipment is ready for electrical connections, wiring and energization, prior to performing same.

3.19 HANGERS AND SUPPORTS

- A. General: Rigidly support and secure all electrical materials, raceway and equipment to building structure using hangers, supports and fasteners, suitable for the use, materials and loads encountered. Provide all necessary hardware.
- B. Overhead Mounting: Attach overhead mounted equipment to structural framework or supporting metal framework. Do not make attachments to steel roofing, steel flooring or ceiling mineral tile.
- C. Wall Mounting: Support wall mounted equipment by masonry, concrete block, metal framing or sub-framing.
- D. Structural Members: Do not cut, drill or weld any structural member except as specifically accepted by the Project Architect.
- E. Independent Support: Do not support electrical materials or equipment from other equipment, ductwork or supports for same.
- F. Raceway Support: Rigidly support all raceways and cables from buildings structure, with maximum spacings per NEC, and so as to prevent distortion of alignment during pulling operation. Use acceptable hangers, clamps and straps for individual raceway runs. Do not use perforated straps or tie wires. Do not support electrical raceways, cables or other electrical materials from equipment of any trade or from ceiling support wires.
- G. Miscellaneous Supports: Provide any additional structural support steel brackets, angles, fasteners and hardware as required to adequately support all electrical materials and equipment.

3.20 ELECTRICAL IDENTIFICATION

- A. General: Located nameplate, marking or other identification means on outside of front covers when above ceilings, when in mechanical or electrical equipment rooms, and when in other unfinished areas. Locate on inside of front cover when in finished rooms/areas. Use Contract Document designations for identification legends unless indicated otherwise.
- B. NEC Required Identification: Provide all equipment identification, warning signs, etc. as required by the NEC.
- C. Manufacturer Supplied Equipment Nameplates: Provide equipment nameplates and markings, with all information as required by NEMA and UL.
- D. Marking Pen Labeling: Mark each junction and pull box indicating source designation and circuit number(s) for the enclosed conductors.

- E. Engraved Nameplates: Provide nameplate for each new panelboard and enclosed circuit breaker. For circuit breakers, indicate load served.
- F. Panelboard Circuit Directories: At Completion of project, provide new circuit directory card, and accurately complete (typewritten format) the circuit directory card for each new panelboard and each existing panelboard where circuits were modified, added or deleted as part of this Project, so as to accurately reflect final conditions.

3.21 GROUNDING

- A. General: Provide all system and equipment grounding as indicated and as required by the NEC.
- B. Equipment Grounding: Provide a green equipment grounding conductor, sized per NEC 250-95 (larger if so indicated) with each feeder and branch circuit run.

3.22 PANELBOARDS AND CIRCUIT BREAKERS

- A. Secure rough-in boxes to building structure or steel framing, independently from conduits. Neatly train all wiring in gutter spaces and terminate at circuits indicated.
- B. Install panelboards and enclosures where indicated, in accordance with the manufacturers' written instructions, applicable requirements of the NEC and NECA's "Standard of Installation", and in compliance with recognized industry practices to ensure that products fulfill requirements.
- C. Coordinate the installation of panelboards and enclosures with cable and raceway installation work.
- D. Provide all required electrical connections within the enclosure.
- E. Fill out typewritten panelboard circuit directory cards upon completion of the installation work.

3.23 SAFETY SWITCHES

- A. Manufacturer: Use only one manufacturer for all safety switches on the project.
- B. Type and Ratings: Provide non-fused safety switches unless specifically noted fused and ratings as indicated. If ratings are not indicated, provide switch with ratings to suit the system voltage and load served.
- C. Enclosure Type: Provide NEMA-1 unless indicated otherwise. Provide NEMA-3R enclosures in exterior or damp locations, NEMA-4x enclosures in wet locations including kitchen areas and locations at grade in vicinity of vehicle traffic and other enclosure types as indicated or required to suit the application.
- D. Mounting: Mount safety switches where indicated and on wall or column adjacent to unit served or directly to unit or supporting framework, where applicable.

3.24 MOTOR CONTROLLERS

- A. General: Install and connect as indicated or required. Wall-Mounted Controllers: Install enclosed controllers on walls with tops at uniform height unless otherwise indicated, and by bolting units to wall or mounting on lightweight structural-steel channels bolted to wall.
- B. Temporary Lifting Provisions: Remove temporary lifting eyes, channels, and brackets and temporary blocking of moving parts from enclosures and components.
- C. Install fuses in each fusible-switch enclosed controller.
- D. Install fuses in control circuits if not factory installed. Comply with requirements in Division 26 Section "Fuses."
- E. Install heaters in thermal overload relays. Select heaters based on actual nameplate full-load amperes after motors have been installed.
- F. Install, connect, and fuse thermal-protector monitoring relays furnished with motor-driven equipment.

3.25 LIGHTING FIXTURES

- A. General: Provide all necessary accessory fittings, hangers, clamps, brackets, yokes, plaster flanges, outlet boxes, and miscellaneous devices required for a complete installation as recommended by the fixture manufacturer.
- B. Mounting and Support: Securely support and/or suspend all lighting fixtures from structural members of building, except that lay-in, flange, and high hat fixtures may be supported by the ceiling grid system. Secure fixtures to the ceiling framing members per NEC 410-16(C). Secure troffers to ceiling tees twice along each long side of troffer.
- C. Mounting Heights: Suspend pendant mounted lighting fixtures at heights indicated, measured from finished floor to bottom of fixture enclosure or reflector unless noted otherwise. Install wall mounted fixtures at heights indicated measured from finished floor to center of fixture outlet box unless noted otherwise.
- D. Recessed Lighting Fixtures: Provide flexible connections to all recessed lighting fixtures as required by the NEC and in accordance with acceptable wiring methods.
- E. Install lighting fixtures in accordance with fixture manufacturer's written instructions, applicable requirements of the NEC, NECA's "Standard of Installation", NEMA standards, and with recognized industry practices to ensure that lighting fixtures fulfill requirements.
- F. Coordinate with other electrical work as appropriate to properly interface installation of lighting fixtures with other work.
- G. Adjust and Clean: Clean lighting fixtures of dirt and debris upon completion of the installation. Protect installed fixtures from damage during the remainder of the construction period.

3.26 LIGHTING CONTROLS

- A. Install lighting controls in accordance with manufacturer's written instructions.

3.27 CHECKOUT, TESTING AND ADJUSTING

- A. General: Checkout and perform all test procedures and adjustments required by the respective manufacturer's written instructions or recommendations, the Contract Documents, and/or deemed necessary by the Architect/Engineer to establish proper performance and installation of all electrical systems and equipment. After testing, correct any deficiencies, and replace materials and equipment shown to be defective or unable to perform at design or rated capacity. Re-test without additional cost to the Owner or Contract.

3.28 CLEANING AND TOUCH-UP PAINTING

- A. General Cleaning: Periodically remove from the Project site, all waste, rubbish and construction debris accumulated from construction operations, and maintain order. The premises shall be left clean and free of any debris and unused construction materials, prior to Owner's acceptance.
- B. Electrical Equipment: Remove all dust, dirt, debris, mortar, wire scraps, rust and other foreign materials from the interior and exterior of all electrical equipment and enclosures, and wipe down. Clean accessible current carrying elements and insulators prior to energizing.
- C. Lighting Fixtures: Thoroughly clean all lighting fixtures and lamps, just prior to final inspection. Fixture housings, reflectors, lenses, etc. shall be cleaned free of any dust, dirt, fingerprints, etc. by an acceptable method.
- D. Touch-Up Painting: Restore and refinish to original condition, all surfaces of electrical equipment scratched, marred and/or dented during shipping, handling or installation. Remove all rust and prime and paint as recommended by the manufacturer.

END OF SECTION 260000

SECTION 312301 - EXCAVATION, BACKFILL, AND COMPACTION (BUILDING AREA)

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.
 - 1. Refer to Division 1 for applicable local codes and regulations.

1.2 DESCRIPTION OF WORK

- A. This section pertains to an area bounded by 20-feet-minimum outside of and parallel to the exterior walls of the building, including other structures attached to the building.
- B. This work includes the following:
 - 1. Preparing subgrade for building slabs, walks, and pavements.
 - 2. Preparing subbase for support of building slabs.
 - 3. Excavating and backfilling for building structure.
 - 4. Excavating and backfilling of trenches within building lines.
 - 5. Excavating and backfilling for underground mechanical and electrical utilities and buried mechanical and electrical appurtenances shall be by the Trade Contractor requiring such work and shall be in accordance with the provisions of this section.
 - 6. Final grading and placement and preparation for topsoil for lawns and planting are specified in Division 310000 – Site Earthwork.

1.3 QUALITY ASSURANCE

- A. Comply with: New York State Department of Transportation (NYSDOT) "Standard Specifications for Construction and Materials."
- B. Routine testing of existing soils and compacted material for compliance with these specifications will be performed as part of Special Inspections.
 - 1. Compacted material not meeting density requirements shall be removed or recompacted and retested at Contractor's expense.

1.4 SPECIAL INSPECTIONS

- A. Refer to Specification Section 014533 and Schedule of Special Inspections.

1.5 MATERIAL EVALUATION/QUALITY CONTROL

- A. Preconstruction Testing: Contractor shall employ Testing Agency acceptable to Engineer and Architect to perform the following services:
 - 1. Test materials proposed for use by Contractor to verify specified requirements.
 - a. Determine optimum moisture at which maximum density can be obtained in accordance with ASTM D 1557, Modified Proctor.
 - b. Perform particle size analysis in accordance with ASTM D 422.

- B. Submit Testing Agency qualifications demonstrating experience with similar types of projects.
- C. The RDP for Geotechnical Engineering shall perform the following:
 - 1. Identify soils requiring undercutting and replacement while observing proof rolling and when subgrade is exposed.
 - 2. Verify footing bearing strata.
 - 3. Review and accept materials proposed by Contractor for use as compacted fill based on test data and information submitted by preconstruction Testing Agency. Architect shall coordinate review of submittals.
 - 4. Observe and accept filling and compaction procedures.
 - 5. Review and approve preparation of slab-on-grade subgrade and subbase.
- D. Geotechnical Engineer shall submit copies of reports to Special Inspector, Engineer, Architect, Construction Manager, and Contractor. Include date of site visit, description of work observed, and summary of observations and recommendations.

1.6 SUBMITTALS

- A. Submit to RDP for Geotechnical Engineering:
 - 1. Gradations for proposed fill materials and mix design proposed for flowable fill at least 15 days before start of backfilling. Flowable fill submittal shall include ASTM C 1260 test results.
 - 2. Product data, specifications, and installation instructions for proprietary materials.
 - 3. Material certifications for products specified to conform with NYSDOT references and ASTM references.
- B. Prior to placement of slab on grade, submit to Special Inspector and RDP for Structural Engineering a written protection program for vapor retarder, slab subbase, and slab on grade for record only.

1.7 DEFINITIONS

- A. Excavation: Removal of material encountered to subgrade elevations indicated and subsequent disposal of materials removed.
- B. Unauthorized Excavation: Removal of materials beyond indicated subgrade elevations or dimensions without specific direction of Architect. Unauthorized excavation and remedial work directed by Architect shall be at Contractor's expense.
 - 1. Under footings, foundation bases, or retaining walls, fill unauthorized excavation by extending indicated bottom elevation of footing or base to excavation bottom without altering required top elevation. Lean concrete may be used to bring elevations to proper position when acceptable to Architect.
 - 2. In locations other than those above, backfill and compact unauthorized excavations as specified for authorized excavations of same classification unless otherwise directed by Architect.
- C. Additional Excavation: If RDP for Geotechnical Engineering determines bearing materials at required subgrade elevations are unsuitable, continue excavation until suitable bearing materials are encountered. Replace excavated material as directed by Geotechnical Engineer.
 - 1. Removal of unsuitable material and replacement as directed will be paid on basis of conditions of contract relative to changes in work.
- D. Subgrade: Undisturbed earth or compacted soil layer immediately below granular subbase, base of structure, or topsoil materials.
- E. Structure: Buildings, foundations, slabs, tanks, curbs, or other man-made stationary features occurring above or below ground surface.

1.8 PROJECT CONDITIONS

- A. Site Information: Subsurface investigation reports were used for basis of design and are available to Contractor for information only. Conditions are not intended as representations or warranties of accuracy or continuity between soil borings. Owner will not be responsible for interpretations or conclusions drawn from this data by Contractor.
 - 1. Additional test borings and other exploratory operations may be performed by Contractor at Contractor's option; however, no change in contract sum will be authorized for additional exploration.
- B. Existing Utilities: Locate existing underground utilities in work area before starting earthwork operations. Where utilities are to remain in place, provide adequate means of protection during earthwork operations.
 - 1. If uncharted or incorrectly charted piping or other utilities are encountered during excavation, consult with utility owner and Architect immediately for directions. Cooperate with Owner and public and private utility companies to keep services and facilities in operation. Repair damaged utilities as required by utility owner.
 - 2. Do not interrupt existing utilities serving facilities occupied by Owner or others during occupied hours except when permitted in writing by Architect and then only after acceptable temporary utility services have been provided.
 - a. Provide minimum 48-hours notice to Architect and receive written notice to proceed before interrupting utilities.
 - 3. Demolish and remove from site existing underground utilities indicated to be removed. Coordinate with utility companies for shutoff of services if lines are active.
- C. Use of Explosives: Do not bring explosives onto site or use in work.
- D. Protection of Property: Protect structures, utilities, sidewalks, pavements, and other facilities from damage caused by settlement, lateral movement, undermining, washout, and other hazards created by earthwork operations.
 - 1. Precondition Survey: Contractor shall perform a precondition survey of structures adjacent to planned excavation and foundation installation and submit to Architect for review. Survey shall include description and photographs of adjacent buildings, clearly identifying benchmarks relative to datum level sufficiently distant so as not be affected by project operations. Contractor shall be responsible for making repairs to existing structures to the Owner's satisfaction for damage caused by construction activities not in conformance with these specifications.
 - 2. Perform excavation by hand within drip line of large trees to remain. Protect root systems from damage and from drying out to greatest extent possible. Maintain moist condition for root system, and cover exposed roots with moistened burlap.

1.9 PRODUCT HANDLING

- A. Store materials so as to preserve their quality and fitness for work.

1.10 WORKMANSHIP

- A. Contractor shall be responsible for correction of work not conforming to specified requirements. Correct deficient work as directed by Architect.
- B. Remove work found to be defective. Replace with new acceptable work.

PART 2 - PRODUCTS

2.1 MATERIALS

- A. General Fill Material: Soil materials free of clay, rock or gravel larger than 3 inches in any dimension, debris, waste, frozen materials, vegetation, and other deleterious matter.
- B. Flowable Fill Material: Cementitious, flowable, excavatable, backfill material having a compressive strength of 50 to 100 pounds per square inch (psi) at 28 days. Provide mix that minimizes shrinkage and is non-expansive.
- C. Structural Fill: Imported, clean, sound and durable sand, gravel, crushed stone, and crushed gravel, free of deleterious materials such as pyritic shale, organics, or contaminants of a chemical, mineral, or biological nature and conforming to New York State Department of Transportation, paragraph 304-2.02, Type 2 and the following limits of gradation:

Sieve		Percent Passing
Sieve Size	Size opening (mm)	
2 inch	50.80	100
1/4 inch	6.35	25 – 60
No. 40	0.42	5 – 40
No. 200	0.074	0 – 10

- D. Subbase Material: Free draining crushed stone, free of organic and other deleterious materials, conforming to ASTM C33, Size 57, or New York State Department of Transportation, paragraph 733-20, Underdrain Filter Type 1, and the following gradation limits:

Sieve		Percent Passing
Sieve Size	Size opening (mm)	
1 inch	25.40	100
1/2 inch	12.70	30 – 100
1/4 inch	6.35	0 – 30
No. 40	0.42	0 – 10
No. 200	0.074	0 – 5

- E. Drainage Fill: Washed crushed stone or crushed or uncrushed gravel conforming to NYSDOT Section 703-02, Table 703-4, Size 2.
- F. Cushion Sand: Comply with requirements of NYSDOT Section 703-06.
- G. Bedding: Comply with the requirements of NYSDOT Section 703-02, material requirements, crushed stone 703-0201, size No. 2.
- H. Filter Fabric: "Geotex 351" by Propex Geosynthetics; "Mirafi 140N" by Mirafi, Inc.; or accepted equivalent.
- I. Soil Stabilization Geotextile: "Geotex 315ST" by Propex Geosynthetics; "Mirafi 600X" by Mirafi, Inc.; or accepted equivalent.
- J. Excavated Materials: Do not use as structural fill or subbase material. Do not use as general fill material unless accepted by Geotechnical Engineer.
- K. Vapor Retarder: Provide vapor retarder cover over proof rolled subgrade where indicated below slabs on grade. Use only materials that are resistant to deterioration when tested in accordance with ASTM E 154 as follows:
 - 1. Polyolefin not less than 15 mils thick, in compliance with ASTM E 1745 Class A and with a perm rating less than 0.02 perms. "Stegowrap 15 mil Class A" by Stego Industries LLC; "Moistop Ultra 15"

- by Fortifiber Building Products; "Griffolyn 15 Mil Green" by Reef Industries, Inc.; or "Vapor Block 15" by Raven Industries.
2. Provide manufacturer's-recommended, pressure-sensitive/water-resistant seam tape and mastic for vapor retarder selected.

PART 3 - EXECUTION

3.1 JOB CONDITIONS

- A. Examine substrates and conditions under which work shall be performed. Do not proceed with work until unsatisfactory conditions are corrected.
- B. Maintain drainage and restrict traffic within building area during construction to maintain integrity of subgrade. Failure to observe these precautions will require Contractor to remove disturbed areas and correct at his expense.

3.2 COLD-WEATHER PROTECTION

- A. Protect excavation bottoms against freezing when atmospheric temperature is less than 35 degrees F.

3.3 REMOVALS

- A. Clear, grub, and strip site of vegetation, topsoil, and other organic materials.
- B. Remove brick fragments and other construction debris. Plow-strip or break up sloped surfaces steeper than 1 vertical to 4 horizontal so fill material can bond with existing surface.
 1. When existing ground surface has a density less than that specified for a particular area classification, break up ground surface, pulverize, moisture-condition to optimum moisture content, and compact to required depth and percentage of maximum density.
- C. Removal from Owner's Property: Remove waste materials, including unacceptable excavated material, trash, and debris. Legally dispose off Owner's property.

3.4 PROOF ROLLING

- A. Following stripping and removing miscellaneous fill, grade and compact exposed subgrade. Proof roll subgrade by making a minimum of four passes across building area in each direction using a roller having static weight of 10 tons minimum or a fully-loaded dump truck in open areas, or a 1.5-ton trench roller where access is confined.
- B. Undercut unsuitable materials or soft spots that develop during proof rolling and replace with compacted structural fill. Contractor shall be paid for this work on unit cost basis.
- C. Do not perform proof rolling on saturated soils or in areas having freestanding water until they are dewatered and allowed to dry.
- D. Do not perform proof rolling during or immediately after periods of inclement weather.

3.5 EXCAVATION

- A. Excavation shall be considered unclassified and understood to mean all materials encountered during excavation. Trenches in excess of 10 feet in width and pits in excess of 30 feet in either length or width are classified as open excavation.

- B. Excavations shall be laid back or sheeted and braced to prevent sloughing in of sides. Maintain sides and slopes of excavations in stable condition until completion of backfill. Incline cut slopes no steeper than permitted by OSHA standards for excavations in soil type(s) encountered.
- C. Hand trim foundation excavations to remove loose soil or ridges of materials left by equipment.
- D. Keep loose material and debris out of excavations.
- E. Shoring and Bracing: Provide materials for shoring and bracing, including sheet piling, uprights, stringers, and cross braces, in good serviceable condition. Maintain shoring and bracing in excavations regardless of time period excavations will be open. Extend shoring and bracing as excavation progresses.
 - 1. Provide permanent steel sheet piling or pressure-creosoted timber sheet piling wherever subsequent removal of sheet piling might permit lateral movement of soil under adjacent structures. Cut off tops minimum 2 feet 6 inches below final grade, and leave permanently in place.

3.6 DEWATERING

- A. Dewatering activities shall conform to Stormwater Pollution Prevention Plan (SWPPP) implemented by site operator if required as a condition of construction permit.
- B. Dewatering may be required after times of heavy rain or for excavations extending below approximately elevation 298 feet. Perform dewatering in a manner that will prevent loosening or migration of the subgrade soils. Maintain water level at least one foot below the deepest excavation.
- C. Perform excavation and filling in manner and sequence to provide proper drainage at all times.
- D. It is anticipated that sump pits and pumps will be suitable for dewatering. Sump pits shall be placed at least one foot outside of foundation excavations for every foot below the foundation subgrade elevation. Do not operate sumps directly below footing excavations.
- D. Prevent surface water and subsurface or groundwater from flowing into excavations and from flooding project site and surrounding area.
 - 1. Do not allow water to accumulate in excavations. Remove water to prevent softening of foundation bottoms, undercutting of footings, and soil changes detrimental to stability of subgrades and foundations. Provide and maintain pumps, well points, sumps, suction and discharge lines, and other dewatering system components necessary to convey water away from excavations.
 - 2. Establish and maintain temporary drainage ditches and other diversions outside excavation limits to convey rainwater and water removed from excavations to collecting or runoff areas. Do not use trench excavations as temporary drainage ditches.
- E. Dewatering system shall be designed by a New York State Licensed Professional Engineer. Design shall ensure that dewatering does not result in loss of soil.
- F. A petroleum odor was detected in some soil borings at depths of 6 to 8 feet below existing grade. This is expected to be below the elevation of excavations for building foundation. Contractor shall notify Architect if a petroleum odor is detected during dewatering. Effluent may need to be treated.

3.7 STORAGE OF EXCAVATED MATERIALS

- A. On-site storage of excavated materials shall conform to Stormwater Pollution Prevention Plan (SWPPP) implemented by site operator if required as condition of construction permit.
- B. Stockpile excavated materials acceptable for reuse. Place, grade, and shape stockpiles for proper drainage.
 - 1. Locate and retain soil materials away from edges of excavations. Do not store within drip lines of trees indicated to remain.

2. Dispose of excess excavated soil material and materials not acceptable for use as general fill.

3.8 TRENCH EXCAVATION FOR PIPES AND CONDUIT

- A. Excavate trenches to uniform width sufficiently wide to provide ample working room and minimum of 6 to 9 inches of clearance on both sides of pipe or conduit.
- B. Do not locate trenches that are deeper than adjacent footings closer horizontally to footing than vertical distance separating bottom of trench and bottom of footing.
- C. Excavate trenches and conduit to depth indicated or required to establish indicated slope and invert elevations and to support bottom of pipe or conduit on undisturbed soil. Beyond building perimeter, excavate trenches to allow installation of top of pipe below frost line.
 1. Where rock is encountered, carry excavation 6 inches below required elevation and backfill with a 6-inch layer of bedding prior to installing pipe.
 2. For pipes or conduit less than 6 inches in nominal size and for flat-bottomed, multiple-duct conduit units, do not excavate beyond indicated depths. Hand-excavate bottom cut to accurate elevations and support pipe or conduit on undisturbed soil.
 3. For pipes and equipment 6 inches or larger in nominal size, shape bottom of trench to fit bottom of pipe for 90 degrees (bottom 1/4 of the circumference). Fill depressions with bedding or tamped cushion sand backfill. At each pipe joint, dig bell holes to relieve pipe bell of loads to ensure continuous bearing of pipe barrel on bearing surface.

3.9 VAPOR RETARDER INSTALLATION

- A. General: Do not begin installation of vapor retarder and slab subbase until protection is in place. See requirements in Section 033020. Following leveling and proof rolling of subgrade, place vapor retarder sheeting with longest dimension parallel with the direction of subbase placement.
- B. Install vapor retarder in accordance with ASTM E 1643, manufacturer's instructions, and as follows:
 1. Lap joints 6 inches, and seal vapor retarder joints with manufacturer- recommended seam tape.
 2. Extend vapor retarder up walls and penetrations 4 inches minimum.
 3. Seal vapor retarder to walls and penetrations with manufacturer-recommended mastic to form continuous barrier.
 4. Repair damaged areas by cutting patches of vapor retarder material and placing to overlap damaged areas by 6 inches each side. Seal each side of patch with seam tape.
- C. After vapor retarder placement, cover with slab subbase and compact as specified to depth shown in drawings.
- D. Do not allow subbase material to become wet prior to or after slab placement.

3.10 FILLING, BACKFILLING, AND COMPACTION

- A. Do not place fill material on surfaces that are muddy, frozen, or contain frost or ice.
- B. Place soil stabilization geotextile below structural fill where shown in drawings after subgrade has been approved and before placement of fill material.
- C. Use structural fill to increase grades within building areas, as interior backfill against foundations and in trenches, as exterior backfill against walls with footing drains and as exterior backfill where pavement or walkways abut building.
- D. Contractor may use flowable fill to increase grades and as interior backfill against foundations and in trenches. Allow fill to cure for at least 7 days before setting forms for concrete foundations or placing slab on grade.

- E. Use subbase material directly below slabs and pavements as shown in drawings.
- F. Use general fill material to increase grades outside building area except as otherwise specified.
- G. Use drainage fill around footing drains as detailed in drawings. Wrap drainage fill with filter fabric.
- H. Backfill trenches with concrete where trench excavations pass within 18 inches of column or wall footings and are carried below bottom of such footings or pass under wall footings. Place concrete to level of bottom of adjacent footing.
- I. Backfill trenches with concrete or flowable fill where trench excavations pass within 18 inches of and are carried below bottom of installed or existing grade beams or pile caps or that pass under grade beams. Place concrete to level of bottom of adjacent grade beam.
- J. Backfill foundation excavations as soon as possible following construction of foundations and foundation walls.
- K. Backfill and fill against foundation walls evenly on both sides to prevent displacement of construction. For walls with fill on one side only, do not backfill until concrete has achieved 70 percent of its design strength and walls have been braced.
- L. Begin filling in lowest section of area.
- M. Place fill materials in layers not to exceed a loose lift thickness of 12 inches in open areas and 4 inches in confined areas. Limit lift thickness as necessary to ensure that adequate compaction is achieved with the compaction equipment used.
- N. Lifts or portions thereof not compacted in accordance with specifications shall be recompact or removed and replaced to meet compaction requirements.
- O. Percentage of Maximum Density Requirements: Compact soil to not less than the following percentages of maximum density in accordance with ASTM D 1557, Modified Proctor:
 - 1. Under structures, footings, foundations, building slabs, and steps: Compact top 12 inches of subgrade and each layer of fill material to 95 percent.
 - 2. Under pavements: Compact top 12 inches of subgrade and each layer of fill material to 95 percent.
 - 3. Subbase Material: Compact to 95 percent with moisture content no greater than 2 percent wet of optimum.
 - 4. Under walkways: Compact top 6 inches of subgrade and each layer of fill material to 95 percent.
 - 5. Under lawn or unpaved areas: Compact top 6 inches of subgrade and each layer of fill material to 90 percent.
 - 6. Cushion sand: Compact to 100 percent.
 - 7. Drainage fill: Density testing is not applicable. Compact each layer to minimize voids.
- P. Where a power roller is used for compaction, do not approach nearer than 10 feet from walls of new or existing construction. Compaction closer than this shall be performed with hand-operated compaction equipment.
- Q. Moisture Control: Where subgrade or layer of soil material must be moisture- conditioned before compaction, uniformly apply water to surface of subgrade or layer of soil material. Apply water in minimum quantity as necessary to prevent free water from appearing on surface during or subsequent to compaction operations.
 - 1. Remove and replace or scarify and air-dry soil material too wet to permit compaction to specified density.
 - 2. Stockpile or spread soil material that has been removed because it is too wet to permit compaction. Assist drying by discing, harrowing, or pulverizing until moisture content is reduced to satisfactory value.

3.11 TOLERANCES

- A. Excavation for structures shall conform to elevations and dimensions shown within a tolerance of plus or minus 0.10 foot except to facilitate drainage during construction stage.
- B. Surface of subbase under building slabs shall be graded smooth and even, free of voids, and rolled to required elevation. Provide final grades within tolerance of 1/2 inch when tested with 10-foot straightedge.

END OF SECTION 312301 (02/21)

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SECTION 321623 - SIDEWALKS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of contract, including General Conditions and Special Conditions and Division 1 specification sections, apply to this section.

1.2 DESCRIPTION OF WORK

- A. This section supplements Section 033000: Cast-In-Place Concrete, with specific emphasis on exterior concrete slabs on grade. The general requirements of Section 033000 pertain to this section unless otherwise specified in this section.

1.3 QUALITY ASSURANCE

- A. Reference Standards:
 - 1. ACI 302 "Guide for Concrete Floor and Slab Construction."
- B. Provide protection from precipitation for the vapor retarder and slab subbase prior to slab-on-grade placement. Provide protection for the slab on grade from direct exposure to the sun, wind, precipitation, and excessive cold or hot temperatures starting during placement and lasting until the end of the curing period.
 - 1. After the curing period, provide protection from precipitation for any slab openings (i.e., column block-outs, mechanical block-outs, expansion/isolation joints, etc.) to prevent moisture from entering the slab subbase.
 - 2. The Contractor shall be responsible for the cost of repairing slab defects resulting from deficient protection methods.
 - 3. One method includes installing the roof membrane and roof drains prior to installing the vapor retarder, slab subbase, and slab on grade.

1.4 SUBMITTALS

- A. Comply with Section 033000.
- B. Submit Option for Slab Placement (see Part 3 of this section) and layout of slab joints.
- C. Prior to slab placement, submit to the Special Inspector and Engineer for information only a written protection program for the vapor retarder, slab subbase, and slab on grade.

PART 2 - PRODUCTS

2.1 STEEL REINFORCEMENT AND ACCESSORIES

- A. Reinforcement: ASTM A 615, Grade 60 for uncoated deformed bars.
 - 1. ASTM A 775 for epoxy-coated, deformed bars.

2. Coatings (epoxy) applied after fabrication and bending.
- B. Epoxy Repair Coating: Liquid, two-part, epoxy repair coating; compatible with epoxy coating on reinforcement and complying with ASTM A 775.
- C. Supports for Reinforcement: Use wire bar-type supports complying with CRSI specifications. Use chairs with sand plates or horizontal runners where base material will not support chair legs.
 1. Concrete bricks may be used to support reinforcing. Stagger brick locations.
 - a. Do not use clay bricks.
 - b. Do not use bricks to support epoxy-coated reinforcing.
 2. Supports for epoxy-coated reinforcing shall be either wire bar-type coated with epoxy, plastic, or vinyl compatible with concrete for minimum distance of 2 inches from point of contact with reinforcing or all plastic-type.
 3. Finish (epoxy-coated) for supports formed from reinforcing bars shall match finish of supported reinforcing.
- D. Minimum 16-gauge annealed tie wire, ASTM A 82.
- E. Deformed-Steel Wire: ASTM A 496/A 496M.
- F. Epoxy-Coated Wire: ASTM A 884/A 884M, Class A, Type 1 coated, plain steel wire, with less than 2 percent damaged coating in each 12-inch wire length.
 1. Provide coated wire ties for use with epoxy-coated or galvanized bars. Acceptable coatings include epoxy, nylon, or vinyl. Galvanized wire ties may be used with galvanized bars. Do not use plain wire ties.

2.2 CONCRETE MATERIALS

- A. Portland Cement: ASTM C 150. Type II or Type I/II only.
- B. Reinforcement: ASTM A 615, Grade 60 for uncoated deformed bars.
 1. ASTM A 775 for epoxy-coated, deformed bars.
- C. Fly Ash: ASTM C 618, Type F, with loss on ignition of less than 6 percent.
- D. Ground-Granulated, Blast-Furnace Slag: ASTM C 989, Grade 100 or 120.
- E. Water: Clean, fresh, drinkable.
- F. Aggregates: NYSDOT-approved, Section 703-02 (normal weight) one source and as herein specified.
 1. Fine Aggregate: Coarse, clean, sharp, uniformly graded natural sand free of loam, clay, lumps or other deleterious substances; less than 10 percent passing the No. 100 sieve and less than 3 percent passing the No. 200 sieve.
 2. Coarse Aggregate: Uniformly graded to 1-1/2 inches, clean, processed, crushed stone with low absorption and free of flat/elongated particles. NYSDOT-approved, Size 3A gravel can be used to meet the large diameter requirement. Gradation similar to blended NYSDOT Type CA 2 and Size 1A or ASTM C 33 Type 57 and Type 8, blended and modified as follows:

Sieve Size	Percent Passing
1 inch	95 to 98.5
3/4 inch	75 to 94
1/2 inch	25 to 50
3/8 inch	10 to 25
No. 4	0 to 10

2.3 ADMIXTURES

- A. Air Entraining: ASTM C 260.
- B. Set-Control Admixtures: Not permitted.
- C. Calcium Chloride: Not permitted.
- D. Water-Reducing Admixture: "Eucon WR-75" or "Eucon WR-91" by Euclid Chemical Co.; "MasterPozzolith 200" by Master Builders; or "Plastocrete 161" by Sika Chemical Corp. Admixture shall conform to ASTM C 494, Type A, and not contain more chloride ions than in municipal drinking water.
- E. Mid-Range, Water Reducer/Finish Enhancer: ASTM C 494, Type A/F. "Daracem 55" or "Daracem 65" by W.R. Grace or accepted equivalent.

2.4 RELATED MATERIALS

- A. Premolded Joint Filler: Provide resilient and nonextruding, premolded, bituminous fiberboard units complying with ASTM D 1751; 1/2-inch-thick, full slab depth.
- B. Construction Joint Form: Square edge form only. Keyed joint not permitted.
- C. Polyurethane Joint Sealant for Exterior Slabs: "Sikaflex-2c SL" by Sika; "MasterSeal SL2" by Master Builders; "Eucolastic 2 SL" by Euclid Chemical Co.; "Urexpan NR-200" by Pecora Corporation; or accepted equivalent.
- D. Absorptive Cover: Burlap cloth made from jute or kenaf, weighing approximately 9 ounces a square yard and complying with AASHTO M 182, Class 2.
- E. Curing-Sheet Materials: ASTM C 171; waterproof paper, polyethylene film, or polyethylene-coated burlap.
- F. Penetrating Exterior Anti-Spalling Sealer: "Euco-Guard 100" by Euclid Chemical Co. (mixed to 17.5 percent concentration); "MasterProtect H400" by Master Builders; "Aquapel Plus" by L&M Construction Chemicals; or accepted equivalent.
- G. Evaporation Retarder: Monomolecular, film-forming compound applied to exposed concrete slab surfaces for temporary protection from rapid moisture loss. "Aquafilm J74RTU" by Dayton Superior; "Eucobar" by Euclid Chemical Co.; "MasterKure ER 50" by Master Builders, Inc.; or accepted equivalent.
- H. Crack Repair Material: For cracks smaller than 1/8 inch, use "Sika Pronto 19" methacrylate by Sika; "Rapid Refloor" polyurea by Metzger McGuire; or accepted equivalent. For cracks greater than 1/8 inch, use specified joint filler material.
- I. Hardener: "Lapidolith" by Sonneborn Building Products or accepted equivalent for exposed slabs.

2.5 PROPORTIONING AND MIX DESIGN

A. CONCRETE QUALITY

Location	Required 28-Day Compressive Strength (psi)	Approximate Cementitious Materials Content (pounds)	Maximum Water/Cement Ratio	Percent Entrained Air
Exterior slabs on grade	4,500	611**	0.45	6*

*Plus or minus 1.5 percent.

**Maximum cement content 526 pounds plus 20 percent pozzolans by weight. Minimum cement content 488 pounds plus 20 percent pozzolans by weight.

- B. Slump: 5-inch maximum for normal and mid-range, water-reduced mixes.
- C. The quantity of coarse aggregate in pounds must be in the range of 1.25 to 1.5 times the quantity of fine aggregate in pounds. Provide a minimum of 1,800 pounds of coarse aggregate for each cubic yard of concrete.
- D. Pozzolans:
1. Pozzolans may be substituted for cement in normal-weight concrete, including fly ash, at a maximum rate of 20 percent by weight or ground-granulated, blast-furnace slag at a maximum rate of 35 percent by weight.
 2. Pozzolans shall be used at a rate of 20 percent by weight of total cementitious materials for exterior slabs.
 3. Submittals shall include actual mix design, including percentage of pozzolans and test results showing that mix meets specified 7-day compressive strength where indicated, 28-day compressive strength, and air content.
 4. Concrete containing pozzolans must be protected and heated during cold weather conditions. Protection and heat shall be maintained until 70 percent of specified design strength is achieved.
- E. Pumping of concrete is permitted only if mix designs specifically prepared and used previously for pumping are submitted. Mix designs not previously used for the anticipated pump line lengths shall be tested by Contractor to verify suitability for the project before use at the site. Pump line shall have a 5-inch-minimum inside diameter and shall be used with 5-inch pumps.

PART 3 - EXECUTION

3.1 GENERAL

- A. Examine conditions under which work shall be performed. Do not proceed with work until unsatisfactory conditions are corrected.

3.2 OPTION FOR SLAB PLACEMENT

- A. Contractor has two options for placement of slabs. Option 1 is to place slabs with construction and contraction joints as shown in drawings or other locations which do not impair slab strength or appearance. Option 2 is to place slabs without joints.
- B. Contractor shall submit option to be used and joint layout to Architect and Engineer for review.

3.3 PRECONCRETE PLACEMENT

- A. Just before concrete placement, the slab subbase shall be dry.
- B. Whenever possible, air temperature should be rising after concrete placement. Attempt to schedule slab placements according to favorable weather reports.
- C. Subgrade shall be frost-free.

3.4 EDGE FORMS AND SCREED STRIPS FOR SLABS

- A. Set edge forms, bulkheads, and intermediate screed strips for slabs to obtain required elevations and contours in finished slab surfaces. Provide secure edge forms or screed strips to support strike-off templates or compacting vibrating-type screeds. Wet screeding is not permitted.

3.5 REINFORCEMENT PLACEMENT

- A. Place slab reinforcing one-third of slab thickness below top surface of slab. Support reinforcement by metal chairs, runners, bolsters, or concrete brick as required.
- B. Dedicate workers to placement of reinforcement to continuously monitor and adjust location of reinforcement during concrete placement.
- C. Touch up damaged epoxy-coated reinforcement in field after placement with epoxy patching material provided by coating manufacturer.

3.6 ISOLATION JOINTS

- A. Construct isolation joints in slabs on grade at points of contact with vertical surface and elsewhere as indicated.

3.7 CONSTRUCTION JOINTS

- A. Locate and install construction joints that are not shown in drawings so as not to impair strength and appearance of structure as acceptable to Engineer.
- B. Continue bar reinforcement through construction joints.

3.8 CONTRACTION JOINTS

- A. Locate and install construction joints that are not shown in drawings so as not to impair strength and appearance of structure as acceptable to Engineer.
- B. Saw cut contraction joints as soon as possible after finishing, generally within 4 to 16 hours. Make sample cut to determine if concrete surface is firm enough so that it is not torn or damaged by the blade.
- C. Use soft-cut contraction joints. Depth of cut shall be one-fifth of the slab thickness with a minimum of 1 inch.
- D. Obtain permission from the Engineer if diamond blade cutting is to be used.
- E. Continue bar reinforcement through contraction joints.

3.9 PLACING CONCRETE SLABS

- A. A maximum of 2 1/2 gallons for each cubic yard of total mix design water can be added in field. This water must be added prior to discharging and testing the concrete. At no time shall the total water exceed the amount listed in the accepted mix design.
- B. Use strip pour methods and mechanical vibratory screed whenever possible.
- C. Deposit and consolidate concrete in a continuous operation within limits of construction joints until placing of panel or section is complete.
- D. Consolidate concrete during placing operations so that concrete is thoroughly worked around reinforcement and other embedded items and into corners.
- E. Bring slab surfaces to correct level with a straightedge and strike off. Uniformly slope to drains. Use darbies to smooth surface, leaving it free of humps or hollows. Do not sprinkle water or portland cement on plastic surface. Do not disturb slab surfaces before beginning finishing operations.
- F. Maintain reinforcement in proper position during concrete placement operations. See requirements for reinforcement placement.
- G. Slab thicknesses shown in drawings are the minimum allowable. Maximum allowable thickness shall be 1 inch greater than specified thickness.
- H. For floor areas with drains, Contractor shall be responsible for finishing of concrete slabs to proper elevations to ensure that surface moisture will drain freely to floor drains and that no puddle areas exist. It is the intent of the elevations shown in the drawings to create this situation. During finishing operation, Contractor shall make all efforts to obtain this.
- I. Cost of corrections to provide for positive drainage shall be responsibility of Contractor.

3.10 MONOLITHIC SLAB FINISHES

- A. Power Float Finish: Apply power float finish to slab surfaces which will subsequently be trowel finished or covered with waterproofing membrane. After screeding, consolidating, and leveling concrete slabs, do not work surface until ready for floating. Begin floating using float blade or float shoes when surface water has disappeared, when concrete has stiffened sufficiently to permit operation of power-driven floats, or both. Consolidate surface with power-driven floats or by hand-floating if area is small or inaccessible to power units. Check and level surface plane to overall tolerances of FF 18 and FL 13, and minimum local tolerances of FF 13 and FL 10. Cut down high spots and fill low spots. Uniformly slope surface to drains. Immediately after leveling, refloat surface to a uniform, smooth, granular texture.
- B. Trowel Finish: Apply trowel finish to monolithic slab surfaces to be exposed to view and slab surfaces to be covered with resilient flooring, carpet, ceramic or quarry tile, paint, or other thin-film finish-coating system. After floating, begin first trowel-finish operation using a power-driven trowel. Begin final troweling when surface produces a ringing sound as trowel is moved over surface. Consolidate concrete surface by final hand-troweling operation. Surface shall be free of trowel marks, uniform in texture and appearance, and leveled to an overall tolerance of FF 35 and FL 25 and a minimum local tolerance of FF 25 and FL 17 for exposed slabs and thin-set finishes and an overall tolerance of FF 25 and FL 20 and a minimum local tolerance of FF 17 and FL 13 for other finishes. Grind smooth surface defects that would telegraph through applied floor-covering system. Exposed surfaces are to be overtrowelled to "burn" the surface to a dense, hard, dark finish.
- C. Non-slip Broom Finish: Apply non-slip, heavy broom finish to all exterior concrete slab surfaces. Immediately after trowel finishing, roughen concrete surface by brooming with fiber bristle broom perpendicular to main traffic route. Coordinate required final finish with Architect before application.
- D. Delay finishing as long as possible. Allow bleed water to evaporate before finishing.

- E. Finish slabs to specified tolerances given. Patching of low spots shall not be permitted. Grinding shall be done as soon as possible, preferably within 3 days, but not until concrete is sufficiently strong to prevent dislodging coarse aggregate particles.

3.11 COLD-WEATHER CONCRETING

- A. Comply with Section 033000.
- B. Provide temporary heat with vented heaters only.
- C. Use foggers to maintain humidity at 50 percent minimum.

3.12 HOT-WEATHER CONCRETING

- A. Comply with Section 033000.

3.13 CURING AND PROTECTION

- A. Protect freshly placed slabs from premature drying and excessive cold or hot temperature. Maintain without drying at a relatively constant temperature for the period of time necessary for cement hydration and proper hardening.
- B. Cure exterior slabs completely by moist-curing using burlap absorptive cover, soaker hoses, and ponding for at least 7 days. Place absorptive cover to provide coverage of concrete surfaces and edges, with 4-inch lap over adjacent absorptive covers. Avoid rapid drying at end of curing period. Allow absorptive cover to remain an additional 3 days.
- C. Do not allow foot or other traffic over slabs during 7-day curing period.
- D. Cure slabs or pads a minimum of 14 days before placing equipment.
- E. Exterior Slabs:
 - 1. Apply penetrating exterior anti-spalling sealer to exterior concrete slabs according to manufacturer's directions.

3.14 JOINT SEALANT

- A. Install joint sealant in exposed construction, isolation, and contraction joints in accordance with manufacturer's recommendations.
- B. Clean joints thoroughly before applying sealant.
- C. Apply sealant after slabs have cured a minimum of 90 days.

3.15 REPAIR OF SURFACES

- A. Contractor shall be responsible for cost of repairing slab defects.
- B. Test surfaces for smoothness and level tolerances. Test uniform surfaces sloped to drain for trueness of slope.

- C. Correct flatness and levelness defects by grinding or removing and replacing slab. Patching low spots shall not be permitted. Repair areas shall be remeasured and accepted by Owner.
- D. Repair cracks only when slab is more than 90 days old. Use crack repair material. For cracks over 1/8 inch, fill crack with oven-dried sand prior to application of crack repair material as recommended by manufacturer. Contractor has option to remove and rebuild areas of cracking. Mask cracks to limit crack repair material to crack only.
- E. Repair curling only when slab is more than 90 days old.
- F. Curling at slab edges exceeding 1/8 inch when measured with a 10-foot straightedge shall be made level by grinding or planing. Straightedge shall be located with its end at the slab edge, and the space between the straightedge and the slab shall be measured.
- G. If curling exceeds 1/4 inch, level slab by grinding or planing as stated above. In addition, core-drill slab 10 inches from the joint at 2 foot intervals, alternating on each side of the joint, and inject non-shrink grout to fill void beneath slab.
- H. Repair edge spalls occurring from shrinkage cracking or from Contractor's operations with methods acceptable to Engineer.

END OF SECTION 033020