SED NO. 60-01-01-06-0-0-018-023

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VOLUME 1

WAVERLY CENTRAL SCHOOL DISTRICT

WAVERLY, NEW YORK

PROJECT NO. 339070-22003

ADDITIONS AND ALTERATIONS TO
WAVERLY JR/SR HIGH SCHOOL

MAY 19, 2023

The engineer that has signed this document certifies that to the best of their knowledge, information and belief, the asbestos plans and specifications are in accordance with applicable requirements of the New York State Uniform Fire Prevention and Building Code, Construction Standards of the Commissioner of Education, New York State Department of Labor Part 56 of Title 12, and the United States Environmental Protection Agency Hazard Emergency Response ACT Regulations. Kevin C. Terry is accredited to the EPA and New York State under AHERA Regulations as an Asbestos Project Designer (Asbestos Handling Certificate Number 14-20336).

To the best of the Architect's knowledge, information and belief, the design of this project conforms to all applicable provisions of the New York State Uniform Fire Prevention and Building Code, the New York State Energy Conservation Code, and the building standards of the New York State Education Department.

SET NO. _____

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All drawings dated May 19, 2023

NOTICE TO BIDDERS

NOTICE IS HEREBY GIVEN, that sealed Bids, in duplicate, are sought and requested by the Board of Education, Waverly Central School District (hereinafter called "Owner"), for the Reconstruction to the Waverly Jr/Sr High School.

Bids are requested for the following Contracts:

General
Plumbing
Electrical
Mechanical

in accordance with the Drawings, Project Manual (including Conditions of the Contract and Specifications), and other Bidding and Contract Documents prepared by:

Tetra Tech Engineers, Architects & Landscape Architects, P.C. d/b/a
Tetra Tech Architects & Engineers
10 Brown Road
Ithaca, New York 14850

A pre-bid conference for potential Bidders and other interested parties will be held on Thursday, November 16, 2023, at 3:30 PM at Waverly J /Sr High School, High School Library, 1 Fredrick Street, Waverly, New York 14892.

Sealed Bids will be received by the Owner until 3:00 PM Tuesday, December 12, 2023 at the Waverly Central School District Office, 15 Frederick Street, Waverly, New York 14892. Bids received will be publicly opened and read aloud at 3:15 PM in Conference Room 126, Lincoln Street Elementary School, 45 Lincoln Street, Waverly, New York 14892.

For the convenience of potential Bidders and other interested parties, the Bidding Documents may be examined at the following locations:

Syracuse Builders Exchange, 6563 Ridings Rd., Syracuse, New York 13206.
Northern New York Builders Exchange, 22074 Fabco Road, Watertown, New York.
The Builders Exchange of the Southern Tier, Inc.-West, 65 E. Main. St., Falconer, New York 14733.

Complete digital sets of Bidding Documents, drawings and specifications, may be obtained online as an electronic download at www.syracuseblueprintplanroom.com 'public projects' for a non-refundable fee of $25.00 (Twenty-Five Dollars).

Complete hard copy sets of Bidding Documents, drawings and specifications, may be obtained online at www.syracuseblueprintplanroom.com 'public projects.' Checks shall be made payable to **Waverly Central School District** in the sum of $100.00 (One Hundred Dollars) for each set of documents. Mail checks to Syracuse Blue Print Co., Inc., 825 East Genesee Street, Syracuse, New York 13210. Plan deposit is refundable in accordance with the terms in the Instructions to Bidders. Any bidder requiring documents to be shipped shall make arrangements with the printer and pay for all packaging and shipping costs (either by providing FedEX/UPS account number or being charged a flat rate by the printer).

Please note www.syracuseblueprintplanroom.com is the designated location and means for distributing and obtaining all bid package information, electronic or hard copy. Only those Contract Documents obtained in this manner will enable a prospective bidder to be identified as a registered plan holder. The Provider takes no responsibility for the completeness of Contract Documents obtained from other sources. Contract Documents obtained from other sources may not be accurate or may not contain addenda that may have been issued.

All bid addenda will be transmitted to registered plan holders, regardless of receiving electronic or hard copy Bid Documents, via email and will be available at www.syracuseblueprintplanroom.com. Registered plan holders who have paid for hard copies of the bid documents will need to make the determination if hard copies of the addenda are required for their use, and coordinate directly with Syracuse Blue Print Company for hard copies of addenda to be issued. There will be no charge for registered plan holders to obtain hard copies of the bid addenda.

As bid security, each Bid shall be accompanied by a certified check or Bid Bond made payable to the Owner, in accordance with the amounts and terms described in the Instructions to Bidders.

The Owner requires Bids comply with bidding requirements indicated in the Instructions to Bidders. The Owner may, at its discretion, waive informalities in Bids, but is not obligated to do so, nor does it represent that it will do so. The Owner also reserves the right to reject any and all Bids. The Owner will not waive informalities which would give one Bidder substantial advantage or benefit not enjoyed by all affected Bidders. Bids may not be withdrawn before 45 days following the Bid opening thereof, unless an error is claimed by the Bidder in accordance with the Instructions to Bidders.

INSTRUCTIONS TO BIDDERS

ARTICLE 1
PROJECT AND BIDDING INFORMATION

1. Project Identification: Additions and Alterations to Waverly Jr/Sr High School.

   a. Project Location:

      1) Waverly Jr/Sr High School 1 Fredrick Street Waverly, New York 14892.

2. Owner: Waverly Central School District.

   a. Address: 15 Frederick Street, Waverly, New York.

3. Bid Opening: Bids will be received until the following Bid opening date and time, at the following location:

   a. Bid Opening Date and Time: Tuesday, December 12, 2023 at 3:00 PM, local time.

   b. Bid Opening Location: Bids shall be delivered to the Waverly Central School District Office, 15 Frederick Street, Waverly, New York 14892. Bids received will be publicly opened and read aloud at 3:15 PM in Conference Room 126, Lincoln Street Elementary School, 45 Lincoln Street, Waverly, New York 14892.

4. Bidders are invited to submit Bids for the following Contracts:

   a. General
   b. Plumbing
   c. Electrical
   d. Mechanical

5. Access to the Project Site: Subject to Owner's prior approval of timing, Bidders will be permitted access to Project site on Monday through Friday, from 7:00am until 4:00pm, except legal holidays.

   a. Contact Owner's representative designated below, prior to visiting Project site, to arrange access.
   b. Owner's representative: Ashlee Hunt 607-565-8101 ext. 1005.

6. Pre-Bid Conference: A pre-bid conference for potential Bidders and other interested parties will be held as follows:

   a. Pre-Bid Conference Date and Time: Thursday, November 16, 2023, at 3:30 PM, local time.
   b. Pre-Bid Conference Location: Waverly Jr/Sr High School, High School Library, 1 Fredrick Street, Waverly, New York 14892.

7. Agreement Form: The following will be used as the basis for the form of agreement between the Owner and the Contractor (Owner-Contractor Agreement):

   a. Standard Form of Agreement Between Owner and Contractor, AIA Document A132.

ARTICLE 2
DEFINITIONS

1. Definitions in the General Conditions of the Contract for Construction, AIA Document A232, or in other Contract Documents are applicable to the Bidding Documents.

    a. "Addenda": Written or graphic instruments issued by the Architect prior to execution of the Contract which modify or interpret the Bidding Documents by additions, deletions, clarifications, or corrections.

    b. "Bid": Complete and properly executed proposal to do the Work for the sums stipulated therein, submitted in accordance with the Bidding Documents.

        1) "Base Bid": Sum stated in the Bid for which Bidder offers to perform the Work described in the Bidding Documents as the base, to which Work may be added or from which Work may be deleted for sums stated for Alternates.

    c. "Bidder": Person or entity who submits a Bid.

ARTICLE 3
BIDDING PROCEDURES

1. Bid Form: Complete the Bid Form provided, in duplicate, with all blank spaces for Base Bid and Alternates legibly completed in ink, or typewritten, in both words and figures.

2. Bid Attachments: Complete and submit the following attachments with the Bid Form:

    a. Attachment #1: Non-Collusive Bidding Certification.
    b. Attachment #2: Certified Corporate Resolution.
    c. Attachment #3: Iranian Energy Divestment Certification
    d. Attachment #4: Certificate on Violations

3. Bid Security:

    a. Submit, with the Bid Form, bid security in the amount of five percent of the Base Bid, in any of the following forms:

        1) Certified check, payable to the Owner; or

        2) Bid Bond, payable to the Owner, on Bid Bond, AIA Document A310, or standard bid bond form, duly executed by the Bidder as principal, with a surety company acceptable to the Owner.

            a) Affix a certified and current copy of the power of attorney for the attorney-in-fact who executes the required bond on behalf of the surety.

    b. Within three days following the Bid opening, bid security will be returned to all Bidders, except the three apparent lowest Bidders.

        1) Within three days following execution of the Owner-Contractor Agreement, bid security will be returned to the three apparent lowest Bidders.

2) If the Owner-Contractor Agreement has not been executed within 45 days following the Bid opening, bid security will be returned to the three apparent lowest Bidders, except as noted below.

c. Should the accepted Bidder, within 10 days following Notice of Award, fail or refuse to execute the Owner-Contractor Agreement and to provide the required performance and payment bonds, the accepted Bidder will be deemed to have abandoned the Contract and its bid security will be forfeited to the Owner.

4. Bid Submission: Submit each Bid, including attachments, in a sealed envelope bearing the Bidder's name and address, name of Contract, and name of Project. Deliver Bid to location specified no later than the Bid opening date and time indicated. Any Bid received after the Bid opening date and time indicated will be returned unopened.

5. Bid Withdrawal:

a. Bid may be withdrawn by the Bidder up until the date and time specified for opening of Bids.

b. Following the Bid opening, Bid may not be withdrawn before 45 days following the Bid opening, except in the case of Bidder error, as follows:

1) If the Bidder claims an error in the Bid, submit a written notice to the Architect, within three days of the Bid opening, describing in detail the nature of the error, submitting documentary evidence or proof of such error.

a) Failure to deliver such notice and evidence or proof, within the time frame required, constitutes a waiver of Bidder's right to claim error.

2) Upon receipt of required notice and evidence or proof, the Owner, in consultation with the Architect, will determine if an excusable error has been made; and if so, the Owner may permit the Bid to be withdrawn. The Owner's determination will be conclusive upon the Bidder, its surety, and all who claim rights under the Bidder.

ARTICLE 4
BIDDING DOCUMENTS

1. Bidding Documents include the bidding requirements and the proposed Contract Documents, as follows:

a. Bidding requirements consist of the following:

1) Notice to Bidders.
2) Instructions to Bidders.
3) Bid Form, with attachments.
4) Proposed Products Form.
5) Proposed Subcontractors Form.
6) Bidder's Qualifications Form.

b. Proposed Contract Documents consist of the following:

1) Owner-Contractor Agreement.
2) Conditions of the Contract.
3) Drawings.

4) Specifications.
5) Addenda.

2. Bidding Document Interpretations or Corrections:

   a. Submit requests for Bidding Document interpretation to the Architect, in writing using the provided Pre-Bid Request for Interpretation Form, at least five working days prior to the Bid opening.

   b. Interpretations or corrections will be issued in the form of written Addenda. The Architect will not make oral interpretations or corrections.

   c. Notification of addenda will be transmitted to registered plan holders via email and will be available to download at www.syracuseblueprintplanroom.com under "public projects."

      1) Failure of any Bidder to not download addenda and/or failure to receive any such Addendum by reason of not having registered as a plan holder in accordance with the bidding instructions, shall not relieve the Bidder from any obligation required by the Addendum.

3. Equivalents and Substitutions: The use of manufacturer's brand names, catalog numbers, and similar proprietary identifying data is intended to establish a standard of quality, appearance, and function for those items. It is not the intention of the Owner or the Architect to eliminate from consideration products that are equivalent in quality, appearance, and function to those identified.

   a. Equivalents are pre-award and substitutions are post-award.

   b. Equivalents:

      1) On Proposed Products Form provided, as post-Bid information, identify and list proposed equivalents to specified products as follows:

         a) Applicable Specification Section and paragraph.
         b) Proposed manufacturer's name, product brand name, and catalog number of proposed equivalent.
         c) Note any aspect of the specified product that the proposed equivalent cannot meet.

      2) Failure to identify and list proposed equivalents shall be deemed to mean the Bidder will furnish the materials or products indicated in the Contract Documents without exception.

   c. Substitutions: Refer to Division 01 Specification Section "Substitution Procedures."

4. Any required plan deposit shall be refunded to Bidders who submit a bona fide Bid and return the hard copy (paper) Bidding Documents in full, and in good condition within thirty days following the award of the contract or the rejection of the bids covered by such Bid Documents. If the Bid Documents are not returned in full, or in good condition, the cost to replace missing or damaged paper documents will be deducted from the deposit. A Bidder receiving a Contract award may retain the paper Bidding Documents, and the Bidder's deposit will be refunded. Partial reimbursement, in an amount equal to the full amount of such deposit for one set of Bid Documents per non-bidder less the actual cost of reproduction of the Bid Documents as determined by the Architect, shall be made for the return of all other copies of the Bid Documents in good condition within thirty days following the award of the contract or the rejection of the bids covered by such Bid Documents. If the Bid Documents are not returned in full, or in good condition, the cost to replace missing or damaged paper documents will be deducted from the deposit.

ARTICLE 5
BIDDER'S REPRESENTATIONS

1. By submitting a Bid, Bidder represents that:

   a. Bidder has visited and thoroughly inspected the Project site, and has become fully informed of the conditions relating to the Project;

   b. Bidder has received, read, and is thoroughly familiar with the Bidding Documents, including all Addenda issued; and

   c. Bidder has prepared its Bid based on the materials, equipment and systems required by the Bidding Documents or equivalents; and

   d. Bidder has prepared its Bid based on the subcontractors identified on the accompanying sealed Subcontractors List and the corresponding subcontract amount listed, and if awarded the Contract, intends to engage the listed Subcontractors.

      1) Owner retains its right to object to any proposed Subcontractor, in accordance with the Conditions on the Contract.

ARTICLE 6
BID CONSIDERATION

1. Opening of Bids: At the designated Bid opening date and time, Bids received will be publicly opened and read aloud.

2. Bid Rejection:

   a. The Owner requires Bids comply with bidding requirements; however, the Owner may, at its discretion, waive informalities in Bids. The Owner is not obligated to do so and does not represent that it will do so. The Owner will not waive informalities which would give one Bidder substantial advantage or benefit not enjoyed by all affected Bidders.

   b. The Owner reserves the right to reject any and all Bids not deemed in the best interests of the Owner, if in its judgment the public interest will be promoted thereby.

c. The Owner reserves the right to reject as "informal" any and all Bids which, in its opinion, are incomplete, conditional, obscure, or contain irregularities of any kind.

d. In rejecting a Bid, the Owner does not forfeit its right to accept the Bid for any other Contract contained in the Project; and the rejection of a Bid is not necessarily a finding by the Owner of any facts or circumstances which would preclude the Bidder from serving as a subcontractor on any portion of the Project.

3. Bid Acceptance: The Owner intends to award the Contract to the responsible Bidder whose Bid complies with conditions to render it formal, who is able to furnish approved surety bonds, and whose Bid is the lowest number of dollars as defined below.

ARTICLE 7
POST-BID INFORMATION

1. Contractor Qualifications: The Owner may make such investigations as it deems necessary to determine the ability of the Bidder to perform the Work.

   a. The Bidder shall furnish to the Owner all such information and data for this purpose as the Owner may request, including the provided Bidder's Qualifications Form.

   b. The Owner reserves the right to reject any Bid if the evidence submitted, or investigation of Bidder fails to satisfy the Owner that the Bidder is properly qualified to carry out the obligations of the Contract and to complete the Work contemplated therein.

2. Owner's Financial Capability: Successful Bidder may submit request to Owner for information regarding Owner's financial arrangements for this Project in accordance with the General Conditions, no later than 30 days following the Bid opening.

3. Post-Bid Submittals:

   a. The three apparent low Bidders shall submit the following completed forms within three days following the Bid opening:

      1) Proposed Products Form.
      2) Proposed Subcontractors Form.
      3) Proposed Schedule of Values Form.
      4) Upon request, Bidder's Qualifications Form.

ARTICLE 8
PERFORMANCE BOND AND PAYMENT BOND

1. Bond Requirements:

   a. The successful Bidder shall furnish bonds covering faithful performance of the Contract and payment of obligations arising thereunder.

   b. Bonds shall be obtained from a surety satisfactory to the Owner, authorized and licensed to do business in the state where the Project is located, and listed in the latest issue of the U.S. Treasury Circular 570. The amount of each bond shall be equal to 100 percent of the Contract Sum. The sufficiency of the bonds is subject to the approval of the Owner and bonds deemed insufficient by the Owner may be rejected.

c. Affix a certified and current copy of the power of attorney for the attorney-in-fact who executes the required bonds on behalf of the surety.

2. Time of Delivery and Form of Bonds:

   a. Deliver required bonds to the Owner not later than the date the Agreement in entered into.
   b. Use Performance Bond and Payment Bond, AIA Document A312, unless otherwise approved by the Owner.

ARTICLE 9
MISCELLANEOUS PROVISIONS

1. All applicable laws, ordinances, rules, and regulations of Federal, State, and other authorities having jurisdiction over the Project shall apply to the Contract throughout and will be deemed included in the Contract as though herein written out in full.

   a. Sections of the New York State Labor Law (LL) and the New York State General Municipal Law (GML) include, but are not limited to, the following:

      1) LL §220, subd. 2: Eight-hour day, 40-hour week.
      2) LL §220, subd. 3 and LL §220-d: Minimum rate of wage and supplement.
      3) LL §220-e: Prohibiting discrimination.
      4) LL §222-a: Prevention of dust hazards.
      5) GML §103-d: Statement of non-collusion in bids.
      6) GML §106-b: Payment on public work contracts.
      7) GML §108: Workmen's compensation insurance.
      8) GML §109: Assignment of public contracts.

2. Time of Completion: Refer to Division 01 Section "Project Summary – Project Schedule."

Attachment: Pre-Bid Request for Interpretation Form

END OF SECTION 00 21 13

INSTRUCTIONS TO BIDDERS
ATTACHMENT #1:
PRE-BID REQUEST FOR INTERPRETATION FORM

SUBMIT FORM BY EMAIL TO INE.Waverly@tetratech.com

Project No.: 339070-22003 **Date:**

Project Name: Additions and Alterations to Waverly Jr / Sr High School

---

Bidder Contact Person:
Bidder Company Name:
Bidder Phone:
Bidder Email Address:

Question Pertains to:

Drawing Number:
Plan Area:
Room Number:
Drawing Detail Number:
Specification Section:

Question: (Please be specific)

Review by Architect/Engineers: **Responded By: _____ Date: _____**

Submit requests not less than 5 working days prior to the specified Bid Opening date and time. In the event that this question requires clarification or modification of the Bidding Documents, such written information can only be provided by formal Addendum, distributed to all plan holders.

TETRA TECH
ARCHITECTS & ENGINEERS

10 Brown Road
Ithaca NY 14850

Ithaca, New York
Farmingdale, New York
Albany, New York

BID FROM (Bidder's Name) : _____

(Address) : _____

_____

Bidder's Telephone : _____

Bidder's Facsimile (Fax) : _____

Bidder's E-mail Address (if applicable) : _____

BID FORM
(submit in duplicate)

CONTRACT: GENERAL

PROJECT TITLE: ADDITIONS AND ALTERATIONS TO WAVERLY JR/SR HIGH SCHOOL

DATE: MAY 19, 2023

PROJECT NO.: 339070-22003

BID TO: Waverly Central School District
15 Frederick Street
Waverly, New York 14892

The Bidder hereby certifies that it has examined and fully understands the requirements and intent of the Bidding Documents, including the Bidding Requirements and proposed Contract Documents; and proposes to furnish all labor, materials, and equipment necessary to complete the Work on, or before, the dates specified in the Contract Documents for the **BASE BID** sum of:

_____
(words)

_____ ($_____)
(figures)

Show all amounts in both words and figures; in the event of a discrepancy between amounts written in words and figures, the amount written in words shall govern.

Refer to Division 01 Section "Allowances" for description of allowances to be included in the Base Bid above.

ALTERNATES

Indicate in the spaces provided below the amount to be added to or the amount to be deducted from (as applicable) the Base Bid if the Owner accepts the following Alternates described in Division 01 Section "Alternates".

Include in the amount of each Alternate, all labor, materials, overhead and profit, modification of Work specified in the Contract Documents, and additional work that may be required by acceptance of the Alternate.

ALTERNATE NO. 01: First Floor Area F Unit Ventilator Replacement

ADD to the Base Bid the sum of:

_____ ($_____)
(words) (figures)

OR

DEDUCT from the Base Bid the sum of:

_____ ($_____)
(words) (figures)

ALTERNATE NO. 02: STEM Suite Exterior Canopy

ADD to the Base Bid the sum of:

_____ ($_____)
(words) (figures)

OR

DEDUCT from the Base Bid the sum of:

_____ ($_____)
(words) (figures)

ALTERNATE NO. 03: Corridor Wall Tile Area A

ADD to the Base Bid the sum of:

_____ ($_____)
(words) (figures)

OR

DEDUCT from the Base Bid the sum of:

_____ ($_____)
(words) (figures)

ALTERNATE NO. 04: Corridor Wall Tile Area E

ADD to the Base Bid the sum of:

_____($_____)
(words) (figures)

OR

DEDUCT from the Base Bid the sum of:

_____($_____)
(words) (figures)

ALTERNATE NO. 05: Corridor Wall Tile Area F

ADD to the Base Bid the sum of:

_____($_____)
(words) (figures)

OR

DEDUCT from the Base Bid the sum of:

_____($_____)
(words) (figures)

ALTERNATE NO. 06: Locker Rooms and Team Rooms Wall Finish

ADD to the Base Bid the sum of:

_____($_____)
(words) (figures)

OR

DEDUCT from the Base Bid the sum of:

_____($_____)
(words) (figures)

ALTERNATE NO. 07: STEM Suite Interior Door Openings

ADD to the Base Bid the sum of:

_____($_____)
(words) (figures)

OR

DEDUCT from the Base Bid the sum of:

_____($_____)
(words) (figures)

LIST OF ADDENDA RECEIVED

No. _____ Date_____ No. _____ Date _____

No. _____ Date_____ No. _____ Date _____

No. _____ Date_____ No. _____ Date _____

BID ATTACHMENTS

Enclosed with this Bid are the following attachments:

Attachment #1 - Non-Collusive Bidding Certification.
Attachment #2 - Certified Corporate Resolution.
Attachment #3 – Iranian Energy Divestment Certification
Attachment #4 – Certification on Violations

BID SECURITY

Enclosed with this Bid is bid security in the amount of five percent of the Base Bid.

EXECUTION OF CONTRACT

If written notice of the acceptance of this Bid is transmitted to the undersigned within 45 days following the Bid opening, the undersigned will, within 10 days following the Notice of Award, execute and transmit a Contract in the form as required by the Architect.

This Bid may be withdrawn at any time prior to the Bid opening.

SIGNATURE

( ) NAME OF BIDDER (Corporate Name)
( )
( ) _____
(Corporate Seal)
( ) SIGNATURE (Corporate Officer)
( )
( ) _____
( )
( ) DATE: _____

BID FORM
ATTACHMENT #1

GENERAL CONDITIONS TO BID
NON-COLLUSIVE BIDDING CERTIFICATION

No bid will be accepted that does not have this form completely executed.

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 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 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;

(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;

(d) 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 as to the person signing in its behalf;

(e) That attached hereto (if corporate bidder) is a certified copy of resolution authorizing the execution of this certified by the signature of this bid or proposal in behalf of the corporate bidder.

_____
(Individual)

_____
(Corporation)

Dated:_____ By _____
(Signature of Officer)

This Non-Collusive Bidding Certificate must be submitted with the bid.

BID FORM
ATTACHMENT #2

CERTIFIED CORPORATE RESOLUTION

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

_____

_____

and to include in such bid or proposal the certificate as to non-collusion required by section one hundred three-d (103-d) of the general municipal law as to the act and deed of such corporation, and for any inaccuracies or mis-statements in such certificate this corporate bidder shall be liable under the penalties of perjury.

The foregoing is a true and correct copy of the resolution and adopted by

_____ at a meeting of its board of directors held on the

_____ day of _____ 20__ .

_____
(Secretary)

BID FORM
ATTACHMENT #3

IRANIAN ENERGY DIVESTMENT CERTIFICATION

Pursuant to Section 103-g
Of the New York State
General Municipal Law

A. By submission of this bid/proposal, each bidder/proposer and each person signing on behalf of any bidder/proposer certifies, and in the case of a joint bid, each party thereto certifies as to its own organization, under penalty of perjury, that to the best of its knowledge and belief that each bidder is not on the list created pursuant to paragraph (b) of subdivision 3 of Section 165-a of the New York State Finance Law.

B. A Bid/Proposal shall not be considered for award, nor shall any award be made where the condition set forth in Paragraph A above has not been complied with; provided, however, that in any case the bidder/proposer cannot make the foregoing certification set forth in Paragraph A above, the bidder/proposer shall so state and shall furnish with the bid a signed statement which sets forth in detail the reasons therefore. Where Paragraph A above cannot be complied with, the Purchasing Unit to the political subdivision, public department, agency or official thereof to which the bid/proposal is made, or his designee, may award a bid/proposal, on a case by case business under the following circumstances:

1. The investment activities in Iran were made before April 12, 2012, the investment activities in Iran have not been expanded or renewed after April 12, 2012, and the Bidder/Proposer has adopted, publicized and is implementing a formal plan to cease the investment activities in Iran and to refrain from engaging in any new investments in Iran; or

2. The 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.

_____
Signature

_____
Title

_____ _____
Date Company

BID FORM
ATTACHMENT #4

CERTIFICATION ON VIOLATIONS

_____, a representative of _____, hereby swears to and certifies that, to the best of his or her knowledge and belief:

1. Neither _____, nor any substantially owned-affiliated entity of the Bidder (collectively the "Bidder"), has been found to be in violation of the Davis-Bacon Act pursuant to 40 U.S.C. 3144, the Copeland Act pursuant to 18 U.S.C. 874 and 40 U.S.C. 3145 or the Contract Work Hours and Safety Standards Act pursuant to 40 U.S.C. 332, or their New York State counterparts.

   ☐ True ☐ False

   If False is selected, information for questions 2 and 3 must be provided. If True is selected questions 2 and 3 are not applicable, continue to question 4.

2. If the Bidder has been found to be in violation of the Davis-Bacon Act, the Copeland Act, the Contract Work Hours and Safety Standards Act, or any of their New York State counterparts, state the name of the agency, the date of the violation, the nature of the violation and any consequence of the violation, including warnings, fines and debarments below.

   _____

   _____

   _____

   _____

3. The Bidder is not currently under investigation by any local, state or federal government agency. If Bidder is under investigation, state the name of the agency, the date of the alleged violation and the nature of the alleged violation below.

   _____

   _____

   _____

   _____

4. The Bidder's Dun & Bradstreet D-U-N-S number is _____.

5. I have authority to execute this certification, knowing it will be relied upon by the Owner of this Project.

_____ _____
Name Title

Sworn to before me this _____day of _____, 20__.

_____
Notary Public

TETRA TECH
ARCHITECTS & ENGINEERS

10 Brown Road
Ithaca NY 14850

Ithaca, New York
Farmingdale, New York
Albany, New York

BID FROM (Bidder's Name) : _____

(Address) : _____

_____

Bidder's Telephone : _____

Bidder's Facsimile (Fax) : _____

Bidder's E-mail Address (if applicable) : _____

BID FORM
(submit in duplicate)

CONTRACT: PLUMBING

PROJECT TITLE: ADDITIONS AND ALTERATIONS TO WAVERLY JR/SR HIGH SCHOOL

DATE: MAY 19, 2023

PROJECT NO.: 339070-22003

BID TO: Waverly Central School District
15 Frederick Street
Waverly New York 14892

The Bidder hereby certifies that it has examined and fully understands the requirements and intent of the Bidding Documents, including the Bidding Requirements and proposed Contract Documents; and proposes to furnish all labor, materials, and equipment necessary to complete the Work on, or before, the dates specified in the Contract Documents for the **BASE BID** sum of:

_____
(words)

_____ ($_____)
(figures)

Show all amounts in both words and figures; in the event of a discrepancy between amounts written in words and figures, the amount written in words shall govern

Refer to Division 01 Section "Allowances" for description of allowances to be included in the Base Bid above.

LIST OF ADDENDA RECEIVED

No. _____ Date_____ No. _____ Date _____

No. _____ Date_____ No. _____ Date _____

No. _____ Date_____ No. _____ Date _____

BID ATTACHMENTS

Enclosed with this Bid are the following attachments:

Attachment #1 - Non-Collusive Bidding Certification.
Attachment #2 - Certified Corporate Resolution.
Attachment #3 – Iranian Energy Divestment Certification
Attachment #4 – Certification on Violations

BID SECURITY

Enclosed with this Bid is bid security in the amount of five percent of the Base Bid.

EXECUTION OF CONTRACT

If written notice of the acceptance of this Bid is transmitted to the undersigned within 45 days following the Bid opening, the undersigned will, within 10 days following the Notice of Award, execute and transmit a Contract in the form as required by the Architect.

This Bid may be withdrawn at any time prior to the Bid opening.

SIGNATURE

( ) NAME OF BIDDER (Corporate Name)
( )
( ) _____
(Corporate Seal)
( ) SIGNATURE (Corporate Officer)
( )
( ) _____
( )
( ) DATE: _____

BID FORM
ATTACHMENT #1

GENERAL CONDITIONS TO BID
NON-COLLUSIVE BIDDING CERTIFICATION

No bid will be accepted that does not have this form completely executed.

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 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 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;

(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;

(d) 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 as to the person signing in its behalf;

(e) That attached hereto (if corporate bidder) is a certified copy of resolution authorizing the execution of this certified by the signature of this bid or proposal in behalf of the corporate bidder.

_____
(Individual)

_____
(Corporation)

Dated:_____ By _____
(Signature of Officer)

This Non-Collusive Bidding Certificate must be submitted with the bid.

BID FORM
ATTACHMENT #2

CERTIFIED CORPORATE RESOLUTION

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

_____

_____

and to include in such bid or proposal the certificate as to non-collusion required by section one hundred three-d (103-d) of the general municipal law as to the act and deed of such corporation, and for any inaccuracies or mis-statements in such certificate this corporate bidder shall be liable under the penalties of perjury.

The foregoing is a true and correct copy of the resolution and adopted by

_____ at a meeting of its board of directors held on the

_____ day of _____ 20__ .

_____
(Secretary)

BID FORM
ATTACHMENT #3

IRANIAN ENERGY DIVESTMENT CERTIFICATION

Pursuant to Section 103-g
Of the New York State
General Municipal Law

A. By submission of this bid/proposal, each bidder/proposer and each person signing on behalf of any bidder/proposer certifies, and in the case of a joint bid, each party thereto certifies as to its own organization, under penalty of perjury, that to the best of its knowledge and belief that each bidder is not on the list created pursuant to paragraph (b) of subdivision 3 of Section 165-a of the New York State Finance Law.

B. A Bid/Proposal shall not be considered for award, nor shall any award be made where the condition set forth in Paragraph A above has not been complied with; provided, however, that in any case the bidder/proposer cannot make the foregoing certification set forth in Paragraph A above, the bidder/proposer shall so state and shall furnish with the bid a signed statement which sets forth in detail the reasons therefore. Where Paragraph A above cannot be complied with, the Purchasing Unit to the political subdivision, public department, agency or official thereof to which the bid/proposal is made, or his designee, may award a bid/proposal, on a case by case business under the following circumstances:

1. The investment activities in Iran were made before April 12, 2012, the investment activities in Iran have not been expanded or renewed after April 12, 2012, and the Bidder/Proposer has adopted, publicized and is implementing a formal plan to cease the investment activities in Iran and to refrain from engaging in any new investments in Iran; or

2. The 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.

_____
Signature

_____
Title

_____ _____
Date Company

BID FORM
ATTACHMENT #4

CERTIFICATION ON VIOLATIONS

_____, a representative of _____, hereby swears to and certifies that, to the best of his or her knowledge and belief:

1. Neither _____, nor any substantially owned-affiliated entity of the Bidder (collectively the "Bidder"), has been found to be in violation of the Davis-Bacon Act pursuant to 40 U.S.C. 3144, the Copeland Act pursuant to 18 U.S.C. 874 and 40 U.S.C. 3145 or the Contract Work Hours and Safety Standards Act pursuant to 40 U.S.C. 332, or their New York State counterparts.

   ☐ True ☐ False

   If False is selected, information for questions 2 and 3 must be provided. If True is selected questions 2 and 3 are not applicable, continue to question 4.

2. If the Bidder has been found to be in violation of the Davis-Bacon Act, the Copeland Act, the Contract Work Hours and Safety Standards Act, or any of their New York State counterparts, state the name of the agency, the date of the violation, the nature of the violation and any consequence of the violation, including warnings, fines and debarments below.

   _____

   _____

   _____

   _____

3. The Bidder is not currently under investigation by any local, state or federal government agency. If Bidder is under investigation, state the name of the agency, the date of the alleged violation and the nature of the alleged violation below.

   _____

   _____

   _____

   _____

4. The Bidder's Dun & Bradstreet D-U-N-S number is _____.

5. I have authority to execute this certification, knowing it will be relied upon by the Owner of this Project.

_____ _____
Name Title

Sworn to before me this _____day of _____, 20__.

_____
Notary Public

TETRA TECH
ARCHITECTS & ENGINEERS

10 Brown Road
Ithaca NY 14850

Ithaca, New York
Farmingdale, New York
Albany, New York

BID FROM (Bidder's Name) : _____

(Address) : _____

_____

Bidder's Telephone : _____

Bidder's Facsimile (Fax) : _____

Bidder's E-mail Address (if applicable) : _____

BID FORM
(submit in duplicate)

CONTRACT: ELECTRICAL

PROJECT TITLE: ADDITIONS AND ALTERATIONS TO WAVERLY JR/SR HIGH SCHOOL

DATE: MAY 19, 2023

PROJECT NO.: 339070-22003

BID TO: Waverly Central School District
15 Frederick Street
Waverly, New York 14892

The Bidder hereby certifies that it has examined and fully understands the requirements and intent of the Bidding Documents, including the Bidding Requirements and proposed Contract Documents; and proposes to furnish all labor, materials, and equipment necessary to complete the Work on, or before, the dates specified in the Contract Documents for the **BASE BID** sum of:

_____
(words)

_____ ($_____)
(figures)

Show all amounts in both words and figures; in the event of a discrepancy between amounts written in words and figures, the amount written in words shall govern.

Refer to Division 01 Section "Allowances" for description of allowances to be included in the Base Bid above.

ALTERNATES

Indicate in the spaces provided below the amount to be added to or the amount to be deducted from (as applicable) the Base Bid if the Owner accepts the following Alternates described in Division 01 Section "Alternates".

Include in the amount of each Alternate, all labor, materials, overhead and profit, modification of Work specified in the Contract Documents, and additional work that may be required by acceptance of the Alternate.

ALTERNATE NO. 01: First Floor Area F Unit Ventilator Replacement

ADD to the Base Bid the sum of:

_____ ($_____)
(words) (figures)

OR

DEDUCT from the Base Bid the sum of:

_____ ($_____)
(words) (figures)

ALTERNATE NO. 02: STEM Suite Exterior Canopy

ADD to the Base Bid the sum of:

_____ ($_____)
(words) (figures)

OR

DEDUCT from the Base Bid the sum of:

_____ ($_____)
(words)

LIST OF ADDENDA RECEIVED

No. _____ Date_____ No. _____ Date _____

No. _____ Date_____ No. _____ Date _____

No. _____ Date_____ No. _____ Date _____

BID ATTACHMENTS

Enclosed with this Bid are the following attachments:

Attachment #1 - Non-Collusive Bidding Certification.
Attachment #2 - Certified Corporate Resolution.
Attachment #3 – Iranian Energy Divestment Certification
Attachment #4 – Certification on Violations

BID SECURITY

Enclosed with this Bid is bid security in the amount of five percent of the Base Bid.

EXECUTION OF CONTRACT

If written notice of the acceptance of this Bid is transmitted to the undersigned within 45 days following the Bid opening, the undersigned will, within 10 days following the Notice of Award, execute and transmit a Contract in the form as required by the Architect.

This Bid may be withdrawn at any time prior to the Bid opening.

SIGNATURE

( )	NAME OF BIDDER (Corporate Name)
( )	
( )	_____
(Corporate Seal)	
( )	SIGNATURE (Corporate Officer)
( )	
( )	_____
( )	
( )	DATE: _____

BID FORM
ATTACHMENT #1

GENERAL CONDITIONS TO BID
NON-COLLUSIVE BIDDING CERTIFICATION

No bid will be accepted that does not have this form completely executed.

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 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 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;

(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;

(d) 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 as to the person signing in its behalf;

(e) That attached hereto (if corporate bidder) is a certified copy of resolution authorizing the execution of this certified by the signature of this bid or proposal in behalf of the corporate bidder.

_____
(Individual)

_____
(Corporation)

Dated:_____ By _____
(Signature of Officer)

This Non-Collusive Bidding Certificate must be submitted with the bid.

BID FORM
ATTACHMENT #2

CERTIFIED CORPORATE RESOLUTION

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

_____

_____

and to include in such bid or proposal the certificate as to non-collusion required by section one hundred three-d (103-d) of the general municipal law as to the act and deed of such corporation, and for any inaccuracies or mis-statements in such certificate this corporate bidder shall be liable under the penalties of perjury.

The foregoing is a true and correct copy of the resolution and adopted by

_____ at a meeting of its board of directors held on the

_____ day of _____ 20__ .

_____
(Secretary)

BID FORM
ATTACHMENT #3

IRANIAN ENERGY DIVESTMENT CERTIFICATION

Pursuant to Section 103-g
Of the New York State
General Municipal Law

A. By submission of this bid/proposal, each bidder/proposer and each person signing on behalf of any bidder/proposer certifies, and in the case of a joint bid, each party thereto certifies as to its own organization, under penalty of perjury, that to the best of its knowledge and belief that each bidder is not on the list created pursuant to paragraph (b) of subdivision 3 of Section 165-a of the New York State Finance Law.

B. A Bid/Proposal shall not be considered for award, nor shall any award be made where the condition set forth in Paragraph A above has not been complied with; provided, however, that in any case the bidder/proposer cannot make the foregoing certification set forth in Paragraph A above, the bidder/proposer shall so state and shall furnish with the bid a signed statement which sets forth in detail the reasons therefore. Where Paragraph A above cannot be complied with, the Purchasing Unit to the political subdivision, public department, agency or official thereof to which the bid/proposal is made, or his designee, may award a bid/proposal, on a case by case business under the following circumstances:

1. The investment activities in Iran were made before April 12, 2012, the investment activities in Iran have not been expanded or renewed after April 12, 2012, and the Bidder/Proposer has adopted, publicized and is implementing a formal plan to cease the investment activities in Iran and to refrain from engaging in any new investments in Iran; or

2. The 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.

_____
Signature

_____
Title

_____ _____
Date Company

BID FORM
ATTACHMENT #4

CERTIFICATION ON VIOLATIONS

_____, a representative of _____, hereby swears to and certifies that, to the best of his or her knowledge and belief:

1. Neither _____, nor any substantially owned-affiliated entity of the Bidder (collectively the "Bidder"), has been found to be in violation of the Davis-Bacon Act pursuant to 40 U.S.C. 3144, the Copeland Act pursuant to 18 U.S.C. 874 and 40 U.S.C. 3145 or the Contract Work Hours and Safety Standards Act pursuant to 40 U.S.C. 332, or their New York State counterparts.

   ☐ True ☐ False

   If False is selected, information for questions 2 and 3 must be provided. If True is selected questions 2 and 3 are not applicable, continue to question 4.

2. If the Bidder has been found to be in violation of the Davis-Bacon Act, the Copeland Act, the Contract Work Hours and Safety Standards Act, or any of their New York State counterparts, state the name of the agency, the date of the violation, the nature of the violation and any consequence of the violation, including warnings, fines and debarments below.

   _____

   _____

   _____

   _____

3. The Bidder is not currently under investigation by any local, state or federal government agency. If Bidder is under investigation, state the name of the agency, the date of the alleged violation and the nature of the alleged violation below.

   _____

   _____

   _____

   _____

4. The Bidder's Dun & Bradstreet D-U-N-S number is _____.

5. I have authority to execute this certification, knowing it will be relied upon by the Owner of this Project.

_____ _____
Name Title

Sworn to before me this _____day of _____, 20__.

_____
Notary Public

TETRA TECH
ARCHITECTS & ENGINEERS

10 Brown Road
Ithaca NY 14850

Ithaca, New York
Farmingdale, New York
Albany, New York

BID FROM (Bidder's Name) : _____

(Address) : _____

_____

Bidder's Telephone : _____

Bidder's Facsimile (Fax) : _____

Bidder's E-mail Address (if applicable) : _____

BID FORM
(submit in duplicate)

CONTRACT: MECHANICAL

PROJECT TITLE: ADDITIONS AND ALTERATIONS TO WAVERLY JR/SR HIGH SCHOOL

DATE: MAY 19, 2023

PROJECT NO.: 339070-22003

BID TO: Waverly Central School District
15 Frederick Street
Waverly, New York 14892

The Bidder hereby certifies that it has examined and fully understands the requirements and intent of the Bidding Documents, including the Bidding Requirements and proposed Contract Documents; and proposes to furnish all labor, materials, and equipment necessary to complete the Work on, or before, the dates specified in the Contract Documents for the **BASE BID** sum of:

_____
(words)

_____ ($_____)
(figures)

Show all amounts in both words and figures; in the event of a discrepancy between amounts written in words and figures, the amount written in words shall govern.

Refer to Division 01 Section "Allowances" for description of allowances to be included in the Base Bid above.

ALTERNATES

Indicate in the spaces provided below the amount to be added to or the amount to be deducted from (as applicable) the Base Bid if the Owner accepts the following Alternates described in Division 01 Section "Alternates".

Include in the amount of each Alternate, all labor, materials, overhead and profit, modification of Work specified in the Contract Documents, and additional work that may be required by acceptance of the Alternate.

ALTERNATE NO. 01: First Floor Area F Unit Ventilator Replacement

ADD to the Base Bid the sum of:

_____($_____)
(words) (figures)

OR

DEDUCT from the Base Bid the sum of:

_____($_____)
(words) (figures)

LIST OF ADDENDA RECEIVED

No. _____ Date_____ No. _____ Date _____

No. _____ Date_____ No. _____ Date _____

No. _____ Date_____ No. _____ Date _____

BID ATTACHMENTS

Enclosed with this Bid are the following attachments:

Attachment #1 - Non-Collusive Bidding Certification.
Attachment #2 - Certified Corporate Resolution.
Attachment #3 – Iranian Energy Divestment Certification
Attachment #4 – Certification on Violations

BID SECURITY

Enclosed with this Bid is bid security in the amount of five percent of the Base Bid.

EXECUTION OF CONTRACT

If written notice of the acceptance of this Bid is transmitted to the undersigned within 45 days following the Bid opening, the undersigned will, within 10 days following the Notice of Award, execute and transmit a Contract in the form as required by the Architect.

This Bid may be withdrawn at any time prior to the Bid opening.

SIGNATURE

( )	NAME OF BIDDER (Corporate Name)
( )	
( )	_____
(Corporate Seal)	
( )	SIGNATURE (Corporate Officer)
( )	
( )	_____
( )	
( )	DATE: _____

BID FORM
ATTACHMENT #1

GENERAL CONDITIONS TO BID
NON-COLLUSIVE BIDDING CERTIFICATION

No bid will be accepted that does not have this form completely executed.

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 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 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;

(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;

(d) 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 as to the person signing in its behalf;

(e) That attached hereto (if corporate bidder) is a certified copy of resolution authorizing the execution of this certified by the signature of this bid or proposal in behalf of the corporate bidder.

_____
(Individual)

_____
(Corporation)

Dated:_____ By _____
(Signature of Officer)

This Non-Collusive Bidding Certificate must be submitted with the bid.

BID FORM
ATTACHMENT #2

CERTIFIED CORPORATE RESOLUTION

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

_____

_____

and to include in such bid or proposal the certificate as to non-collusion required by section one hundred three-d (103-d) of the general municipal law as to the act and deed of such corporation, and for any inaccuracies or mis-statements in such certificate this corporate bidder shall be liable under the penalties of perjury.

The foregoing is a true and correct copy of the resolution and adopted by

_____ at a meeting of its board of directors held on the

_____ day of _____ 20__ .

_____
(Secretary)

BID FORM
ATTACHMENT #3

IRANIAN ENERGY DIVESTMENT CERTIFICATION

Pursuant to Section 103-g
Of the New York State
General Municipal Law

A. By submission of this bid/proposal, each bidder/proposer and each person signing on behalf of any bidder/proposer certifies, and in the case of a joint bid, each party thereto certifies as to its own organization, under penalty of perjury, that to the best of its knowledge and belief that each bidder is not on the list created pursuant to paragraph (b) of subdivision 3 of Section 165-a of the New York State Finance Law.

B. A Bid/Proposal shall not be considered for award, nor shall any award be made where the condition set forth in Paragraph A above has not been complied with; provided, however, that in any case the bidder/proposer cannot make the foregoing certification set forth in Paragraph A above, the bidder/proposer shall so state and shall furnish with the bid a signed statement which sets forth in detail the reasons therefore. Where Paragraph A above cannot be complied with, the Purchasing Unit to the political subdivision, public department, agency or official thereof to which the bid/proposal is made, or his designee, may award a bid/proposal, on a case by case business under the following circumstances:

1. The investment activities in Iran were made before April 12, 2012, the investment activities in Iran have not been expanded or renewed after April 12, 2012, and the Bidder/Proposer has adopted, publicized and is implementing a formal plan to cease the investment activities in Iran and to refrain from engaging in any new investments in Iran; or

2. The 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.

_____
Signature

_____
Title

_____ _____
Date Company

BID FORM
ATTACHMENT #4

CERTIFICATION ON VIOLATIONS

_____, a representative of _____, hereby swears to and certifies that, to the best of his or her knowledge and belief:

1. Neither _____, nor any substantially owned-affiliated entity of the Bidder (collectively the "Bidder"), has been found to be in violation of the Davis-Bacon Act pursuant to 40 U.S.C. 3144, the Copeland Act pursuant to 18 U.S.C. 874 and 40 U.S.C. 3145 or the Contract Work Hours and Safety Standards Act pursuant to 40 U.S.C. 332, or their New York State counterparts.

   ☐ True ☐ False

   If False is selected, information for questions 2 and 3 must be provided. If True is selected questions 2 and 3 are not applicable, continue to question 4.

2. If the Bidder has been found to be in violation of the Davis-Bacon Act, the Copeland Act, the Contract Work Hours and Safety Standards Act, or any of their New York State counterparts, state the name of the agency, the date of the violation, the nature of the violation and any consequence of the violation, including warnings, fines and debarments below.

   _____

   _____

   _____

   _____

3. The Bidder is not currently under investigation by any local, state or federal government agency. If Bidder is under investigation, state the name of the agency, the date of the alleged violation and the nature of the alleged violation below.

   _____

   _____

   _____

   _____

4. The Bidder's Dun & Bradstreet D-U-N-S number is _____.

5. I have authority to execute this certification, knowing it will be relied upon by the Owner of this Project.

_____ _____
Name Title

Sworn to before me this _____day of _____, 20__.

_____
Notary Public

NAME OF BIDDER_____

PROPOSED PRODUCTS FORM

SUBMITTED BY THREE LOW BIDDERS WITHIN THREE DAYS FOLLOWING BID OPENING

In accordance with Articles 4 and 6 of the Instructions to Bidders, list specified products and corresponding proposed equivalent products below. Include additional pages as necessary.

Attach additional sheet explaining any aspect of the Contract Documents that cannot be complied with by the manufacturer or supplier of the proposed equivalent product.

Specified Product	Equivalent Product
Technical Section: _____	Manufacturer: _____
Specified Product: _____	Product Designation: _____
Technical Section: _____	Manufacturer: _____
Specified Product: _____	Product Designation: _____
Technical Section: _____	Manufacturer: _____
Specified Product: _____	Product Designation: _____
Technical Section: _____	Manufacturer: _____
Specified Product: _____	Product Designation: _____
Technical Section: _____	Manufacturer: _____
Specified Product: _____	Product Designation: _____
Technical Section: _____	Manufacturer: _____
Specified Product: _____	Product Designation: _____
Technical Section: _____	Manufacturer: _____
Specified Product: _____	Product Designation: _____

NAME OF BIDDER_____

PROPOSED SUBCONTRACTORS FORM

SUBMITTED BY THREE LOW BIDDERS
WITHIN THREE DAYS FOLLOWING BID OPENING

Review of proposed subcontractors shall be in accordance with Article 5.2 of the General Conditions.

Instructions:

1. List below name of each subcontractor whose figures have been used in preparing the Bid, and to whom a subcontract is expected to be awarded, upon Architect's review, should the Contract be awarded to the Bidder.

2. For each subcontractor, identify the Specification section(s) included in that subcontract.

Subcontractor Name	Specification Section

NAME OF BIDDER_____

BIDDER'S QUALIFICATIONS FORM

NOTARIZED AND SUBMITTED BY THREE LOW BIDDERS
WITHIN THREE DAYS FOLLOWING BID OPENING
UPON REQUEST BY ARCHITECT

All questions must be answered, and the data given must be clear and comprehensive. If necessary, questions may be answered on separate attached sheet.

1. Name of Bidder:

2. Permanent main office address:

3. When organized:

4. If a corporation, where incorporated:

5. How many years have you been engaged in the contracting business under your present firm or trade name?

6. Contracts on hand: (List these, showing amount of each contract and the appropriate anticipated dates of completion.)

7. General character of work performed by your company:

8. Have you ever failed to complete any work awarded to you?

   If so, where and why?

9. Have you ever defaulted on a contract?

   If so, where and why?

10. List the more important projects recently completed by your company, stating the approximate cost for each, and the month and year completed.

11. List your major equipment available for this Contract.

12. List your experience in work similar to this project.

13. List the background and experience of the principal members of your organization, including officers.

14. List the work to be performed by Subcontractors and summarize the dollar value of each Subcontract.

15. Credit available: $

16. Give bank reference:

17. Will you, upon request, fill out a detailed financial statement and furnish any other information that may be required by the Owner?

18. The undersigned hereby authorizes and requests any person, firm or corporation to furnish any information requested by the Owner in verification of the recitals comprising this Bidder's Qualifications Form.

Dated _____this _____ date of _____, 20__ .

_____
(Name of Bidder)

By _____

Title _____

State of _____)
) ss.

County of _____

_____ being duly sworn deposes and says that he is _____

_____ of _____

_____
(Name of Organization)

and that the answers to the foregoing questions and all statements therein contained are true and correct.

Subscribed and sworn to before me

this _____ day of_____, 20___

My commission expires _____, 20___

AIA® Document A232® – 2019

General Conditions of the Contract for Construction, *Construction Manager as Adviser Edition*

for the following PROJECT:
(Name, and location or address)

Waverly Central School District
Additions and Alterations to Junior-Senior High School
15 Fredrick Street
Waverly, New York 14892
Tetra Tech Project Number: 339070-22003

THE CONSTRUCTION MANAGER:
(Name, legal status, and address)

LeChase Construction Services, LLC
11849 East Corning Road Suite 102
Corning, New York 14830

THE OWNER:
(Name, legal status, and address)

Waverly Central School District
15 Fredrick Street
Waverly, New York 14892

THE ARCHITECT:
(Name, legal status, and address)

Tetra Tech Engineers, Architects & Landscape Architects, P.C.
d/b/a Tetra Tech Architects & Engineers
10 Brown Road
Ithaca, New York 14850

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.

This document is intended to be used in conjunction with AIA Documents A132™–2019, Standard Form of Agreement Between Owner and Contractor, Construction Manager as Adviser Edition; B132™–2019, Standard Form of Agreement Between Owner and Architect, Construction Manager as Adviser Edition; and C132™–2019, Standard Form of Agreement Between Owner and Construction Manager as Adviser.

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ARTICLE 1 GENERAL PROVISIONS

§ 1.1 Basic Definitions

§ 1.1.1 The Contract Documents. The Contract Documents are enumerated in the Agreement between the Owner and Contractor (hereinafter the Agreement) and consist of the Agreement, Conditions of the Contract (General, Supplementary and other Conditions), Drawings, Specifications, the Project Manual addenda issued prior to execution of the Contract, other documents listed in the Agreement, and Modifications issued after execution of the Contract and Performance and Payment Bonds. A Modification is (1) a written amendment to the Contract signed by both parties, (2) a Change Order, (3) a Construction Change Directive, or (4) a written order for a minor change in the Work issued by the Architect. The Contract Documents do include the advertisement or invitation to bid, Instructions to Bidders, sample forms, other information furnished by the Owner in anticipation of receiving bids or proposals, and the Contractor's bid or proposal. The Contract Documents form the Contract for Construction. The Contract Documents represent the entire and integrated agreement between the parties hereto and supersedes prior negotiations, representations, or agreements, either written or oral. The Contract Documents may be amended or modified only by a Modification. The Contract Documents shall not be construed to create a contractual relationship of any kind between any persons or entities other than the Owner and Contractor. The Construction Manager and Architect shall, however, be entitled to performance and enforcement of obligations under the Contract Documents intended to facilitate performance of their duties.

(Paragraph deleted)

§1.1.2 The Contract. Where the term "Agreement" or "Contract" is used in the General Conditions, and other Contract Documents, it shall mean the separate Owner-Contractor Agreement between the Owner and each Contractor identified in Conditions of the Contract (General, Supplementary and other conditions).

§ 1.1.3 The Work. The term "Work" means the construction and services required by the Contract Documents, whether completed or partially completed, and includes all other labor, materials, equipment, and services provided or to be provided by the Contractor to fulfill the Contractor's obligations. The Work may constitute the whole or a part of the Project.

§ 1.1.4 The Project. The Project is the total construction of which the Work performed under the Contract Documents may be the whole or a part and which may include construction by other Contractors, and by the Owner's own forces and Separate Contractors.

§ 1.1.5 Contractors. Contractors are persons or entities, other than Separate Contractors, who perform Work under contracts with the Owner that are administered by the Architect and Construction Manager.

§ 1.1.6 Separate Contractors. Separate Contractors are persons or entities who perform construction under separate contracts with the Owner not administered by the Architect and Construction Manager.

§ 1.1.7 The Drawings. The Drawings are the graphic and pictorial portions of the Contract Documents showing the design, location and dimensions of the Work, generally including plans, elevations, sections, details, schedules, and diagrams.

§ 1.1.8 The Specifications. The Specifications are that portion of the Contract Documents consisting of the written requirements for materials, equipment, systems, standards and workmanship for the Work, and performance of related services.

§ 1.1.9 Instruments of Service. Instruments of Service are representations, in any medium of expression now known or later developed, of the tangible and intangible creative work performed by the Architect and the Architect's consultants under their respective professional services agreements. Instruments of Service may include, without limitation, studies, surveys, models, sketches, drawings, specifications, and other similar materials.

§ 1.1.10 Initial Decision Maker. The Initial Decision Maker is the person identified in the Agreement to render initial decisions on Claims in accordance with Section 15.2. The Initial Decision Maker shall not show partiality to the Owner or Contractor and shall not be liable for results of interpretations or decisions rendered in good faith.

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§ 1.1.11 Milestone Schedule. The Milestone Schedule prepared by the Architect and Construction Manager contained in the Bid Documents which is intended to coordinate the completion of the Work on the Project.

§ 1.1.12 Construction Milestone. A due date or benchmark for critical path work items identified by the Architect and Construction Manager which Contractors must satisfy in order to complete the Project by the substantial completion date.

§ 1.1.13 Construction Schedule. A comprehensive schedule of all of the Work which each individual Contractor must complete in order to complete their Work in accordance with the Milestone Schedule. This Construction Schedule must be in sufficient detail breaking down items of Work and in an electronic format with predecessor logic in a format reasonably requested by the Construction Manager.

§ 1.1.14 Coordinated Construction Schedule. The Coordinated Schedule created by the Construction Manager based upon each Contractor's approved Construction Schedule which coordinates all of the Work activities to be completed by the substantial completion date.

§ 1.1.15 Project Schedule. The Project Schedule which incorporates and includes the Architect's design work through the substantial completion of the Project.

§ 1.1.16 MISCELLANEOUS DEFINITIONS

§1.1.16.1 The term "Herein" shall mean the contents of the Contract Documents and / or the contents of the particular section where this term appears.

§1.1.16.2 The term "Indicated" as used Herein shall mean shown on the Drawings or described in the Contract Documents.

§1.1.16.3 The term "Concealed" as used Herein shall mean items hidden from sight in such locations as trenches, chases, shafts, furred spaces, walls, slabs, above ceilings and where in sight in crawl spaces or service tunnels.

§1.1.16.4 The term "Exposed" as used Herein shall mean not "concealed" as defined Herein and the spaces behind normally closed doors such as interiors of cabinets.

§1.1.16.5 The term "Product" as used Herein shall include materials, systems and / or equipment."

§1.1.16.6 The term "Furnish" as used Herein shall mean furnish and deliver to the jobsite all products necessary that are connected with the Work including unloading, handling, transporting unwrapping and inspecting those products to be installed.

§1.1.16.7 The term "Install" as used Herein shall mean furnish all labor and perform all operations connected with assembly, erection, anchoring, installation of products or work, finishing, curing, finishing, cleaning and similar operations including supplying all necessary tools, rigging and equipment to do the work, and connect up, test, place in operation and service such products.

§1.1.16.8 The term "Provide" as used Herein shall mean furnish, without limitation, all labor, products, materials, equipment, transportation, services, etc. required to install, complete the work, and /or to test and place in operation/service.

§1.1.16.9 The term "Piping" as used Herein shall mean pipe, rigid conduit, fittings, valves, hangers and other accessories, which comprise a system.

§1.1.16.10 The terms "equal", "proper", "satisfactory", "workmanlike" and words of similarly implied interpretation, judgment or opinion, shall be understood to mean "in the opinion of the Architect.

§1.1.16.11 As used Herein, the terms "General Contractor" and "General Construction Contractor" have the same meaning.

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§1.1.16.12 Persistently fails. The phrase "persistently fails" and other similar expressions, as used in reference to the Contractor, shall be interpreted to mean any combination of acts and omissions, that cause the Owner and/or the Owner's Authorized Representative to reasonably conclude that the Contractor will not complete the Work within the Contract Time, for the Contract Sum or in what they reasonably deem not to be in substantial compliance with the requirements of the Contract Documents.

§ 1.2 Correlation and Intent of the Contract Documents

§ 1.2.1 The intent of the Contract Documents is to include all items necessary for the proper execution and completion of the Work by the Contractor. The Contract Documents are complementary, and what is required by one shall be as binding as if required by all; performance by the Contractor shall be required only to the extent consistent with the Contract Documents and reasonably inferable from them as being necessary to produce the indicated results.

§ 1.2.1.1 The invalidity of any provision of the Contract Documents shall not invalidate the Contract or its remaining provisions. If it is determined that any provision of the Contract Documents violates any law, or is otherwise invalid or unenforceable, then that provision shall be revised to the extent necessary to make that provision legal and enforceable. In such case the Contract Documents shall be construed, to the fullest extent permitted by law, to give effect to the parties' intentions and purposes in executing the Contract.

§ 1.2.2 Organization of the Specifications into divisions, sections and articles, and arrangement of Drawings shall not control the Contractor in dividing the Work among Subcontractors or in establishing the extent of Work to be performed by any trade.

§ 1.2.3 Unless otherwise stated in the Contract Documents, words that have well-known technical or construction industry meanings are used in the Contract Documents in accordance with such recognized meanings.

§1.2.4 Where items are specified by the use of a reference standard not bound in the specifications, the date of the reference standard shall be the latest edition at the time of signing the Contract except as specifically indicated otherwise.

§1.2.5 The reference in the Specifications regarding the division or separation of the Work among types of trades or occupations is only for the suggested purpose of coordinating the Work of the different trades, etc. but it shall be the Contractor's entire responsibility for the proper coordination and completion of all the Work described in the "Specifications" whether performed by the Contractor or Subcontractors, if any.

§1.2.6 In the event of inconsistencies within or between parts of the Contract Documents or between the Contract Documents and applicable standards, codes and ordinances, the Contractor shall (1) provide the better quality or greater quantity of work or (2) comply with the more stringent requirements; either or both in accordance with the Architect's interpretation. The terms and provisions of this Section, however, shall not relieve the Contractor of any of the obligations set forth elsewhere Herein.

.1 On the Drawings, given dimensions shall take precedence over scaled measurements and large scale drawings over small scale Drawings.

.2 Before ordering any materials or doing any work, the Contractor and each Subcontractor shall verify measurements at the Project Site and shall be responsible for the correctness of such measurements. No extra charge or compensation will be allowed on account of differences between actual dimensions and the dimensions indicated on the Drawings. Any difference which may be found shall be submitted to the Architect for resolution before proceeding with the Work.

.3 If a minor change in the Work is found necessary due to actual field conditions, the Contractor shall submit detailed drawings of such departure for the approval by the Architect before making the change.

§1.2.7 Execution of the Contract by the Contractor is a representation that the Contractor has carefully examined the Contract Documents and the site, and represents that the Contractor is thoroughly familiar with the nature and location of the Work, the site, the specific conditions under which the Work is to be performed, and all matters which may in any way affect the Work or its performance. The Contractor further represents that as a result of such examinations and investigations, the Contractor thoroughly understands the Contract Documents and their intent and purpose, and is

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familiar with all applicable codes, ordinances, laws, regulations, and rules as they apply to the Work, and that the Contractor will abide by same. Claims for additional time or additional compensation as a result of the Contractor's failure to follow the foregoing procedure and to familiarize itself with all conditions and the Contract Documents will not be permitted.

§ 1.3 Capitalization

Terms capitalized in these General Conditions include those that are (1) specifically defined, (2) the titles of numbered articles, or (3) the titles of other documents published by the American Institute of Architects. Capitalized terms in other Contract Documents shall be defined as found Herein.

§ 1.4 Interpretation

In the interest of brevity the Contract Documents frequently omit modifying words such as "all" and "any" and articles such as "the" and "an," but the fact that a modifier or an article is absent from one statement and appears in another is not intended to affect the interpretation of either statement.

§ 1.5 Ownership and Use of Drawings, Specifications, and Other Instruments of Service

§ 1.5.1 The Architect and the Architect's consultants shall be deemed the authors and owners of their respective Instruments of Service, including the Drawings and Specifications, and retain all common law, statutory, and other reserved rights in their Instruments of Service, including copyrights. The Contractor, Subcontractors, Sub-subcontractors, and suppliers shall not own or claim a copyright in the Instruments of Service. Submittal or distribution to meet official regulatory requirements or for other purposes in connection with the Project is not to be construed as publication in derogation of the Architect's or Architect's consultants' reserved rights.

§ 1.5.2 The Contractor, Subcontractors, Sub-subcontractors, and suppliers are authorized to use and reproduce the Instruments of Service provided to them, subject to any protocols established pursuant to Sections 1.7 and 1.8, solely and exclusively for execution of the Work. All copies made under this authorization shall bear the copyright notice, if any, shown on the Instruments of Service. The Contractor, Subcontractors, Sub-subcontractors, and suppliers may not use the Instruments of Service on other projects or for additions to the Project outside the scope of the Work without the specific written consent of the Owner, Architect, and the Architect's consultants.

§ 1.6 Notice

§ 1.6.1 Except as otherwise provided in Section 1.6.2, where the Contract Documents require one party to notify or give notice to the other party, such notice shall be provided in writing to the designated representative of the party listed in Article 8 of the Agreement to whom the notice is addressed and shall be deemed to have been duly served if delivered in person, by mail, by courier, or by electronic transmission if a method for electronic transmission is set forth in the Agreement.

§ 1.6.2 Notice of Claims as provided in Section 15.1.2.1 shall be provided in writing and shall be deemed to have been duly served only if delivered to the designated representative of the party to whom the notice is addressed by certified or registered mail, or by courier providing proof of delivery.

§ 1.7 Digital Data Use and Transmission

The parties shall agree upon protocols governing the transmission and use of Instruments of Service or any other information or documentation in digital form. The parties will use AIA Document E203™–2013, Building Information Modeling and Digital Data Exhibit, to establish the protocols for the development, use, transmission, and exchange of digital data.

§ 1.8 Building Information Models Use and Reliance

Any use of, or reliance on, all or a portion of a building information model without agreement to protocols governing the use of, and reliance on, the information contained in the model and without having those protocols set forth in AIA Document E203™–2013, Building Information Modeling and Digital Data Exhibit, and the requisite AIA Document G202™–2013, Project Building Information Modeling Protocol Form, shall be at the using or relying party's sole risk and without liability to the other party and its contractors or consultants, the authors of, or contributors to, the building information model, and each of their agents and employees.

§ 1.9 Disclaimer

In no event shall the Owner or the Architect have any responsibility for the Contractor's construction means, methods,

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techniques, sequences, procedures or for safety or for safety precautions and programs in connection with the Work notwithstanding any of the rights and authority granted the Owner in the Contract Documents.

ARTICLE 2 OWNER

§ 2.1 General

§ 2.1.1 The Owner is the person or entity identified as such in the Agreement and is referred to throughout the Contract Documents as if singular in number. The Owner shall designate in writing a representative who shall have express authority to bind the Owner with respect to all matters requiring the Owner's approval or authorization. Except as otherwise provided in Section 4.2.1, the Construction Manager and the Architect do not have such authority. The term "Owner" means the Owner or the Owner's authorized representative.

(Paragraphs deleted)

§ 2.2 Intentionally Omitted

§ 2.3 Information and Services Required of the Owner

§ 2.3.1 Except for permits and fees that are the responsibility of the Contractor under the Contract Documents, including those required under Section 3.7.1, the Owner shall secure and pay for necessary approvals, easements, assessments and charges required for construction, use or occupancy of permanent structures or for permanent changes in existing facilities. Unless otherwise provided under the Contract Documents, the Owner, assisted by the Construction Manager and Architect, shall secure and pay for the building permit.

§ 2.3.2 The Owner shall retain an architect lawfully licensed to practice architecture, or an entity lawfully practicing architecture, in the jurisdiction where the Project is located. That person or entity is identified as the Architect in the Agreement and is referred to throughout the Contract Documents as if singular in number.

§ 2.3.3 The Owner shall retain a construction manager adviser lawfully practicing construction management in the jurisdiction where the Project is located. That person or entity is identified as the Construction Manager in the Agreement and is referred to throughout the Contract Documents as if singular in number.

§ 2.3.4 If the employment of the Construction Manager or Architect terminates, the Owner shall employ a successor construction manager or architect whose status under the Contract Documents shall be that of the Construction Manager or Architect, respectively.

§ 2.3.5 Upon the request of the Architect, the Owner shall furnish surveys describing physical characteristics, legal limitations and utility locations for the site of the Project, and a legal description of the site. The Contractor shall be entitled to rely on the accuracy of information furnished by the Owner except to the extent that the Contractor knows or reasonably should know such information to be inaccurate or incomplete, but shall exercise proper precautions relating to the safe performance of the Work. Contractor shall be responsible for laying out the Work, shall protect and preserve the established reference points and shall make no changes or relocations without the prior written approval of the Owner. Contractor shall report to the Architect whenever any reference point is lost or destroyed, or requires relocation because of necessary changes in grades or locations, and shall be responsible for the accurate replacement or relocation of such reference points by professionally qualified personnel.

§ 2.3.6 The Owner shall furnish information or services required of the Owner by the Contract Documents with reasonable promptness. The Owner shall also furnish any other information or services under the Owner's control and relevant to the Contractor's performance of the Work with reasonable promptness after receiving the Contractor's written request for such information or services.

§ 2.3.7 Unless otherwise provided in the Contract Documents, the Owner shall furnish to the Contractor one copy of the Contract Documents for purposes of making reproductions pursuant to Section 1.5.2.

§ 2.3.8 The Owner shall forward all communications to the Contractor through the Construction Manager. Other communication shall be made as set forth in Section 4.2.6.

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§ 2.4 Owner's Right to Stop the Work

If the Contractor fails to correct Work that is not in accordance with the requirements of the Contract Documents as required by Section 12.2 or fails to carry out Work in accordance with the Contract Documents, as determined by the Architect, the Owner, or the Construction Manager, the Owner may issue a written order to the Contractor to stop the Work, or any portion thereof, until the cause for such order has been eliminated; however, the right of the Owner to stop the Work shall not give rise to a duty on the part of the Owner to exercise this right for the benefit of the Contractor or any other person or entity, except to the extent required by Section 6.1.3.

(Paragraphs deleted)

§ 2.5 The Owner's Right to Carry Out the Work

§ 2.5.1 If the Contractor defaults, fails or neglects to carry out the Work in accordance with the Contract Documents and fails within a three (3) calendar day period after receipt of written notice from the Owner to commence and continue correction of such default, failure or neglect with diligence and promptness, including the submission of an acceptable recovery schedule if required by the Construction Manager, the Owner may, without further notice (except to inform the Contractor its attempt to cure is inadequate) and without prejudice to other remedies the Owner may have, correct such deficiencies. Such action by the Owner and amounts charged to the Contractor are both subject to review by the Construction Manager and prior approval of the Architect. In such case an appropriate Change Order shall be issued (without the requirement for a signature by the Contractor) deducting from Payments then or thereafter due the Contractor the cost of correcting such deficiencies, including compensation for the Architect, the Construction Manager, Attorneys, and others, and expenses made necessary by such default, neglect or failure. The expenses incurred by the Owner in connection with retaining a replacement contractor (on a contingency basis or otherwise) are in addition to any other expenses incurred by Owner to remedy the deficiencies and shall be deducted from Payments then or thereafter due the Contractor. The Construction Manager and/or the Architect, pursuant to Section 9.5.1, may withhold or nullify a Certificate for Payment in whole or in part, to the extent reasonably necessary to reimburse the Owner for the cost of correcting such deficiencies, the cost of retaining a replacement contractor, and Owner's expenses and compensation for the Construction Manager and Architect and their respective consultants' additional services made necessary by such default, neglect, or failure. If current and future payments are not sufficient to cover such amounts, the Contractor shall pay the difference to the Owner. If the Contractor disagrees with the actions of the Owner or the Architect, or the amounts claimed as costs due to the Owner, the Contractor may file a Claim pursuant to Article 15. Such action by the Owner and amounts charged to the Contractor shall be equally binding upon the Contractor's Performance and Payment Bonds Surety.

§ 2.5.2 In the event Contractor fails, refuses or neglects to perform closeout obligations, including without limitation performance of punch-list items, within thirty (30) calendar days following the date of Substantial Completion, the Owner, after notice to Contractor and without prejudice to other remedies the Owner may have, may correct such deficiencies. In such case, the Contractor shall be liable to the Owner for the costs of correcting such deficiencies, including compensation for the Architect, the Construction Manager, Attorneys, and others, and expenses made necessary by such default, neglect or failure. If Payments due the Contractor then or thereafter due are not sufficient to cover such amounts, the Contractor shall pay the difference to the Owner. Such action by the Owner and amounts charged to the Contractor shall be equally binding upon the Contractor's Performance and Payment Bonds Surety.

§ 2.5.3 Should there be, in the opinion of the Architect or Initial Decision Maker, unwarranted delay on the part of any Contractor in completion of incomplete Work or other Contractor requirements, the Owner may have full or partial use and occupancy of any or all portions of buildings as required for moving in or installing furniture, fixtures, supplies or equipment and for general cleaning and maintenance work. In such event Contractor whose unfinished work is performed subsequently shall be responsible for the prevention of any damage to such Owner's installation. Such use or occupancy by the Owner shall in no instance constitute acceptance of any of the Work.

ARTICLE 3 CONTRACTOR

§ 3.1 General

§ 3.1.1 The Contractor is the person or entity identified as such in the Agreement and is referred to throughout the Contract Documents as if singular in number. The Contractor shall be lawfully licensed, if required in the jurisdiction where the Project is located. The Contractor shall designate in writing a representative who shall have express authority to bind the Contractor with respect to all matters under this Contract. The term "Contractor" means the Contractor or the Contractor's authorized representative.

§ 3.1.2 The Contractor shall perform the Work in accordance with the Contract Documents.

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§ 3.1.3 The Contractor shall not be relieved of its obligations to perform the Work in accordance with the Contract Documents either by activities or duties of the Construction Manager or Architect in their administration of the Contract, or by tests, inspections or approvals required or performed by persons or entities other than the Contractor.

§ 3.2 Review of Contract Documents and Field Conditions by Contractor

(Paragraph deleted)

§ 3.2.1 By executing the Contract, Contractor represents and warrants to the Owner that:

.1 Contractor is and will be financially responsible and has and will have sufficient liquidity to meet its financial responsibilities under the Contract and for all other Projects in which Contractor is or may become involved;

.2 Contractor has carefully examined the Contract Documents and has visited and examined the site;

.3 from Contractor's investigation, Contractor has satisfied itself as to the nature and location of the proposed Work, general and local conditions, and all matters which may in any way affect the Work or its performance;

.4 Contractor fully understands the intent and purpose of the Contract Documents; and

.5 The Contractor acknowledges that the Owner is a school district which is subject to various laws and regulations of the State of New York. The Contractor will, in each phase of the Contract, in accordance with applicable standards, comply with applicable laws and regulations as they pertain to the bidding and construction of the Project, including, without limitation, the requirements of Article 5-A of the General Municipal Law; Article 9 of the Education Law; and Sub-Chapter J, Part 155 of Title 8, Chapter II of the Codes, Rules and Regulations of the State of New York.

§ 3.2.2 Because the Contract Documents are complementary, the Contractor shall, before starting each portion of the Work, carefully study and compare the various Contract Documents relative to that portion of the Work, as well as the information furnished by the Owner pursuant to Section 2.3.5, shall take field measurements of any existing conditions related to that portion of the Work, and shall observe any conditions at the site affecting it. The Contractor shall promptly report to the Construction Manager and Architect any errors, inconsistencies or omissions discovered by or made known to the Contractor as a request for information submitted to the Construction Manager in such form as the Construction Manager and Architect may require. It is recognized that the Contractor's review is made in the Contractor's capacity as a contractor and not as a licensed design professional, unless otherwise specifically provided in the Contract Documents.

§ 3.2.2.1 The Contractor shall promptly notify the Architect, in writing, of any inconsistencies or errors to provide the Architect ample time for observation, investigation, detail drawings, etc.

§ 3.2.2.2 All Contractors submitting bid proposals shall be presumed to have examined the site to consider fully all conditions, which may have a bearing on the work, and to have accounted for these conditions in their bid proposals.

§ 3.2.2.3 When required, off-site storage is the responsibility of the Contractor.

§ 3.2.2.4 The exactness of grades, elevations, dimensions or locations indicated on the Drawings or of Work installed by others is not guaranteed by the Architect or the Owner.

§ 3.2.2.5 Except as to any reported errors, inconsistencies, nonconformities or omissions, and to concealed or unknown conditions referred to in Section 3.7.4, by executing the Agreement, the Contractor represents the following:

.1 The Contract Documents are sufficiently complete and detailed for the Contractor to (1) perform the Work required to produce the results intended by the Contract Documents and (2) comply with all the requirements of the Contract Documents.

.2 The Work required by the Contract Documents, including, without limitation, all construction details, construction means, methods, procedure and techniques necessary to perform the Work, use of materials, selection of equipment and requirements of product manufacturers are consistent with: (1) good and sound practices within the construction industry; (2) generally prevailing and accepted

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industry standards applicable to Work; (3) requirements of any warranties applicable to the Work; and (4) all laws, ordinances, regulations, rules, and orders, and Owner's policies and procedures which bear upon the Contractor's performance of the Work.

§ 3.2.2.6 The Contractor shall satisfy itself as to the accuracy of all grades, elevations, dimensions and locations indicated on the Drawings. Where the Work of this Contract connects or interfaces with existing or other work Contractor shall verify at the site all conditions of such existing or other work. Any errors due to the Contractor's failure to verify such information shall be promptly remedied by the Contractor at no additional cost to the Owner.

§ 3.2.2.7 Before ordering any materials or doing any Work, the Contractor and each Subcontractor shall verify all existing conditions and measurements. Any differences, which may be found, between actual measurements and dimensions indicated on the Drawings shall be submitted to the Architect for resolution before proceeding with the Work. No extra compensation will be allowed for such discrepancies.

§ 3.2.2.8 If the Contractor performs any construction activity which involves a recognized error, inconsistency or omission in the Contract Documents without first providing notice to the Owner, Architect and Construction Manager of such condition and receiving authorization to proceed, the Contractor shall assume responsibility for such performance and shall bear an appropriate amount of the attributable costs for correction.

§ 3.2.3 The Contractor is not required to ascertain that the Contract Documents are in accordance with applicable laws, statutes, ordinances, codes, rules and regulations, or lawful orders of public authorities, but the Contractor shall promptly report to the Construction Manager and Architect any nonconformity discovered by or made known to the Contractor as a request for information submitted to Construction Manager in writing in such form as the Construction Manager and Architect may require.

§ 3.2.4 If the Contractor believes that additional cost or time is involved because of clarifications or instructions the Architect issues in response to the Contractor's notices or requests for information pursuant to Sections 3.2.2 or 3.2.3, the Contractor shall submit Claims in writing as provided in Article 15. If the Contractor fails to perform the obligations of Sections 3.2.2 or 3.2.3, the Contractor shall pay such costs and damages to the Owner, as would have been avoided if the Contractor had performed such obligations. If the Contractor performs those obligations, the Contractor shall not be liable to the Owner or Architect for damages resulting from errors, inconsistencies, or omissions in the Contract Documents, for differences between field measurements or conditions and the Contract Documents, or for nonconformities of the Contract Documents to applicable laws, statutes, ordinances, codes, rules and regulations, and lawful orders of public authorities.

§ 3.2.5 The Owner is entitled to reimbursement from the Contractor for amounts paid to the Construction Manager and Architect for evaluating and responding to the Contractor's requests for information that are not prepared in accordance with the Contract Documents or where the requested information is available to the Contractor from a careful study and comparison of the Contract Documents, field conditions, other Owner-provided information, Contractor-prepared coordination drawings, or prior Project correspondence or documentation.

§ 3.2.6 Where existing conditions are obscured or concealed from the Owner or Architect's view prior to the start of this Project's construction activities, portrayal of such conditions in the documents is based on reasonable implications and assumptions. The Owner and Architect do not imply or guarantee to the Contractor in any way that such portrayals in the Documents are accurate or true.

§ 3.2.6.1 If the Contractor, during the progress of the work, discovers any discrepancies between the Drawings and the Specifications, errors and/or omissions on the Drawings, or any discrepancies between physical condition of the work and the Drawings, he shall immediately notify the Architect in writing who shall promptly adjust same. Whether or not an error is believed to exist, deviations from the Drawings and dimensions given thereon shall be made only after approval in writing is obtained from the Architect. Any work performed after such discovery without the approval of the Architect shall be at the Contractor's risk and expense.

§ 3.2.6.2 The Contractor may submit requests for information to the Architect to help facilitate the Contractor's performance of the contract. Prior to submitting each request for information, the Contractor shall first carefully study and compare the Contract Documents, field conditions, other Owner provided information, Contractor prepared Coordination Drawings, and prior Project correspondence and documentation to determine that the information to be requested is not reasonably obtainable from such sources.

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§ 3.2.6.3 Each request for information shall be submitted to the Architect, in writing, with a copy to the Construction Manager. Each request for information shall identify the specific sources which were reviewed by the Contractor in an effort to determine the information requested, and a statement to the effect that the information being requested could not be determined from such sources.

§ 3.2.6.4 The Contractor shall submit each request for information sufficiently in advance of the date by which such information is requested in order to allow the Architect sufficient time, in the Architect's professional judgment, to permit adequate review and response and to permit Contractor compliance with the latest Construction Schedule.

§ 3.2.6.5 The Contractor shall reimburse the Owner amounts charged to the Owner by the Architect or Construction Manager for responding to Contractor requests for information where such information is available to the Contractor from a careful study and comparison of the Contract Documents, field conditions, other Owner provided information.

§ 3.2.7 Whenever the Drawings show existing or other construction not required as part of the Contract Work, it is understood that it is so shown as a matter of information and that the Owner, while believing such information to be substantially correct, assumes no responsibility thereof. The Contractor shall become familiar with all conditions affecting the nature and manner of conducting the Work.

§ 3.3 Supervision and Construction Procedures

§ 3.3.1 The Contractor shall supervise and direct the Work, using the Contractor's best skill and attention. The Contractor shall be solely responsible for, and have control over, construction means, methods, techniques, sequences, and procedures, and for coordinating all portions of the Work under the Contract, subject to overall coordination of the Project by the Construction Manager. If the Contract Documents give specific instructions concerning construction means, methods, techniques, sequences, or procedures, the Contractor shall evaluate the jobsite safety thereof and shall be solely responsible for the jobsite safety of such means, methods, techniques, sequences, or procedures. If the Contractor determines that such means, methods, techniques, sequences, or procedures may not be safe, the Contractor shall give timely written notice to the Owner, the Construction Manager, and the Architect, and shall propose alternative means, methods, techniques, sequences, or procedures. The Architect shall evaluate the proposed alternative solely for conformance with the design intent for the completed construction. The Construction Manager shall review the proposed alternative for sequencing, constructability, and coordination impacts on the other Contractors. Architect and Construction Manager shall advise Contractor in writing if Contractor's proposed alternative is acceptable as referenced above, in which case the Contractor shall perform the Work using its alternative means, methods, techniques, sequences, or procedures.

§ 3.3.1.1 The Contractor shall be responsible for and coordinate any and all inspections required by any governmental body having jurisdiction over the project. Failure to obtain any permits, licenses or other approvals because of the failure of the Contractor to conform to this requirement shall not extend the Contract time, and the Contractor shall not be entitled to any increase in the Contract Sum therefor. In addition, any additional costs and/or expenses of any nature incurred by the Owner as a result of the Contractor's failure to conform to this requirement shall constitute a charge against the Contractor's Contract.

§ 3.3.1.2 Coordination: Each Contractor shall be fully responsible for the coordination of the relationship of the Work of its Subcontractors and other Contractors and shall cross check all of its Instructions, Specifications, Drawings, Shop Drawings, Instruments of Service and installations with those of other Contractors and with existing conditions.

.1 The General Construction Contractor shall Furnish and erect all necessary batter boards, establish all lines and levels and connection therewith, and run all subsequent lines and levels as the work progresses in order to assure careful and accurate work true to the proper lines in accordance with the Contract Documents. Any batter boards, monuments, or marks of reference, which may for any reason become disturbed or destroyed, whether such displacement or destruction is caused by carelessness, accident, or by the elements, shall at all times, be promptly and accurately re-established by the General Construction Contractor.

.2 The General Construction Contractor shall establish finished floor elevations and finished grade lines for the building for all trades when requested to do so; and shall establish center lines of all interior partitions on

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floor forms before concrete is placed in order that Mechanical/Electrical Contractors will be able to place sleeves, etc., in proper locations.

.3 Each Contractor shall be required to establish centerlines, elevations and location of its Work when it is required for other Contractors to coordinate location of their work.

§ 3.3.1.3 The Contractor shall:

.1 Review all specified construction or installation procedures, including those recommended by manufacturers,

.2 Advise the Architect:
- If the specified procedure deviates from good construction practice,
- If following the procedure will affect any warranties, including the Contractor's general warranty,
- Or of any objections the Contractor may have to the procedure; and
- Propose any alternative procedure, which the Contractor will warrant.

§ 3.3.1.4 Preconstruction Meetings: Prior to commencing the Work and before commencing certain portions of the Work, Contractors and their Subcontractors shall be required to participate in preconstruction meetings when deemed necessary by the Construction Manager and the Architect to coordinate Work between trades or to address concerns of the Owner.

§ 3.3.2 The Contractor shall be responsible to the Owner for acts and omissions of the Contractor's employees, Subcontractors and their agents and employees, and other persons or entities performing portions of the Work for, or on behalf of, the Contractor or any of its Subcontractors. Contractor shall provide all on-site workers and the workers shall wear and prominently display a photo-identification badge at all times for identification and security purposes along with proof of their OSHA 10-hour training certification with their badge.

§ 3.3.3 The Contractor shall be responsible for inspection of portions of the Project already performed to determine that such portions are in proper condition to receive subsequent Work.

§ **3.3.4** Shut Downs: Such Work as connections to existing sewers, plumbing, heating and electric systems, shall be done at a time agreeable to the Owner and the Architect, and shall be determined and agreed to well in advance of the actual doing of such Work so as to interfere as little as possible with the operation and use of existing facilities. Shut downs must be coordinated through the designated representative of the Owner. The continued uninterrupted operation of all facilities of the building is essential.

.1 If any existing facilities must be interrupted, the Contractor for the Work shall provide all necessary temporary facilities and connections necessary for maintaining these existing facilities at no increase in Contract price except as otherwise specified.

.2 No mechanical, heating, plumbing, sprinkler or electric services shall be interrupted at any time, except as approved in advance by the Owner. All communication systems must be maintained without interruption. As much related Work as possible shall be performed prior to shut-downs, so as to minimize the period of shut-down.

.3 All material and manpower to do the Work involved shall be at the job prior to interruption of services.

§ 3.3.5 The Contractor, its employees and subcontractors shall be subject to such rules and regulations for the conduct of the Work as the Owner may establish. The Contractor shall be responsible for the enforcement of same among his or her employees and those of its Subcontractors.

§ 3.3.6 Where equipment, lines of piping and/or conduit are shown diagrammatically, the Contractor shall be responsible for the coordination and orderly arrangement of the various lines of exposed piping and conduit included in the Work of the Contract. Contractor shall coordinate the Work of several Subcontractors and prevent all interferences between equipment, lines of piping, architectural features, and avoid any unsightly arrangements in the exposed Work.

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§ 3.4 Labor and Materials

§ 3.4.1 Unless otherwise provided in the Contract Documents, the Contractor shall provide and pay for labor, materials, equipment, tools, construction equipment and machinery, water, heat, utilities, transportation, and other facilities and services necessary for proper execution and completion of the Work, whether temporary or permanent and whether or not incorporated or to be incorporated in the Work.

(Paragraph deleted)

§ 3.4.2 After the Contract has been executed, the Architect in conjunction with the Construction Manager, will consider a formal request for the substitution of products in place of those specified only under the conditions set forth in the Specifications. Substitutions shall satisfy the following conditions:

1. The materials, products and equipment described in the Contract Documents establish the standard of required quality, function, dimension and appearance expected.
2. Requests for substitutions must be submitted prior to, and acceptance provided by Architect prior to, time that bids are received (see below for post-bid substitution requests).
3. Substitution requests will be considered only if standards are met or exceeded as described above and are subsequently approved by the Architect and Owner.
4. Each such request shall include the name of the material, product or equipment item for which substitution is requested and a complete description of the proposed substitute, including drawings, cuts, performance and test data and any other information necessary for a complete evaluation.
5. Each such request shall include a statement setting forth any changes in other materials, product or equipment or other work that incorporation of the substitution would require.
6. The burden of proof of the merit of the proposed substitution is upon the proposer.
7. The Architect's decision of approval or disapproval of a proposed substitution shall be final and will be set forth in writing.
8. Additional substitution requests, during construction, will be considered only if substitution is caused by specific material, product or equipment's subsequent removal from, or unavailability in the marketplace, and only if the substitution(s) complies with the requirements Herein and each is at "no change" or "credit" to Contract amount.
9. Contractor's Responsibilities: If any of the following conditions occur due to substitutions, the contractor making the substitution shall bear the cost of such conditions, including payment for services rendered by the Architect and/or Construction Manager:
   (a) Redesign required for any of the Work.
   (b) Material or quantity changes for any of the Work.
   (c) Delays in any of the Work.
   (d) Request for information generated due to substitutions.

§ 3.4.2.1 In the event that Contractor wants to make a substitution and Architect requires additional compensation to evaluate same, Contractor agrees to have the cost of a reasonable Architect's fee (for this additional service) deducted from its Contract Sum. By proposing a substitution, the Contractor is deemed to represent and warrant to the Owner that the proposed substitution is appropriate for the purposes for which the Contractor proposes its use. Substitutions may be rejected by the Owner for any reason or for no reason, without explanation.

§ 3.4.3 The Contractor shall enforce strict discipline and good order among the Contractor's employees and other persons carrying out the Work. The Contractor shall not permit employment of unfit persons or persons not properly skilled in tasks assigned to them. There shall be no harassment of any kind by Contractor's employees or other persons carrying out the Work, including but not limited to sexual, ethnic, or religious harassment. If the Owner determines and notifies the Contractor that an employee or other person carrying out the Work is not acceptable within the meaning of this Article, Contractor shall remove the employee or other person from each project site within 24 hours.

§ 3.4.4 The Contractor shall comply with the most current Contract Requirements and Prevailing Wage Rate Schedules as published by the Bureau of Public Works, State of New York, Department of Labor established for this Project.

§ 3.4.4.1 The Contractor shall provide the labor necessary to install its work within the terms of this Contract. The Owner assumes no responsibility for any expense due to so-called "overtime."

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§ 3.4.5 On receipt of signed Contract, the Prime Contractor will be expected to place firm orders with vendors for needed materials, including Subcontractors and major material suppliers. If deemed necessary to assure delivery of materials at times needed, Contractor may accept delivery of such materials at any time, and may include the cost of such materials in its next monthly application for payment, provided such materials have actually been delivered to Contractor and properly stored by him with approval or under direction of the Architect and Construction Manager either at the job site or in an approved storage shed or warehouse, as provided elsewhere in these General Conditions. No materials or supplies for the Work shall be purchased by the Contractor or by any subcontractor subject to any chattel mortgage or under a conditional sale or other agreement by which an interest is retained by the seller. The Contractor warrants that he has full title to all materials and supplies used by him in the Work, or resold to the Owner, Pursuant to this Contract Document, free from all liens, claims or encumbrances.

§ 3.4.6 All materials used permanently in the Work shall be new unless otherwise specified. The apparent silence of the Specifications as to any detail described concerning any Work to be done and materials to be Furnished shall be regarded as meaning that only the best general practice is to prevail and that only material and workmanship of the first quality are to be used, and all interpretations of the Specifications shall be made on this basis. All material incorporated in the Work shall be clean and exhibit no appearance of aging, exposure to weather, prior use, handling or damage of any kind.

§ 3.4.6.1 All Work shall be executed in a thorough, substantial, workmanlike manner, in complete accordance with the manufacturer's most recent written recommendations unless otherwise specified or permitted by the Architect. A sufficient force of competent workmen, foremen, and superintendents shall be employed at all times to permit the Work to be pursued with diligence until completion.

§ 3.4.7 Manufacturer's identifications shall be inconspicuous, but where nameplates contain information relative to characteristics or maintenance, they shall be clearly visible and located for easy access.

§ 3.4.8 Equipment intended for permanent installation shall not be operated for temporary purposes without the written permission of the Architect.

§ 3.4.9 Materials shall be delivered in manufacturer's original sealed containers, with complete identification of contents and manufacturer, and kept sealed in original containers until used. Labels shall not be removed until materials have been installed and inspected.

§ 3.4.1 0 Whenever the Contract Documents require delivery by the Contractor of any materials, equipment or other items, the term delivery shall be deemed to include unloading and storing with proper protection where directed.

§ 3.4.11 Materials shall be applied or installed under proper climactic conditions, not when they may be affected by temperature, moisture, humidity or dust.

§ 3.4.12 As defined by Federal and State Laws, no materials incorporated into the Project Work shall contain asbestos. Material shall be "asbestos-free" containing zero percent (0%) asbestos. The Architect reserves the right to request certification from the material manufacturer through the Contractor for certification that materials installed contain zero percent (0%) asbestos.

§ 3.4.13 Equivalent Products: Except as otherwise specified, whenever a material, article or piece of equipment is identified on the Drawings or in the Specifications by reference to manufacturer's or vendors' names, trade names, catalog numbers, or the like, it is so identified for the purpose of establishing a standard, and any material, article, or piece of equipment of other manufacturers' or vendors which will perform adequately the duties imposed by the general design may be considered equally acceptable provided the material, article, or piece of equipment so proposed is, in the opinion of the Architect, of equal substance, appearance, size, function and performance. Such proposed product shall not be purchased or installed until approved by the Architect.

.1 The Architect will be allowed a reasonable time within which to evaluate each proposed substitution. The Architect will be the sole judge of equivalence, and no substitution shall be ordered, installed or utilized without the Architect's review process having been completed and the product accepted by written notification.

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.2 Owner may require Contractor to furnish at the Contractor's expense a special performance guarantee or other surety with respect to any substitution.

.3 The Architect will record time required by the Architect and the Architect's Consultants in evaluating substitutions proposed by the Contractor and in making changes in the Contract Documents occasioned thereby. Whether or not the Architect accepts a proposed substitution, Contractor shall reimburse the Owner for the charges of the Architect, and the Architect's Consultants for evaluating each proposed substitution.

§ 3.5 Warranty

§ 3.5.1 The Contractor warrants to the Owner, Construction Manager, and Architect that materials and equipment Furnished under the Contract will be of good quality and new unless the Contract Documents require or permit otherwise. The Contractor further warrants that the Work will conform to the requirements of the Contract Documents and will be free from defects, except for those inherent in the quality of the Work the Contract Documents require or permit. Work, materials, or equipment not conforming to these requirements, including substitutions not properly approved and authorized, shall be considered defective. The Contractor's warranty excludes remedy for damage or defect caused by abuse, alterations to the Work not executed by the Contractor, improper or insufficient maintenance, improper operation, or normal wear and tear and normal usage. If required by the Construction Manager or Architect, the Contractor shall furnish satisfactory evidence as to the kind and quality of materials and equipment. Contractor shall perform the Work in strict accordance with the Contract Documents and best industry practices. All materials are to be new, unless specified otherwise. Contractor, at its expense, shall remove and replace materials not meeting specifications or materials failing to perform as represented or warranted by the manufacturer, regardless of whether incorporated into the Work. Contractor shall promptly replace or correct any work or materials which Owner, Construction Manager or Architect shall reject as failing to conform to the requirements of the Contract Documents. The foregoing warranty obligations are not limited by the provisions of Article 12, and are in addition to and not in limitation of any other warranty set forth in the Contract Documents or otherwise prescribed by law.

§ 3.5.2 All material, equipment, or other special warranties required by the Contract Documents shall be issued in the name of the Owner, or shall be transferable to the Owner, and shall commence in accordance with Section 9.8.4.

§ 3.5.3 Neither final payment, nor provision in Contract Documents, nor partial or entire occupancy of premises by Owner shall constitute an acceptance of Work not done in accordance with Contract Documents or relieve the Contractor of liability in respect to any express warranties or responsibility for faulty materials or workmanship.

§ 3.5.4 The Contractor shall warrant all materials and operating systems to be free from any defects and faulty equipment for a period of one (1) year from the date the Architect recommends final payment, or where the performance of materials, system or equipment is documented, from the date that such materials, systems, or equipment perform satisfactorily, whichever date is later. The Performance and Payment bonds shall remain in full force and effect through the guarantee period.

§ 3.5.5 In emergencies occurring during the guarantee period, the Owner may correct any defect immediately and charge the cost to the Contractor. The Owner shall at once notify the Contractor, who may take over the Work and make any corrections remaining after his or her forces arrive at the Work. Any repair work not started within seven days following notice to the Contractor of any defect shall be considered an emergency.

§ 3.5.6 The Contractor shall obtain and furnish to the Architect written Manufacturer's Warranties in the name of the Owner for all major materials and for all equipment. The terms of the warranty shall be as individually specified for the item. If no term is specified, the term shall be for a minimum of one year.

§ 3.6 Exempt From Sales Tax

§ 3.6.1 Owner represents that it is an organization operated for purposes that make it exempt from New York Sales and Compensating Use Tax pursuant to Section 1115(a) (15) of the tax law, as amended by laws of New York 1974, CH. 513 and 514. The Contractor is advised that the Owner is exempt from payment of all State and Local sales and compensating use taxes of the State of New York, cities and counties on the purchase of all materials and supplies incorporated in and becoming an integral component part of the structures, buildings or real property, pursuant to the provisions of this Contract. Such taxes are not to be included in the Contract price, bid or costs to be reimbursed, as the case may be. This exemption does not, however, apply to tools, machinery, equipment or other property leased by or to

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the Contractor or a subcontractor or to supplies and materials which, even though they are consumed in the performance of the Contract, are not incorporated into the completed permanent work, and the Contractor and his or her subcontractors shall be responsible for and pay any and all applicable taxes, including sales and compensating use taxes, on such leased tools, machinery, equipment or other property upon all such unincorporated supplies and materials. Owner shall deliver to Contractor the appropriate exemption certificate required to be supplied by the Owner and Contractor and his or her subcontractors and material men shall be solely responsible for obtaining or delivering any and all exemption or other certificates and for furnishing a Contractor Exempt Purchase Certificate or other appropriate certificates to all persons, firms, or corporations from whom they purchase supplies, materials, and equipment for the performance of the Work.

§ 3.6.2 Except as otherwise specified, all Federal, State and Local taxes are to be included in the Contract price.

§ 3.6.3 Assessments and Taxes on Wages: Each Contractor shall pay and include in his or her proposal all costs and liabilities for the amounts assessed, or which may be assessed by the Federal, State and local governments under any and all Acts or Laws upon the wages and salaries paid or to be paid all employees of the Contractor and his or her subcontractors under this Contract.

§ 3.7 Permits, Fees, Notices, and Compliance with Laws

§ 3.7.1 Unless otherwise provided in the Contract Documents, the Owner, assisted by the Architect and Construction Manager, shall secure and pay for the State Education Department building permit. The Contractor shall secure and pay for other permits, fees, licenses, and inspections by government agencies necessary for proper execution and completion of the Work that are customarily secured after execution of the Contract and legally required at the time bids are received.

§ 3.7.2 The Contractor shall comply with and give notices required by applicable laws, statutes, ordinances, codes, rules and regulations, and lawful orders of public authorities applicable to performance of the Work , including but not limited to all infectious disease exposure precautions.

§ 3.7.3 If the Contractor performs Work and knows or should have known it to be contrary to applicable laws, statutes, ordinances, codes, rules and regulations, or lawful orders of public authorities, the Contractor shall assume appropriate responsibility for such Work and shall bear the costs attributable to correction , including applicable fines and/or penalties.

§ 3.7.4 Concealed or Unknown Conditions. If the Contractor encounters conditions at the site that are (1) subsurface or otherwise concealed physical conditions that differ materially from those indicated in the Contract Documents or (2) unknown physical conditions of an unusual nature that differ materially from those ordinarily found to exist and generally recognized as inherent in construction activities of the character provided for in the Contract Documents, the Contractor shall promptly provide written notice to the Owner, Construction Manager, and the Architect before conditions are disturbed or affected work is performed, and in no event later than 7 days after first observance of the conditions. The Architect and Construction Manager will promptly investigate such conditions and, if the Architect, in consultation with the Construction Manager, determines that they differ materially and cause an increase or decrease in the Contractor's cost of, or time required for, performance of any part of the Work, will recommend that an equitable adjustment be made in the Contract Sum or Contract Time, or both. If the Architect, in consultation with the Construction Manager, determines that the conditions at the site are not materially different from those indicated in the Contract Documents and that no change in the terms of the Contract is justified, the Architect shall promptly notify the Owner, Construction Manager, and Contractor in writing, stating the reasons. If the Owner or Contractor disputes the Architect's determination or recommendation, either party may submit a Claim as provided in Article 15.

§ 3.7.5 If, in the course of the Work, the Contractor encounters human remains or recognizes the existence of burial markers, archaeological sites or wetlands not indicated in the Contract Documents, the Contractor shall immediately suspend any operations that would affect them and shall notify the Owner, Construction Manager, and Architect. The Contractor shall continue to suspend such operations until otherwise instructed by the Owner but shall continue with all other operations that do not affect those remains or features. Requests for adjustments in the Contract Sum and Contract Time arising from the existence of such remains or features may be made as provided in Article 15. No adjustment in the Contract Time or Contract Sum will be permitted, however, in connection with a concealed or unknown condition that does not differ materially from those conditions disclosed or that reasonably should have been

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disclosed by the Contractor's (1) prior inspections, test, and reviews, or (2) inspections, tests, and reviews the Contractor had the opportunity to make or should have performed in connection with the Project.

§ 3.8 Allowances

§ 3.8.1 The Contractor shall include in the Contract Sum all allowances stated in the Contract Documents. Items covered by allowances shall be supplied for such amounts and by such persons or entities as the Owner may direct.

§ 3.8.2 Contract Sum Permitted Allowance costs shall include the direct cost to the Contractor and Subcontractor for labor, materials and equipment,
including delivery, unloading, storage, handling and installation. Allowance costs do not include the Contractor's
(Paragraph deleted)
overhead and profit, including the costs of bonds, insurance, administration and supervision, which costs should be carried as part of the Contract Sum.

§ 3.8.3 Materials and equipment under an allowance shall be selected by the Owner with reasonable promptness.

§ 3.9 Superintendent

§ 3.9.1 The Contractor shall employ a competent Superintendent and necessary assistants who shall be in attendance at the Project site during performance of the Work, and shall attend all Project meetings, whether held prior to or after Substantial Completion of the Work. The Superintendent shall represent the Contractor, and communications given to the superintendent shall be as binding as if given to the Contractor. The Contractor shall delegate to the Superintendent decision making authority to facilitate coordination of multiple contractors and coordination of the Work.

§ 3.9.2 Prior to starting the Work, the Contractor shall designate a Project Manager, a non-working on-site Superintendent, and other key individuals who shall be assigned to the Project through and including final completion. Such designations shall be in writing and provided to the Architect and Owner. The Superintendent shall be in attendance at the Project site throughout the Work, remain on the Project site not less than eight hours per day, five days per week, until termination of the Contract, unless the job is suspended, Work is stopped by the Owner, or no Work is scheduled. The Superintendent shall be approved by the Owner in its sole discretion. Said representatives shall be qualified in the type of work to be undertaken and shall not be changed during the course of construction without the prior written consent of the Owner. Should a representative leave the Contractor's employ, the Contractor shall promptly designate a new representative. The Owner shall have the right, at any time, to direct a change in the Contractor's representatives if their performance is unsatisfactory. In the event of such a demand, the Contractor shall within three days after notification thereof, replace said individual(s) with an individual(s) satisfactory to Owner, in Owner's sole discretion. If said replacement is disapproved, the Contractor may, at Owner's option, be terminated for cause. The Owner shall have no obligation to direct or monitor the Contractor's employees. All references Herein to the Superintendent shall be taken to mean the Contractor's superintending staff. Each Subcontractor shall designate a Project Manager, Superintendent, and other key individuals who shall be assigned to the Project.

§ 3.9.3 The Contractor, as soon as practicable after award of the Contract, shall notify the Owner and Architect, through the Construction Manager, of the name and qualifications of a proposed Superintendent. Within 14 days of receipt of the information, the Construction Manager may notify the Contractor, stating whether the Owner, the Construction Manager, or the Architect (1) has reasonable objection to the proposed Superintendent or (2) require additional time for review. Failure of the Construction Manager to provide notice within the 14-day period shall constitute notice of no reasonable objection. The Contractor shall not change the Superintendent without prior written notice to the Architect and Owner at least thirty (30) days prior to the proposed date of the change.

§ 3.9.4 The Contractor shall not employ a proposed Superintendent to whom the Owner, Construction Manager, or Architect has made reasonable and timely objection. The Contractor shall not change the Superintendent without the Owner's written consent.

§ 3.9.5 The Contractor shall not reduce or terminate supervision of the Work, nor change the Superintendent without the prior written approval of the Owner and Architect.

§ 3.9.6 If, for any reason, the Contractor takes an action resulting in any of the changes noted in Section 3.9.5, the Owner or their Agent may take remedial action to ensure continued progress of the Work, including the hiring of suitable supervisory personnel, and charge the Contractor all costs associated with these remedial actions including the costs of

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legal, and Architectural services.

§ 3.10 Contractor's Construction and Submittal Schedules

§ 3.10.1 The Contractor, promptly after being awarded the Contract, shall submit for the Owner's and Architect's information, and the Construction Manager's use in developing the Project schedule, a Contractor's construction schedule for the Work in electronic format with predecessor logic. The schedule shall contain detail appropriate for the Project, including (1) the date of commencement of the Work, interim schedule milestone dates, and the date of Substantial Completion; (2) an apportionment of the Work by construction activity; and (3) the time required for completion of each portion of the Work. The schedule shall provide for the orderly progression of the Work to completion and shall not exceed time limits current under the Contract Documents. The schedule shall be revised at appropriate intervals as required by the conditions of the Work and Project. The Contractor shall cooperate with the Construction Manager in scheduling and performing the Contractor's Work to avoid conflict with, and as to cause no delay in, the work or activities of other Contractors, or the construction or operations of the Owner's own forces or Separate Contractors. Failure by a Contractor to furnish any required schedule or schedule revision in a timely manner shall entitle the Construction Manager to prepare a schedule for that Contractor's Work, to which said Contractor shall be bound.

§ 3.10.2 The Contractor, promptly after being awarded the Contract shall submit (as determined by Architect) long lead items for construction, and thereafter as necessary to maintain a current submittal schedule, shall submit a submittal schedule for the Construction Manager's and Architect's approval. The Architect and Construction Manager's approval shall not be unreasonably delayed or withheld. The submittal schedule shall (1) be coordinated with the Contractor's construction schedule, and (2) allow the Construction Manager and Architect reasonable time to review submittals. If the Contractor fails to submit a submittal schedule, or fails to provide submittals in accordance with the approved submittal schedule, the Contractor shall not be entitled to any increase in Contract Sum or extension of Contract Time based on the time required for review of submittals.

§ 3.10.3 The Contractor shall participate with other Contractors, the Construction Manager, and the Owner in reviewing and coordinating all schedules for incorporation into the Project schedule that is prepared by the Construction Manager. The Contractor shall make revisions to the construction schedule and submittal schedule as deemed necessary by the Construction Manager to conform to the Project schedule.

§ 3.10.4 The Contractor shall perform the Work in accordance with the most recent schedules submitted to the Owner, Construction Manager, and Architect, and incorporated into the approved Project schedule.

§ 3.10.5 Procedure and Schedule of Work:

.1 Unless otherwise stated the Work on the entire project shall be performed continuously without interruption, so that all Work can be completed in the time set forth in the Contract Documents.

.2 The Contractor shall cooperate with the Owner, and the sequence of operation shall be scheduled with the Owner so as to interfere as little as possible with the Owner's use of existing site and existing structures and the Owner's approval shall be obtained prior to the starting of such operations.

.3 Time of Completion: All Work shall be completed on or before the date set forth in the Agreement, except as otherwise specified or modified by Change Order.

.4 Job Meetings: During the course of construction, job meetings will be held with representatives of the Owner, the Architect and Engineers, the Construction Manager and the Contractors to discuss the progress of the Work, any problems of construction, timing or procedure, so as to expedite all phases of the Work to completion. Contractors and Subcontractors are to be represented at such meetings.

.5 Overtime Work: Each Contractor shall take into account the possible need for overtime work in order to meet the Contract Completion Date and shall include the costs associated with said overtime work in their Contract Sum.

§ 3.10.6 Project Scheduling

.1 After the Contractor has received from the Owner a notice to proceed or a letter of intent, a preconstruction conference will be held. The procedures and scheduling of the Work will be discussed.

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.2 At the preconstruction conference, using the Project Schedule in Contract Documents, each Contractor shall submit a Construction Schedule to the Construction Manager of its own Work indicating starting dates and estimated completion dates of each phase of the Work and indicating information described in Contract (General, Supplementary and other conditions) "Submittals", using the time of completion set forth in the Contract Documents. The Project Schedule submitted by each Contractor shall be in electronic format with predecessor logic and durations specified for each of the Work activities set forth on the Schedule of Values.

.3 Procedures and requirements described in the Contract (General, Supplementary and other conditions) Section on "Submittals" shall be followed by all Contractors and the Architect to develop a Project Schedule.

.4 Once a Project Schedule is published by the Architect and approved by the Owner, it shall be strictly enforced until the Project is completed, unless it becomes necessary to revise it by an appropriate modification.

Upon issuance of the approved Project Schedule, each Contractor shall be responsible for interfacing and/or integrating its Work with that of other Contractors and the Owner and for completing its Work in the allotted time.

In the event that the Contractors do not create and/or agree on an integrated Project Schedule, the Contractors will abide by the Project schedule previously developed by the Architect and contained in the bid documents.

.5 NO PAYMENTS will be made on any of the Contracts until the scheduling procedures in this Section 3.10.6 have been completed.

§ 3.10.7 Continuing Performance and Schedule Adjustments

.1 In the event the Owner and Architect determine that performance of the Work has not progressed to the level of completion required by the Project Schedule the Owner shall have the right to order the Contractor to take corrective action necessary to expedite the progress of construction including without limitation overtime work, additional work shifts, supplying additional manpower or equipment as well as other extraordinary measures. Such extraordinary measures shall continue until the progress of the Work conforms to milestone dates set forth in the Project Schedule.

.2 The Contractor shall not be entitled to additional compensation in connection with such extraordinary measures required by the Owner except when Work progress has been delayed by events such as labor strikes or natural catastrophes. The Owner reserves the right to withhold payments due under the Contract Documents until the Contractor submits a Project Schedule Recovery Plan including a daily work schedule to complete all Work in compliance with the Project Schedule. The Contractor shall be responsible for all costs of preparing and performing the Work identified in the Project Schedule Recovery Plan.

.3 The Owner shall have the right to direct the Contractor to delay, postpone or reschedule any portion of the Work that may interfere with or disrupt the operations of the Owner.

§ 3.11 Documents and Samples at the Site

The Contractor shall make available, at the Project site, the Contract Documents, including Change Orders, Construction Change Directives, and other Modifications, in good order and marked currently to indicate field changes and selections made during construction, and the approved Shop Drawings, Product Data, Samples, and similar required submittals. These shall be in electronic form or paper copy, available to the Construction Manager, Architect, and Owner, and delivered to the Construction Manager for submittal to the Owner upon completion of the Work as a record of the Work as constructed.

§ 3.12 Shop Drawings, Product Data, and Samples

§ 3.12.1 Shop Drawings are drawings, diagrams, schedules, and other data specially prepared for the Work by the Contractor or a Subcontractor, Sub-subcontractor, manufacturer, supplier, or distributor to illustrate some portion of the Work. Each submittal shall bear written confirmation that Contractor has satisfied Contractor's obligations under the Contract Documents with respect to Contractor's review and approval of the submittal. Reproducing Architect's construction drawing is not acceptable for shop drawing submittals.

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§ 3.12.2 Product Data are illustrations, standard schedules, performance charts, instructions, brochures, diagrams, operating and maintenance procedures, and other information furnished by the Contractor to illustrate materials or equipment for some portion of the Work.

§ 3.12.3 Samples are physical examples that illustrate materials, equipment, or workmanship, and establish standards by which the Work will be judged.

§ 3.12.4 Shop Drawings, Product Data, Samples, and similar submittals are not Contract Documents. Their purpose is to demonstrate how the Contractor proposes to conform to the information given and the design concept expressed in the Contract Documents for those portions of the Work for which the Contract Documents require submittals. Review by the Architect and Construction Manager is subject to the limitations of Sections 4.2.10 through 4.2.12. Informational submittals upon which the Construction Manager and Architect are not expected to take responsive action may be so identified in the Contract Documents. Submittals that are not required by the Contract Documents may be returned by the Construction Manager or Architect without action.

§3.12.4.1 The Contractor represents and warrants that all Shop drawings shall be prepared by a person or entity possessing expertise and experience in the trade for which the shop drawing has been prepared and, if required by the Contract Documents or law, by a licensed professional engineer.

§ 3.12.5 The Contractor shall review for compliance with the Contract Documents, indicate review and approval in writing, and submit to the Construction Manager, Shop Drawings, Product Data, Samples, and similar submittals required by the Contract Documents, in accordance with the Project submittal schedule approved by the Construction Manager and Architect or, in the absence of an approved Project submittal schedule, with reasonable promptness and in such sequence as to cause no delay in the Work or in the activities of other Contractors, Separate Contractors, or the Owner's own forces. The Contractor shall cooperate with the Construction Manager in the coordination of the Contractor's Shop Drawings, Product Data, Samples, and similar submittals with related documents submitted by other Contractors. No extension of time will be granted to the Contractor because of failure to have Shop Drawings, product data, and samples submitted in ample time to allow for review by the Architect or their Consultants.

§ 3.12.6 By submitting Shop Drawings, Product Data, Samples, and similar submittals, the Contractor represents to the Owner, Construction Manager, and Architect, that the Contractor has (1) reviewed and approved them, (2) determined and verified materials, field measurements and field construction criteria related thereto, or will do so, and (3) checked and coordinated the information contained within such submittals with the requirements of the Work and of the Contract Documents.

§ 3.12.7 Work performed without approved Shop Drawings, product data, samples or similar submittals as required by the Specifications is subject to all comments and conditions of approval regardless of Work progress. Completed work must be in accordance with all comments and conditions of approval regardless of Work progress. Any portion of the Work performed prior to review and approval by the Architect of required Shop Drawings, Product Data, Samples, or other Submittals, is performed at Contractor's risk. No Contract adjustments will be made to correct or modify Work installed without approval.

§ 3.12.8 The Work shall be in accordance with approved submittals except that the Contractor shall not be relieved of responsibility for deviations from the requirements of the Contract Documents by the Architect's approval of Shop Drawings, Product Data, Samples, or similar submittals, unless the Contractor has specifically notified the Construction Manager and Architect in writing of such deviation at the time of submittal and (1) the Architect has given written approval to the specific deviation as a minor change in the Work, or (2) a Change Order or Construction Change Directive has been issued authorizing the deviation. The Contractor shall not be relieved of responsibility for errors or omissions in Shop Drawings, Product Data, Samples, or similar submittals, by the Architect's approval thereof.

§ 3.12.9 The Contractor shall direct specific attention, in writing or on resubmitted Shop Drawings, Product Data, Samples, or similar submittals, to revisions other than those requested by the Construction Manager and Architect on previous submittals. In the absence of such notice, the Architect's approval of a resubmission shall not apply to such revisions.

§ 3.12.10 The Contractor shall not be required to provide professional services that constitute the practice of architecture or engineering unless such services are specifically required by the Contract Documents for a portion of

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the Work or unless the Contractor needs to provide such services in order to carry out the Contractor's responsibilities for construction means, methods, techniques, sequences, and procedures. The Contractor shall not be required to provide professional services in violation of applicable law.

§ 3.12.10.1 If professional design services or certifications by a design professional related to systems, materials, or equipment are specifically required of the Contractor by the Contract Documents, the Owner and the Architect will specify all performance and design criteria that such services must satisfy. The Contractor shall be entitled to rely upon the adequacy and accuracy of the performance and design criteria provided in the Contract Documents. The Contractor shall cause such services or certifications to be provided by an appropriately licensed design professional, whose signature and seal shall appear on all drawings, calculations, specifications, certifications, Shop Drawings, and other submittals prepared by such professional. Shop Drawings, and other submittals related to the Work, designed, or certified by such professional, if prepared by others, shall bear such professional's written approval when submitted to the Architect. The Owner, the Architect, and the Construction Manager shall be entitled to rely upon the adequacy and accuracy of the services, certifications, and approvals performed or provided by such design professionals, provided the Owner and Architect have specified to the Contractor the performance and design criteria that such services must satisfy. Pursuant to this Section 3.12.10, the Architect will review and approve or take other appropriate action on submittals only for the limited purpose of checking for conformance with information given and the design concept expressed in the Contract Documents. The Construction Manager shall review submittals for sequencing, constructability, and coordination impacts on other Contractors.

§ 3.12.10.2 If the Contract Documents require the Contractor's design professional to certify that the Work has been performed in accordance with the design criteria, the Contractor shall furnish such certifications to the Construction Manager and Architect at the time and in the form specified by the Architect.

§ 3.12.10.3 If it is the position of the Contractor, or his or her licensed design professional, that the Owner and Architect have not provided all performance and design criteria, the Contractor shall request additional criteria in writing before proceeding with the professional services described in 3.12.10. Proceeding with the professional services shall be evidence that the Owner and Architect have provided all necessary performance and design criteria.

§ 3.13 Use of Site

§ 3.13.1 The Contractor shall confine operations at the site to areas permitted by applicable laws, statutes, ordinances, codes, rules and regulations, lawful orders of public authorities, and the Contract Documents and shall not unreasonably encumber the site with materials or equipment.

§ 3.13.1.1 Use of Buildings and Site:

.1 Each Contractor shall cooperate with the Owner in making available for the Owner's use, areas of the completed or partially completed building(s) or site as provided for in Article 9, Section 9.9. The Owner shall have the right to take possession of and to use any completed or partially completed portions of the building or site even though the time of completing the entire Work or such portion of the Work may not have expired. Such use shall not constitute acceptance thereof. Such occupancy shall in no way abrogate any specified warranties or guaranties for materials, workmanship or operation of equipment pertaining to the occupied portions.

.2 Each Contractor shall cooperate with the Owner in making available for the Owner's use such building services as heating, ventilating, cooling, water, lighting and telephone for the space or spaces to be occupied, and if the equipment required to furnish such services is not entirely completed at the time the Owner desires to occupy the aforesaid space or spaces, the Contractor shall make every reasonable effort to complete such part of its Work as soon as possible to the extent that the necessary equipment can be put into operation and use.

.3 Mutually acceptable arrangements shall be made as to the warranties or guaranties affecting all Work associated therewith.

.4 Such occupancy or use shall not commence prior to a time mutually agreed to by the Owner and Contractor and to which the insurance company or companies providing the property insurance have consented by endorsement to the policy or policies. Such occupancy shall be documented

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with an appropriately executed Certificate of Substantial Completion.

§ 3.13.2 The Contractor shall coordinate the Contractor's operations with, and secure the approval of, the Construction Manager before using any portion of the site.

§ 3.14 Cutting and Patching

§ 3.14.1 The Contractor shall be responsible for cutting, fitting, or patching required to complete the Work or to make its parts fit together properly. All areas requiring cutting, fitting, or patching shall be restored to the condition existing prior to the cutting, fitting, or patching, unless otherwise required by the Contract Documents.

§ 3.14.1.1 The word "new" used Herein shall mean Work which has been or is to be installed under the terms of Contract for this project. The word "existing" used Herein shall mean existing conditions previous to the award of a Contract for this project.

§ 3.14.1.2 In order to eliminate cutting and patching as much as possible, each Contractor shall, during the progress of the Work Furnish to the General Construction Contractor who shall then install them, proper sleeves, inserts, etc. as required for his or her new Work and shall give proper and detailed instructions to others where Work may be affected by their Work, with adequate notice prior to the erection of new Work. Cutting and patching Work as required to install new work or remove existing Work shall be done carefully and neatly with as little damage as possible

§ 3.14.1.3 Unless otherwise specified in the Contract (General, Supplementary and other conditions, or the plans and specifications) each Contractor is responsible for their own cutting, removals and patching required for the proper installation or execution of their Work, as defined in the Specifications. Core drilling remains the responsibility of each Contractor.

§ 3.14.1.4 Any costs caused by defective or ill-timed Work shall be borne by the Contractor responsible, therefore. Any Contractor who is required to cut and patch his or her new Work to provide conditions for other Contractors to complete their new Work and who was not given adequate prior notice of the conditions required for completion of such Work before doing his or her work, shall charge the Contractor in default the documented cost of the cutting and patching Work plus 15% for overhead and profit unless otherwise specified.

§ 3.14.1.5 Cutting and patching of any Work shall be made in such a manner as to not breach any provisions of any guarantee or warranty on existing work left in place or guaranty or warranty required for his or her new Work. Patching of Work shall match existing adjacent surfaces and patchwork shall be disguised completely to hide any trace of patching.

§ 3.14.2 The Contractor shall not damage or endanger a portion of the Work or fully or partially completed construction of the Owner, Separate Contractors, or of other Contractors by cutting, patching, or otherwise altering such construction, or by excavation. The Contractor shall not cut or otherwise alter construction by the Owner, Separate Contractors, or by other Contractors except with written consent of the Construction Manager, Owner, and such other Contractors or Separate Contractors. Consent shall not be unreasonably withheld. The Contractor shall not unreasonably withhold, from the Separate Contractors, other Contractors, or the Owner, its consent to cutting or otherwise altering the Work.

§ 3.15 Cleaning Up

§ 3.15.1 The Contractor shall keep the premises and surrounding area free from accumulation of waste materials and rubbish caused by operations under the Contract. At completion of the Work, the Contractor shall remove waste materials, rubbish, the Contractor's tools, construction equipment, machinery, and surplus materials from and about the Project. If the Contractor fails to clean up as provided in the Contract Documents, the Owner, or Construction Manager with the Owner's approval, may do so and the Owner shall be entitled to reimbursement from the Contractor.

(Paragraph deleted)

§ 3.15.2 All debris required to be removed from the Project shall be removed in accordance with all applicable rules, regulations and statutes, which may pertain thereto & in accordance with the authority having jurisdiction. The Contractor shall warrant that all debris shall be disposed of in accordance with all rules, regulations and statutes applicable thereto and at a facility permitted and authorized to receive materials of the type and nature so removed

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from the premises. The Contractor shall hold the Owner free and harmless of, from or concerning any claimed liability resulting from the improper or unlawful removal and/or disposal of such debris. Contractors are encouraged to recycle as much material as is practical.

§ 3.16 Access to Work

The Contractor shall provide the Owner, Construction Manager, and Architect with access to the Work in preparation and progress wherever located.

§ 3.17 Royalties, Patents and Copyrights

The Contractor shall pay all royalties and license fees. The Contractor shall defend suits or claims for infringement of copyrights and patent rights and shall hold the Owner, Construction Manager, and Architect harmless from loss on account thereof, but shall not be responsible for defense or loss when a particular design, process, or product of a particular manufacturer or manufacturers is required by the Contract Documents, or where the copyright violations are contained in Drawings, Specifications, or other documents prepared by the Owner, Architect, or Construction Manager. However, if an infringement of a copyright or patent is discovered by, or made known to, the Contractor, the Contractor shall be responsible for the loss unless the information is promptly furnished to the Architect through the Construction Manager.

§ 3.18 Indemnification

§ 3.18.1 To the fullest extent permitted by law, the Contractor shall indemnify and hold harmless the Owner, Construction Manager, Architect, and their respective directors, trustees, officers, employees, agents, consultants, interim administrators, authorized volunteers and committee members, students, teachers, auxiliary instructors, and members of the Board of Education (collectively "Indemnitees") from and against claims, damages, losses and expenses, including but not limited to attorneys' fees, arising out of or resulting from performance of the Work, when such claim, damage, loss or expense is attributable to bodily injury, sickness, disease, or death, or to injury to or destruction of tangible property (other than the Work itself, and including loss of use), but only to the extent caused, in whole or part, by the acts or omissions, or other culpable conduct, of the Contractor, a Subcontractor, anyone directly or indirectly employed by them, or anyone for whose acts they may be liable, regardless of whether or not such claim, damage, loss, or expense is caused in part by an Indemnitee. The Contractor agrees to include the following indemnity provision in each and every contract it enters into with a subcontractor, and to require that subcontractor to include such provision in each contract it enters into with any lower tier subcontractor: To the fullest extent permitted by law, Subcontractor shall indemnify and hold harmless the Contractor, Owner, Construction Manager , Architect, and each of their respective representatives, employees, directors, officers, consultants and agents, from and against any and all claims, suits, actions, debts, damages, fines, penalties, costs, charges and expenses, including attorneys' fees and court costs, arising out of, relating to or resulting from the performance of this Subcontract, including, but not limited to, bodily injury and/or property damage, to the extent caused, in whole or in part, by acts, actions, omissions, fault or breach of the Subcontractor, its employees, agents, subcontractors, suppliers and/or materialmen, regardless of whether or not such claim is caused in part by a party indemnified hereunder.

§ 3.18.1.1 To the maximum extent permitted by law, the Contractor hereby assumes the entire responsibility and liability for any and all damage (liquidated, direct or consequential) and injury (including death), disease or sickness of any kind or nature whatsoever, to all persons, whether or not employees of the Contractor, and to all property and business or businesses, caused by, resulting from, arising out of, or occurring in connection with:

a. the Work;
b. the performance or intended performance of the Work;
c. the performance or failure to perform the Contract;
d. the failure to complete the Work by the date set for Substantial Completion;
e. any occurrence which happens in or about the area where the Work is being performed by the Contractor, either directly or through a Subcontractor, or while any of Contractor's property, equipment or personnel is in or about such area; or
f. New York State Labor Law, Article 10, including without limitation sections 240, 241, 241-a and 241-b, thereof, as amended, regardless of whether or not such claim, damage, loss or expense is caused in part by a party indemnified hereunder.

§ 3.18.1.2 Except to the extent, if any, expressly prohibited by law, should any such damage or injury referred to in Section 3.18.1.1 be sustained, suffered, or incurred by Owner, Architect, or Construction Manager, or should any claim for such damage or injury be made or asserted against any of them, whether or not such claim is based upon

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Owner's, Architect's, or Construction Manager's alleged active or passive negligence or participation in the wrong or upon any alleged breach of any statutory duty or obligation on the part of the Owner, Architect, or Construction Manager, Contractor shall indemnify and hold harmless Owner, Architect, and Construction Manager along with their Board of Education, Administration officers, agents, partners, and employees (hereinafter collectively referred to as "Indemnitees"), of, from and against any and all other loss, cost, expense, and liability, including without limitation, legal fees and disbursements, that Indemnitees may directly or indirectly sustain, suffer or incur as a result of such damages, injuries and claims; and Contractor agrees to assume, on behalf of any and all Indemnitees the defense (with counsel satisfactory to the party indemnified) of any action at law or in equity, or other legal proceeding, which may be brought against any Indemnitee upon or by reason of such damage, injury or claim and to pay on behalf of every Indemnitee, the amount of any judgment, decree, award, or order that may be entered against each said Indemnitee in any such action or proceeding. In the event that any such claim, loss, cost, expense, liability, damage or injury is sustained, suffered, or incurred by, or is made, asserted or threatened against any Indemnitee, Owner shall, in addition to all other rights and remedies, have the right to withhold from any payments due and to become due to Contractor an amount sufficient in Owner's judgment to protect and indemnify the Indemnitee(s) from and against any and all such claim, loss, cost, expense, liability, damage or injury, including legal fees and disbursements; or Owner, in its discretion, may require Contractor to furnish a surety bond satisfactory to Owner guaranteeing such protection which bond shall be furnished by Contractor within 5 days after written demand has been made therefore. In the event more than one Contractor is connected with an event or occurrence (or series of events or occurrences) covered by this indemnification, then all such Contractors shall be jointly and severally responsible to the Indemnitee, and the ultimate responsibility among such indemnifying Contractors shall be settled or otherwise determined by separate proceedings and without loss, expense or damage to any Indemnitee.

§ 3.18.2 In claims against any person or entity indemnified under this Section 3.18 by an employee of the Contractor, a Subcontractor, anyone directly or indirectly employed by them or anyone for whose acts they may be liable, the indemnification obligation under Section 3.18 shall not be limited by a limitation on amount or type of damages, compensation, insurance proceeds, or benefits payable by or for the Contractor or a Subcontractor under workers' compensation acts, disability benefit acts or other employee benefit acts.

§ 3.18.3 In any and all claims against the Owner, the Architect, the Construction Manager, or their agents or employees by third parties, the indemnification obligation under this § 3.18 shall apply and shall not be limited by limitation or amount of or type of damages, compensation, insurance proceeds, or benefits payable by or for the Contractor or Subcontractors.

§ 3.18.4 Contractor shall comply with, and cooperate with, Architect, Construction Manager, and Owner in complying with legal requirements. Among other things, Contractor shall be responsible for performing corrective work within any abatement periods prescribed by governmental entities including but not limited to OSHA, appealing from decisions or orders, requesting extensions on abatement periods, and furnishing such information or evidentiary material as may be necessary or as may be requested by Architect, Construction Manager, or Owner to fully protect the rights and interests of Owner, Architect, and Construction Manager with respect to possible, threatened or pending proceedings or orders.

§ 3.18.5 Natale Patent Rights. With respect to any Contractor performing asbestos abatement as part of its Scope of Work.

.1 Contractor shall hold a valid current license to perform Work using the negative pressure system covered by the Natale Patent or provide and Indemnity Agreement as follows:

.2 Indemnity Agreement: Contractor and Contractor's surety agree to protect, indemnify and hold harmless the Owner, the Architect, and the Board of Education, Administration directors, officers, agents, employees, and assigns of the Architect from any and all claims, judgments, liabilities, expenses, attorney fees, court costs, or losses of any nature, resulting from claims of patent right infringement including but not limited to U.S. Patent Number 4,604,111, commonly known as the Natale Patent, arising out of the performance of Work on the Project.

(a) The provisions of this Indemnity Agreement shall protect the Indemnitees against all claims arising out of the subject matter or performance of this Contract and Contract Documents, including, without limitation, allegations or findings that the Indemnitees, or any of them, were guilty of negligence in the

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issuance of such Contract.

(b) The provisions of this Indemnity Agreement shall be in addition to and shall in no way delete any provisions, including warranty and indemnity provisions of the Agreement.

§ 3.18.6 The Contractor accepts assignment of, and liability for, all purchase orders and other agreements for procurement of materials and equipment that are identified as part of the Contract Documents. The Contractor shall be responsible for such pre-purchased items, if any, as if the Contractor were the original purchaser. The Contract Sum includes, without limitation, all costs and expenses in connection with delivery, storage, insurance, installation and testing of items covered in any assigned purchase orders or agreements. All warranty and correction of the Work obligations under the Contract Documents shall also apply to any pre-purchased items, unless the Contract Documents specifically provide otherwise.

ARTICLE 4 ARCHITECT AND CONSTRUCTION MANAGER

§ 4.1 General

§ 4.1.1 The Owner shall retain an architect lawfully licensed to practice architecture or an entity lawfully practicing architecture in the jurisdiction where the Project is located. That person or entity is identified as the Architect in the Agreement and is referred to throughout the Contract Documents as if singular in number. All changes in the work must be processed through the Architect.

§ 4.1.2 The Construction Manager is the firm set forth on page 1 hereof.

§ 4.1.3 Duties, responsibilities, and limitations of authority of the Construction Manager and Architect as set forth in the Contract Documents shall not be restricted, modified, or extended without written consent of the Owner.

§ 4.2 Administration of the Contract

§ 4.2.1 The Construction Manager and Architect will provide administration of the Contract as described in the Contract Documents and will be the Owner's representatives during construction until the date the Architect issues the final Certificate for Payment and during the Correction Period described in Article 12. The Construction Manager and Architect will have authority to act on behalf of the Owner only to the extent provided in the Contract Documents.

§ 4.2.2 The Architect will visit the site at intervals appropriate to the stage of construction, or as otherwise agreed with the Owner, to become generally familiar with the progress and quality of the portion of the Work completed or in progress, and to determine in general if the Work observed is being performed in a manner indicating that the Work, when fully completed, will be in accordance with the Contract Documents. However, the Architect will not be required to make exhaustive or continuous on-site inspections to check the quality or quantity of the Work. On the basis of the site visits, the Architect will keep the Owner and the Construction Manager reasonably informed about the progress and quality of the portion of the Work completed, and promptly report to the Owner and Construction Manager
(1) known deviations from the Contract Documents and from the most recent Project schedule prepared by the Construction Manager, and (2) defects and deficiencies observed in the Work.

§ 4.2.2.1 The Contractor shall reimburse the Owner for compensation paid to the Architect for additional site visits made necessary by the fault, neglect, or request of the Contractor.

§ 4.2.2.2 On the basis of onsite observations and otherwise, The Architect shall keep the Owner informed of the progress of the work in accordance with the Owner/Architect contract terms
§ 4.2.2.3 The Architect will promptly report to the Owner any observed defects or deficiencies of the Work.

§ 4.2.3 The Construction Manager shall provide one or more representatives who shall be in attendance at the Project site whenever the Work is being performed or as otherwise directed by the Owner. The Construction Manager will determine in general if the Work observed is being performed in accordance with the Contract Documents, will keep the Owner and Architect reasonably informed of the progress of the Work, and will promptly report to the Owner and Architect known deviations from the Contract Documents and the most recent Project schedule, and defects and deficiencies observed in the Work.

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§ 4.2.4 The Construction Manager will schedule and coordinate the activities of the Contractor and other Contractors in accordance with the latest approved Project schedule.

§ 4.2.5 The Construction Manager, except to the extent required by Section 4.2.4, and Architect will not have control over, or charge of, the construction means, methods, techniques, sequences or procedures, or for the safety precautions and programs in connection with the Work, since these are solely the Contractor's rights and responsibilities under the Contract Documents, except as provided in Section 3.3.1, and neither will be responsible for the Contractor's failure to perform the Work in accordance with the requirements of the Contract Documents except to the extent that any such failure shall be directly attributable to the negligent or wrongful act or omission of the Construction Manager or the Architect. Neither the Construction Manager nor the Architect will have control over or charge of, or be responsible for acts or omissions of, the Contractor, Subcontractors, or their agents or employees, or of any other persons or entities performing portions of the Work. Nothing contained in this Section 4.2.5 shall limit the duties of the Architect or the Construction Manager to the Owner under any other provision of the Contract Documents. If the Architect or the Construction Manager believes that the Contractor is failing to perform the Work in accordance with the requirements of the Construction Documents, it shall promptly disclose such failure to the Owner in writing.

§ 4.2.6 Communications. The Owner shall communicate with the Contractor and the Construction Manager's consultants through the Construction Manager about matters arising out of or relating to the Contract Documents. The Owner and Construction Manager shall include the Architect in all communications that relate to or affect the Architect's services or professional responsibilities. The Owner shall promptly notify the Architect of the substance of any direct communications between the Owner and the Construction Manager otherwise relating to the Project. Communications by and with the Architect's consultants shall be through the Architect. Communications by and with Subcontractors and suppliers shall be through the Contractor. Communications by and with other Contractors shall be through the Construction Manager. Communications by and with the Owner's own forces and Separate Contractors shall be through the Owner. The Contract Documents may specify other communication protocols.

§ 4.2.7 The Construction Manager and Architect will review and certify all Applications for Payment by the Contractor, in accordance with the provisions of Article 9.

§ 4.2.8 The Architect and Construction Manager have authority and responsibility to reject Work that does not conform to the Contract Documents, and will notify each other about the rejection. The Construction Manager shall determine whether the Work of the Contractor is being performed in accordance with the requirements of the Contract Documents and notify the Owner, Contractor and Architect of defects and deficiencies in the Work. Whenever the Construction Manager considers it necessary or advisable, the Construction Manager will have authority to require inspection or testing of the Work in accordance with Sections 13.4.2 and 13.4.3, upon written authorization of the Owner, whether or not the Work is fabricated, installed or completed. The foregoing authority of the Construction Manager will be subject to the provisions of Sections 4.2.18 through 4.2.20 inclusive, with respect to interpretations and decisions of the Architect. However, neither the Architect's nor the Construction Manager's authority to act under this Section 4.2.8 nor a decision made by either of them in good faith either to exercise or not to exercise such authority shall give rise to a duty or responsibility of the Architect or the Construction Manager to the Contractor, Subcontractors, suppliers, their agents or employees, or other persons performing any of the Work.

§ 4.2.9 Utilizing the submittal schedule provided by the Contractor, the Construction Manager shall prepare, and revise as necessary, a Project submittal schedule incorporating information from other Contractors, the Owner, Owner's consultants, Owner's Separate Contractors and vendors, governmental agencies, and participants in the Project under the management of the Construction Manager. The Project submittal schedule and any revisions shall be submitted to the Architect for approval.

§ 4.2.10 The Construction Manager will receive and promptly, in such a manner as to cause no delay in the progress of the Work, review for conformance with the submittal requirements of the Contract Documents, all submittals from the Contractor such as Shop Drawings, Product Data, and Samples. Where there are Multiple Contractors, the Construction Manager will also check and coordinate the information contained within each submittal received from the Contractor and other Multiple Contractors, and transmit to the Architect those recommended for approval. By submitting Shop Drawings, Product Data, Samples, and similar submittals, the Construction Manager represents to the Owner and Architect that the Construction Manager has reviewed and recommended them for approval. The Construction Manager's actions will be taken in accordance with the Project submittal schedule approved by the

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Architect or, in the absence of an approved Project submittal schedule, with reasonable promptness while allowing sufficient time to permit adequate review by the Architect.

§ 4.2.11 The Architect will review and approve, or take other appropriate action upon, the Contractor's submittals such as Shop Drawings, Product Data, and Samples, but only for the limited purpose of checking for conformance with information given and the design concept expressed in the Contract Documents. The Architect's action will be taken in accordance with the submittal schedule approved by the Architect or, in the absence of an approved submittal schedule, with reasonable promptness while allowing sufficient time in the Architect's professional judgment to permit adequate review. Upon the Architect's completed review, the Architect shall transmit its submittal review to the Construction Manager.

§ 4.2.11.1 If the Architect is required to review more than two (2) submittals by a Contractor for the reason that the submittal and one (1) re-submittal failed to conform to the information given or the design concept expressed in the Contract Documents, the Contractor shall reimburse the Owner for the amount of compensation paid by the Owner to the Architect for such additional reviews. The Owner shall be entitled to withhold from any payment due the Contractor any such amount due from the Contractor.

§ 4.2.12 Review of the Contractor's submittals by the Construction Manager and Architect is not conducted for the purpose of determining the accuracy and completeness of other details such as dimensions and quantities, or for substantiating instructions for installation or performance of equipment or systems, all of which remain the responsibility of the Contractor as required by the Contract Documents. The Construction Manager and Architect's review of the Contractor's submittals shall not relieve the Contractor of the obligations under Sections 3.3, 3.5, and 3.12. The Construction Manager and Architect's review shall not constitute approval of safety precautions or, unless otherwise specifically stated by the Construction Manager and Architect, of any construction means, methods, techniques, sequences, or procedures. The Architect's approval of a specific item shall not indicate approval of an assembly of which the item is a component.

§ 4.2.13 The Construction Manager and the Architect will prepare Change Orders and Construction Change Directives as set forth in the agreements between the Owner-Architect and Owner-Construction Manager.

§ 4.2.14 The Construction Manager and the Architect will take appropriate action on Change Orders or Construction Change Directives in accordance with Article 7, and the Architect will have authority to order minor changes in the Work as provided in Section 7.4. The Architect, in consultation with the Construction Manager, will investigate and make determinations and recommendations regarding concealed and unknown conditions as provided in Section 3.7.4.

§ 4.2.15 Utilizing the documents provided by the Contractor, the Construction Manager will maintain at the site for the Owner one copy of all Contract Documents, approved Shop Drawings, Product Data, Samples, and similar required submittals, in good order and marked currently to record all changes and selections made during construction. These will be available to the Architect and the Contractor, and will be delivered to the Owner upon completion of the Project.

§ 4.2.16 The Construction Manager will assist the Architect in conducting inspections to determine the date or dates of Substantial Completion and the date of final completion; issue Certificates of Substantial Completion in conjunction with the Architect pursuant to Section 9.8; and receive and forward to the Owner written warranties and related documents required by the Contract and assembled by the Contractor pursuant to Section 9.10. The Construction Manager will forward to the Architect a final Application and Certificate for Payment or final Project Application and Project Certificate for Payment upon the Contractor's compliance with the requirements of the Contract Documents.

§ 4.2.17 If the Owner and Architect agree, the Architect will provide one or more Project representatives to assist in carrying out the Architect's responsibilities at the site. The Owner shall notify the Construction Manager of any change in the duties, responsibilities and limitations of authority of the Project representatives.

§ 4.2.18 The Architect will interpret and decide matters concerning performance under, and requirements of, the Contract Documents on written request of the Construction Manager, Owner, or Contractor through the Construction Manager. The Architect's response to such requests will be made in writing within any time limits agreed upon or otherwise with reasonable promptness.

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§ 4.2.19 Interpretations and decisions of the Architect will be consistent with the intent of, and reasonably inferable from, the Contract Documents and will be in writing or in the form of drawings. When making such interpretations and decisions, the Architect will endeavor to secure faithful performance by Contractor, and will not be liable for results of interpretations or decisions so rendered in good faith.

§ 4.2.19.1 If Work is described or indicated in a manner which makes it impossible to carry out the requirements of the Contract Documents, or should discrepancies appear among the Contract Documents, the Contractor shall request interpretation before proceeding with the Work. If Contractor fails to make such a request, no excuse will be entertained for failure to carry out the Work of the Contract Documents. Should a conflict occur in or between Contract Documents, the Contractor is deemed to have estimated on the more expensive way of doing the Work.

§ 4.2.20 The Architect's decisions, after consultation with the Owner, on matters relating to aesthetic effect will be final if consistent with the intent expressed in the Contract Documents.

§ 4.2.21 The Construction Manager will receive and review requests for information from the Contractor, and forward each request for information to the Architect, with the Construction Manager's recommendation. The Architect will review and respond in writing, through the Construction Manager, to requests for information about the Contract Documents. The Construction Manager's recommendation and the Architect's response to each request will be made in writing within any time limits agreed upon or otherwise with reasonable promptness. If appropriate, the Architect will prepare and issue supplemental Drawings and Specifications in response to the requests for information.

ARTICLE 5 SUBCONTRACTORS

§ 5.1 Definitions

§ 5.1.1 A Subcontractor is a person or entity who has a direct contract with the Contractor to perform a portion of the Work at the site. The term "Subcontractor" is referred to throughout the Contract Documents as if singular in number and means a Subcontractor or an authorized representative of the Subcontractor. The term "Subcontractor" does not include other Contractors or Separate Contractors or the subcontractors of other Contractors or Separate Contractors.

§ 5.1.2 A Sub-subcontractor is a person or entity who has a direct or indirect contract with a Subcontractor to perform a portion of the Work at the site. The term "Sub-subcontractor" is referred to throughout the Contract Documents as if singular in number and means a Sub-subcontractor or an authorized representative of the Sub-subcontractor.

§ 5.2 Award of Subcontracts and Other Contracts for Portions of the Work

§ 5.2.1 The Contractor shall not award work to any one Subcontractor in excess of 50 percent of the Contract Sum, without prior written approval of the Owner. Unless otherwise stated in the Contract Documents, the Contractor, within ten (10) calendar days after award of the Contract, shall furnish in writing the Construction Manager, for review by the Owner, Construction Manager and Architect, of the persons or entities proposed for each principal portion of the Work, including those who are to Furnish materials or equipment fabricated to a special design. Within 14 days of receipt of the information, the Construction Manager may notify the Contractor whether the Owner, the Construction Manager or the Architect (1) has reasonable objection to any such proposed person or entity or, (2) requires additional time or information for review. Failure of the Construction Manager to provide notice within the 14-day period shall constitute notice of no reasonable objection.

§ 5.2.1.1 Unless otherwise expressly set forth in the Contract Documents, a Subcontractor proposed by a Contractor shall not be acceptable unless the Contractor submits evidence to the Construction Manager with its proposal of the Subcontractor that the proposed Subcontractor has satisfactorily completed similar contracts or subcontracts and has the necessary experience, personnel, equipment, licensing, and financial ability to complete the subcontract in accordance with the Project Schedule. The substitution of a different proposed Subcontractor shall not entitle the Contractor to any upward adjustment in the Contract Sum or the Contract Time.

§ 5.2.2 The Contractor shall not contract with a proposed person or entity to whom the Owner, Construction Manager or Architect has made reasonable and timely objection. The Contractor shall not be required to contract with anyone to whom the Contractor has made reasonable objection. Contractor shall provide proposed substitute within five (5) days of notice of such reasonable objection.

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§ 5.2.3 The Contractor shall not substitute a Subcontractor, person, or entity for one previously selected if the Owner, Construction Manager or Architect makes reasonable objection to such substitution.

(Paragraph deleted)
§ 5.2.4 Maintenance of the Project Schedule is critical. Contractors shall award subcontracts to entities capable of performing in a manner that will maintain the Project Schedule and require its subcontractors to complete their work in accordance with the Project Schedule.

§ 5.3 Subcontractual Relations
By appropriate written agreement, the Contractor shall require each Subcontractor, to the extent of the Work to be performed by the Subcontractor, to be bound to the Contractor by terms of the Contract Documents including but not limited to all deadlines and substantial completion dates, and to assume toward the Contractor all the obligations and responsibilities, including the responsibility for safety of the Subcontractor's Work, that the Contractor, by these Contract Documents, assumes toward the Owner, Construction Manager and Architect. Each subcontract agreement shall preserve and protect the rights of the Owner, Construction Manager and Architect under the Contract Documents with respect to the Work to be performed by the Subcontractor so that subcontracting thereof will not prejudice such rights, and shall allow to the Subcontractor, unless specifically provided otherwise in the subcontract agreement, the benefit of all rights, remedies, and redress against the Contractor that the Contractor, by the Contract Documents, has against the Owner. Where appropriate, the Contractor shall require each Subcontractor to enter into similar agreements with Sub-subcontractors. The Contractor shall make available to each proposed Subcontractor, prior to the execution of the subcontract agreement, copies of the Contract Documents to which the Subcontractor will be bound, and, upon written request of the Subcontractor, identify to the Subcontractor terms and conditions of the proposed subcontract agreement that may be at variance with the Contract Documents. Subcontractors will similarly make copies of applicable portions of such documents available to their respective proposed Sub-subcontractors.

§ 5.4 Contingent Assignment of Subcontracts
§ 5.4.1 Each subcontract agreement for a portion of the Work is assigned by the Contractor to the Owner, provided that

- **.1** assignment is effective only after termination of the Contract by the Owner for cause pursuant to Section 14.2 and only for those subcontract agreements that the Owner accepts by notifying the Subcontractor and Contractor; and
- **.2** assignment is subject to the prior rights of the surety, if any, obligated under bond relating to the Contract.

When the Owner accepts the assignment of a subcontract agreement, the Owner assumes the Contractor's rights and obligations under the subcontract.

§ 5.4.2 Upon such assignment to the Owner under this Section 5.4, the Owner may further assign the subcontract to a successor Contractor or other entity.

(Paragraph deleted)
ARTICLE 6 CONSTRUCTION BY OWNER OR BY SEPARATE CONTRACTORS
§ 6.1 Owner's Right to Perform Construction with Own Forces and to Award Other Contracts
§ 6.1.1 The Owner reserves the right to perform construction or operations related to the Project with the Owner's own forces, and with Separate Contractors retained under Conditions of the Contract substantially similar to those of this Contract, including those provisions of the Conditions of the Contract related to insurance and waiver of subrogation.

§ 6.1.2 When the Owner performs construction or operations with the Owner's own forces or Separate Contractors, the Owner shall provide for coordination of such forces and Separate Contractors with the Work of the Contractor, who shall cooperate with them.

§ 6.1.3 Unless otherwise provided in the Contract Documents, when the Owner performs construction or operations related to the Project with the Owner's own forces or with Separate Contractors, the Owner or its Separate Contractors shall have the same obligations and rights that the Contractor has under the Conditions of the Contract, including, without excluding others, those stated in Article 3, this Article 6, and Articles 10, 11, and 12.

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§ 6.2 Mutual Responsibility

§ 6.2.1 The Contractor shall afford the Owner's own forces, Separate Contractors, Construction Manager and other Contractors reasonable opportunity for introduction and storage of their materials and equipment and performance of their activities, and shall connect and coordinate the Contractor's construction and operations with theirs as required by the Contract Documents.

§ 6.2.2 If part of the Contractor's Work depends for proper execution or results upon construction or operations by the Owner's own forces, Separate Contractors or other Contractors, the Contractor shall, prior to proceeding with that portion of the Work, promptly notify the Construction Manager and Architect of apparent discrepancies or defects in the construction or operations by the Owner or Separate Contractor or other Contractors that would render it unsuitable for proper execution and results of the Contractor's Work. Failure of the Contractor to notify the Construction Manager and the Architect of apparent discrepancies or defects prior to proceeding with the Work shall constitute an acknowledgment that the Owner's or Separate Contractor's or other Contractors' completed or partially completed construction is fit and proper to receive the Contractor's Work. The Contractor shall not be responsible for discrepancies or defects in the construction or operations by the Owner or Separate Contractors or other Contractors that are not apparent.

§ 6.2.3 The Contractor shall reimburse the Owner for costs the Owner incurs, including costs that are payable to a Separate Contractors or to other Contractors, because of the Contractor's delays, improperly timed activities or defective construction.

§ 6.2.4 The Contractor shall promptly remedy damage that the Contractor causes to completed or partially completed construction, or to property of the Owner, Separate Contractors, or other Contractors as provided in Section 10.2.5.

§ 6.2.5 The Owner, Separate Contractors, and other Contractors shall have the same responsibilities for cutting and patching as are described for the Contractor in Section 3.14.

§ 6.2.6 Claims and other disputes and matters in question between the Contractor and a Separate Contractor shall be subject to the provisions of Article 15 as amended provided the separate contractor has reciprocal obligations.

§ 6.3 Owner's Right to Clean Up

If a dispute arises among the Contractor, Separate Contractors, other Contractors, and the Owner as to the responsibility under their respective contracts for maintaining the premises and surrounding area free from waste materials and rubbish, the Owner may clean up and the Construction Manager, with notice to the Architect, will allocate the cost among those responsible.

ARTICLE 7 CHANGES IN THE WORK

§ 7.1 General

§ 7.1.1 Changes in the Work may be accomplished after execution of the Contract, and without invalidating the Contract, by Allowance Use Authorization, Change Order, Construction Change Directive, or order for a minor change in the Work, subject to the limitations stated in this Article 7 and elsewhere in the Contract Documents.

§ 7.1.2 A Change Order shall be based upon agreement among the Owner, Construction Manager, Architect and Contractor. A Construction Change Directive requires agreement by the Owner, Construction Manager and Architect and may or may not be agreed to by the Contractor. An order for a minor change in the Work may be issued by the Architect alone.

§ 7.1.2.1 See other subsections for Allowance Use provisions and permitted costs for the Allowance Uses.

§ 7.1.3 Changes in the Work shall be performed under applicable provisions of the Contract Documents. The Contractor shall proceed promptly with changes in the Work, unless otherwise provided in the Change Order, Construction Change Directive, or order for a minor change in the Work.

§ 7.1.4 Unit Prices

§ 7.1.4.1 Unit prices shall be submitted in the Bid Form for various items set forth therein.

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§ 7.1.4.2 Unit prices set forth shall be used to determine equitable adjustment of the Contract price in connection with additional Work or Work omitted or reduced by the Architect. The Unit Prices quoted shall include all labor, materials, equipment, applicable taxes and shall apply to all Work added or Work deducted.

§ 7.1.4.3 If any one of the unit prices quoted by a Contractor is excessively high in the opinion of the Architect, the Owner and Architect will have the right to adjust such unit prices to a fair and reasonable amount.

§ 7.1.5 Changes in the Work involving additional Work or deletion of Work whether or not resulting in an addition to or subtraction from the Contract Sum shall not be made until the Contractor submits to the Architect the cost of the added or deleted Work with a complete and detailed listing of all Subcontractors involved, all materials, labor and equipment.

§ 7.1.5.1 Overhead and profit as described in 7.1.7.1 and 7.1.7.2-a may be added to the cost of a claim for additional Work *only* when the source of monies for such additional work is not a Contingency Allowance included in the Contract Sum or any other monies for Work included in the Contract Sum.

§ 7.1.5.2 Changes in the Work whether or not involving additions or deductions from the Contract Sum shall not be made until an appropriate Change Order or Change Directive has been issued.

§ 7.1.5.3 Where quoted unit prices are not applicable as set forth in Section 7.1.4 and the extra cost is to be determined under clause 7.3.3.3, the mark-ups (above actual cost) for overhead and profit shall be as specified in Section 7.1.7 and as qualified in 7.1.5.1 above.

§ 7.1.6 Labor costs shall include items incidental to labor such as workmen's compensation insurance, social security, fringe benefits (exclusive of transportation) and all mandatory costs paid in connection with labor.

§ 7.1.7 Overhead shall include insurance other than those incidental to labor mentioned above, premiums on bonds required by the Contract, Contractor's Supervisory employees, home and field office expenses, transportation costs and both manual and power small tools and manual and power small equipment. Material and equipment costs shall be as described in 7.3.4.

§ 7.1.7.1 For Work done by the Contractor's own forces, mark-up for combined overhead and profit on materials and on cost of labor shall be as set forth in Section 7.5 hereof.

§ 7.1.7.2 For Work done by the subcontractors, mark-up of costs as defined Herein by subcontractors for combined overhead and profit on materials and on cost of labor shall be as set forth in Section 7.5 hereof.

§ 7.1.8 Material costs shall be as described in 7.3.4.

§ 7.1.9 To facilitate reviewing quotations for either extra charges or deductions, all proposals shall be accompanied by a complete itemization of costs including labor, materials, subcontracts, and if allowed, mark-ups for overhead and profit. Subcontracts shall be similarly itemized.

§ 7.1.10.1 If requested, the Contractor shall submit detailed quotations from material suppliers.

§ 7.2 Change Orders

A Change Order is a written instrument prepared by the Construction Manager and signed by the Owner, Construction Manager, Architect, and Contractor, stating their agreement upon all of the following:

.1 The change in the Work;
.2 The amount of the adjustment, if any, in the Contract Sum; and
.3 The extent of the adjustment, if any, in the Contract Time.

§ 7.2.1 All Change Orders must have the approval of the Owner, Architect, and Construction Manager in writing.

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§ 7.2.2 Agreement on any Change Order shall constitute a final settlement of all matters relating to the change in the Work which is the subject of the Change Order, including, but not limited to, all direct and indirect costs associated with such change and any all adjustments to the Contract Sum and the contract time.

§ 7.2.3 Methods used in determining adjustments to the Contract Sum may include these, those listed in Section 7.3 with its subsections and Section 7.5 with its subsections.

§ 7.2.4 In order to facilitate checking of quotations for extras or credits, all proposals, except those so minor that their propriety can be seen by inspection, shall be accompanied by a complete itemization of costs including labor, materials and subcontracts. Labor and materials shall be itemized in the manner prescribed above. Where major cost items are Subcontracts, they shall be itemized also.

§ 7.3 Construction Change Directives

§ 7.3.1 A Construction Change Directive is a written order prepared by the Construction Manager and signed by the Owner, Construction Manager and Architect, directing a change in the Work prior to agreement on adjustment, if any, in the Contract Sum or Contract Time, or both. The Owner may by Construction Change Directive, without invalidating the Contract, order changes in the Work within the general scope of the Contract consisting of additions, deletions, or other revisions, the Contract Sum and Contract Time being adjusted accordingly.

§ 7.3.2 A Construction Change Directive shall be used in the absence of total agreement on the terms of a Change Order.

§ 7.3.3 If the Construction Change Directive provides for an adjustment to the Contract Sum, the adjustment shall be based on one of the following methods:

- **.1** Mutual acceptance of a lump sum properly itemized and supported by sufficient substantiating data to permit evaluation;
- **.2** Unit prices stated in the Contract Documents or subsequently agreed upon;
- **.3** Cost to be determined in a manner agreed upon by the parties and a mutually acceptable fixed or percentage fee; or
- **.4** As provided in Section 7.3.4.

§ 7.3.4 If the Contractor does not respond promptly or disagrees with the method for adjustment in the Contract Sum, the Construction Manager shall determine the adjustment on the basis of reasonable expenditures and savings of those performing the Work attributable to the change, including, in case of an increase in the Contract Sum, an amount for overhead and profit as set forth in Section 7.5. In such case, and also under Section 7.3.3.3, the Contractor shall keep and present, in such form as the Construction Manager may prescribe, an itemized accounting together with appropriate supporting data. Unless otherwise provided in the Contract Documents, costs for the purposes of this Section 7.3.4 shall be limited to the following:

- **.1** Costs of labor, including applicable payroll taxes, social security, unemployment insurance, fringe benefits required by agreement or custom, and workers' compensation insurance directly related to the work of the change, and other employee costs approved by the Construction Manager and Architect;
- **.2** Costs of materials, supplies, and equipment, including cost of transportation directly related to the work of the change, whether incorporated or consumed;
- **.3** Rental costs of machinery and equipment, exclusive of hand tools, whether rented from the Contractor or others directly related to the work of the change;
- **.4** Costs of premiums for all bonds and insurance, permit fees, and sales, use, or similar taxes, directly related to the change; and
- **.5** Costs of supervision and field office personnel directly attributable to the change.

§ 7.3.5 If the Contractor disagrees with the adjustment in the Contract Time, the Contractor may make a Claim in accordance with applicable provisions of Article 15.

§ 7.3.6 Upon receipt of a Construction Change Directive, the Contractor shall promptly proceed with the change in the Work involved and advise the Construction Manager of the Contractor's agreement or disagreement with the method, if any, provided in the Construction Change Directive for determining the proposed adjustment in the Contract Sum or Contract Time.

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§ 7.3.7 A Construction Change Directive signed by the Contractor indicates the Contractor's agreement therewith, including adjustment in Contract Sum and Contract Time or the method for determining them. Such agreement shall be effective immediately and shall be recorded as a Change Order.

§ 7.3.8 The amount of credit to be allowed by the Contractor to the Owner for a deletion or change that results in a net decrease in the Contract Sum shall be actual net cost as confirmed by the Construction Manager and Architect. When both additions and credits covering related Work or substitutions are involved in a change, the allowance for overhead and profit shall be figured on the basis of net increase, if any, with respect to that change.

§ 7.3.9 Pending final determination of the total cost of a Construction Change Directive to the Owner, the Contractor may request payment for Work completed under the Construction Change Directive in Applications for Payment. The Construction Manager and Architect will make an interim determination for purposes of monthly certification for payment for those costs and certify for payment the amount that the Construction Manager and Architect determine to be reasonably justified. The interim determination of cost shall adjust the Contract Sum on the same basis as a Change Order, subject to the right of either party to disagree and assert a Claim in accordance with Article 15.

§ 7.3.10 When the Owner and Contractor agree with a determination made by the Construction Manager and Architect concerning the adjustments in the Contract Sum and Contract Time, or otherwise reach agreement upon the adjustments, such agreement shall be effective immediately and the Construction Manager shall prepare a Change Order. Change Orders may be issued for all or any part of a Construction Change Directive.

§ 7.3.11 Lump sum adjustment described in clause 7.3.3.1 shall be substantiated by submitting evidence of actual costs to the Architect for evaluation for the following:

.1 Costs described in Section 7.3.4, including labor and other costs of subcontractors, itemized by trades.

§ 7.4 Minor Changes in the Work

The Architect may order minor changes in the Work that are consistent with the intent of the Contract Documents and do not involve an adjustment in the Contract Sum or an extension of the Contract Time. The Architect's order for minor changes shall be in writing. If the Contractor believes that the proposed minor change in the Work will affect the Contract Sum or Contract Time, the Contractor shall notify the Construction Manager and shall not proceed to implement the change in the Work. If the Contractor performs the Work set forth in the Architect's order for a minor change without prior notice to the Construction Manager that such change will affect the Contract Sum or Contract Time, the Contractor waives any adjustment to the Contract Sum or extension of the Contract Time.

§ 7.5 OVERHEAD AND PROFIT

§ 7.5.1 The combined overhead and profit included in the total cost of a Change Order to the Owner shall be based on the following schedule:

§ 7.5.1.a Contractor: For Work performed by the Contractor's own forces, markup shall not exceed a total of fifteen percent (15%), of the value of labor and materials (L+M).

. 1 Example: Total Contractor Amount= (L+M) + 15% O&P

§ 7.5.1.b Contractor's Subcontractor(s): For Work performed by the Subcontractor's own forces, markup shall not exceed a total often percent (10%) of their value of labor and material (L+M). For the Contractor, for work performed by that Contractor's Subcontractor, markup shall not exceed five percent (5%) for the value of the Subcontractor amount.

.1 Example: Total Subcontractor Amount= (L+M) + 10% O&P
.2 Example: Total Contractor Amount= Total Subcontract Amount+ 5% O&P

§ 7.5.1.c Contractor's Subcontractor's Sub-subcontractor(s): For Work performed by the Sub-subcontractor's own forces, markup shall not exceed a total of five percent (5%) of their value of labor and materials (L+M). For the Subcontractor, for work performed by the Sub-subcontractor, markup shall not exceed a total of five percent (5%) of their value of labor and materials (L+M) for work performed by the Sub-subcontractor. For the Subcontractor,

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markup shall not exceed a total of five percent (5%) of the Sub-subcontractor amount. For the Contractor, markup shall not exceed 5% of the Subcontractor Amount.

.1 Example: Total Sub-subcontractor Amount= (L+M) + 5% O&P
.2 Example: Total Subcontractor Amount= Sub-subcontractor Amount+ 5% O&P
.3 Example: Total Contractor Amount= Subcontractor Amount+ 5% O&P

§ 7.5.2 Performance and Payment Bond Adjustments: Do not itemize increases for bond premiums for each individual Change Order per General Conditions of the Contract, Section 11.1.1. No Information in Section 11.1.1 that refers to bond adjustments.

ARTICLE 8 TIME

§ 8.1 Definitions

§ 8.1.1 Unless otherwise provided, Contract Time is the period of time, including authorized adjustments, allotted in the Contract Documents for Substantial Completion of the Work.

§ 8.1.2 The date of commencement of the Work is the date established in the Agreement.

§ 8.1.3 The date of Substantial Completion is the date certified by the Architect in accordance with Section 9.8.

§ 8.1.4 The term "day" as used in the Contract Documents shall mean calendar day unless otherwise specifically defined.

§ 8.2 Progress and Completion

§ 8.2.1 TIME IS OF THE ESSENCE IN THE COMMENCEMENT, PROSECUTION AND COMPLETION OF THE WORK. If the Contractor shall neglect, fail, or refuse to complete the Work within the time specified for Substantial Completion of the Contract or abandon the Work prior to Substantial Completion unless such delay is approved in advance in writing by the Owner, Owner may be damaged and the Contractor does hereby agree, as partial consideration for the awarding of this Contract, to pay to the Owner, as liquidated inconvenience and disruption damages and not as a penalty, the sum of One Thousand Dollars ($1,000.00) per day for each calendar day beyond five (5) days after the date specified Herein for Substantial Completion that the Contractor fails to achieve Substantial Completion for the Project or One Thousand Dollars ($1,000) per day for each calendar day after the date Contractor abandons the Work until actual Substantial Completion of the Work. Pursuit of liquidated inconvenience and disruption damages shall not exclude the pursuit of any other damages or remedy available to Owner, including but not limited to direct and/or consequential damages. Due to the impracticability and extreme difficulty of fixing and ascertaining the true cost of the disruption and public inconvenience resulting from the Contractor's failure to complete the Work on time, this amount is fixed and agreed upon by and between the Contractor and the Owner to be a reasonable estimate of the inconvenience damages incurred by students, teachers, taxpayers, and the public for inconvenience and disruption caused by the Contractor's continued presence on-site or in the case of abandonment the continued presence on-site of a replacement contractor, which are a portion of the damages which the Owner and the community may sustain. Liquidated inconvenience and disruption damages shall be deducted from any monies due or that may become due to the Contractor, and if said monies are insufficient to cover said damages, then the Contractor shall pay the Owner the amount of the difference. Liquidated inconvenience and disruption damages are in addition to any and all other damages incurred by the Owner as a result of the Contractor's failure to complete the Work within the time specified for Substantial Completion of the Contract, including but not limited to the expense of rental of space, the expense of transportation, and the fees and reimbursements to the Owner's Agents including, but not limited to, the Architect, the Construction Manager, and legal counsel for their services; and are cumulative and recoverable singularly or cumulatively by the Owner in addition to any liquidated inconvenience and disruption damages that may be recovered. Pursuit of liquidated inconvenience and disruption damages shall not exclude the pursuit of any other damages or remedy available to Owner, including but not limited to direct and/or consequential damages. By executing the Agreement, the Contractor confirms that the Contract Time is a reasonable period for performing the Work and that the Owner would not have entered into this Contract without the inclusion of liquidated inconvenience and disruption damages as set forth in this subsection. If the provision imposing liquidated inconvenience and disruption damages is determined to be unenforceable under federal or New York State law, the following provision shall apply: TIME IS OF THE ESSENCE IN THE COMMENCEMENT, PROSECUTION AND CONSTRUCTION OF THE WORK. Contractor shall be responsible for all direct and consequential damages to Owner, Architect, and Construction Manager arising from any delay of Contractor, its Subcontractors, or suppliers, in performing or

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completing the Work in accordance with the time requirements imposed by the Contract Documents. The indemnity provisions of this Agreement are applicable to such damages and to claims arising in respect thereto. By executing the Agreement, the Contractor confirms that the Contract Time is a reasonable period for performing the Work.

§ 8.2.1.1 Contractor shall cooperate with Owner, Construction Manager, Architect and other Contractors on the Project, making every reasonable effort to reduce the contract time.

§ 8.2.2 The Contractor shall not knowingly, except by agreement or instruction of the Owner in writing, prematurely commence operations on the site or elsewhere prior to the effective date of insurance required by Article 11 to be furnished by the Contractor and Owner. The date of commencement of the Work shall not be changed by the effective date of such insurance.

(Paragraph deleted)
§ 8.2.2.1 Contractor shall not commence Work on the site until evidence of insurance and original performance and payment bonds as required in Article 11, have been accepted by the Owner.

§ 8.2.3 Contractor shall do all things necessary to ensure the prosecution of the Work in accordance with any one or more of the following as determined by the Architect and the Owner, in their discretion:

.1 Project schedules and revisions thereof, given from time to time to Contractor;

.2 The time requirements for various portions of Work;

.3 The requirements of the Project including, but not limited to, coordination requirements as may from time to time be known to Contractor; and

.4 Schedules of the Work provided by Contractor to Architect upon the Owner's request.

§ 8.2.4 Should the progress of the Work and/or other Work be delayed by any fault, neglect, act or failure to act of Contractor or any of its Subcontractors or suppliers so as to cause any additional cost, expense, liability or damage to Owner, Architect, or Construction Manager, or for which Owner, Architect, or Construction Manager may become liable, Contractor shall hold them harmless from and indemnify them against all such additional cost, expense, liability or damage.

§ 8.2.5 If the Contractor does not achieve Substantial Completion within the Contract Time established in the Agreement between the Owner and the Contractor, or in a subsequent Change Order, the Contractor shall be liable to the Owner for any liquidated, direct and/or consequential damages; for the costs of fees and reimbursements to the Owner's Agents including, but not limited to, the Architect and the Construction Manager for their services attributable to the Contractor's delay or abandonment. Except as may be prohibited by applicable law, all of Owner's rights and remedies in connection with the Contractor's failure to achieve Substantial Completion within the Contract Time established in the Agreement between the Owner and the Contractor, shall be cumulative and may be exercised singularly or concurrently. Election by Owner to pursue any remedy shall not exclude pursuit of any other remedy.

§ 8.2.6 The Work shall be performed during designated working hours, except that in the event of emergency or when necessary to perform the Work in accordance with the requirements of Section 8.2, Work shall be performed at Contractor's cost and expense on other shifts, overtime, Saturdays, Sundays, Holidays and at other times, if permission to do so has been obtained in writing from Owner. Without limiting the requirements of the preceding sentence, if the progress of the Work or of the Project has been delayed by any fault, neglect, act or failure to act of Contractor or any of its Subcontractors or suppliers, Contractor shall work such overtime, at Contractor's cost and expense as aforesaid, as Architect shall deem necessary or desirable to make up for all time lost and to avoid delay in the completion of the Work and of the Project. The failure by Architect to direct Contractor to engage in such overtime shall not relieve Contractor of the consequences of its delay.

§ 8.2.7 Unless otherwise noted, the date of commencement of the Work is the date established in a notice to proceed. The notice to proceed will be issued immediately upon return of signed documents by the Contractor and the presentation of acceptable insurance certificates. Contractor shall organize construction schedules as specified in Section 3.10, Contractor's Construction Schedules. The commencement date shall not be postponed by the failure to

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act of the Contractor or of persons or entities for which the Contractor is responsible.

§ 8.2.8 The Architect may direct acceleration of the Work so that it may be performed in advance of the schedules, time requirements and Project requirements described in Section 8.2. If so directed, Contractor shall increase its staff and/or work overtime. Contractor will not be entitled to additional compensation for work performed outside of designated working hours, except as approved by Owner in writing in advance. Provided that Contractor is not in default under the Contract, is meeting the Project Schedule, and Owner has issued the aforesaid authorization, there shall be added to the Contract Sum as actual out-of-pocket amount equal to:

.1 Additional premiums on wages actually paid, at rates that have been accepted by Architect;

.2 Taxes imposed by law on such additional wages; and

.3 Premiums for worker's compensation and liability insurance if required to be paid on such additional wages.

Written authorization for overtime work that exceeds $500.00 for which Contractor intends to charge the Owner in any one week shall be invalid unless confirmed in writing by the Owner, it being understood that Owner's Site Representative shall not have authority to authorize such overtime which exceeds $500.00 in any one week.

§ 8.2.9 In no case shall the Contractor delay the progress of the Work or any part thereof on account of changes in the Work or disputes caused by proposed or ordered changes in the Work or any disputes or disagreements as to the equitable value of such changes.

§ 8.2.10 Contractor and Contractor's Surety shall be strictly accountable for completion of the Work in accordance with the Project Schedule as a condition to satisfactory contractual performance.

§ 8.2.11 The Contractor shall proceed expeditiously with adequate forces and shall achieve Substantial Completion within the time set in the Project Schedule.

§ 8.3 Delays and Extensions of Time

(Paragraphs deleted)

§ 8.3.1 Should Contractor be obstructed or delayed in the commencement, prosecution or completion of the Work, without fault on its part, by reason of failure to act, direction, order, neglect, delay or default of the Owner or the Architect; by changes in the Work; fire, lightning, earthquake, enemy action, act of God or similar catastrophe; by Government restrictions with respect to materials or labor, or by an industry-wide strike beyond Contractor's reasonable control, then Contractor shall be entitled to an extension of time lost by reason of any and all causes aforesaid, but no claim for extension of time on account of delay shall be allowed unless a claim in writing therefore is presented to Architect with reasonable diligence but in any event not later than fifteen (15) days after the commencement of such claimed delay. Except for the causes specifically listed above in this Section, no other cause or causes of delays shall give rise to an extension of time to perform the Work. The granting of an extension of time is conditioned upon Contractor's timely submission of the aforesaid written notice. Except to the extent, if any, expressly prohibited by law, Contractor expressly agrees not to make, and hereby waives, any claim for damages, including those resulting from increased labor or material cost, on account of any delay, obstruction or hindrance for any cause whatsoever, whether or not foreseeable and whether or not anticipated including but not limited to the causes set forth in this Section, and agrees that the sole right and remedy therefore shall be an extension of time not to exceed the duration of the time lost, provided the Contractor has met the pre-condition of a notice of claim to the Architect as set forth in this Section.

§ 8.3.2 If Contractor claims an increase in the Contract Sum or an extension in the completion time required by reason of a change in the Work, Contractor shall give Architect written notice within fifteen (15) days after Contractor's knowledge of the occurrence of the matter giving rise to such claim. This notice shall be given by Contractor before proceeding to execute the changed Work, except in an emergency endangering life or property in which case Contractor shall proceed in accordance with Article 10. No such claim will be valid unless notice is given as required in this Section. Contractor shall proceed to execute the Work, even though the increase or time extension has not been agreed upon.

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§ 8.3.2.1 Extension of time, if requested by the Contractor, shall only be considered after the Contractor has made reasonable effort to recover the lost time.

§ 8.3.2.2 An extension, or extensions, of time may be granted subject to the provisions of this article, but only after written application therefore by the Contractor.

§ 8.3.2.3 An extension of time shall be only for the number of days of delay that the Architect may determine to be due solely to the causes set forth in the application for extension of time. The Contractor shall not be entitled to receive a separate extension of time for each one of several causes of delay operating concurrently; but, if at all, only the actual period of delay as determined by the Architect.

§ 8.3.3 Contractor shall not be allowed an extension of time unless Contractor has established to the satisfaction of the Owner and Architect that the delay claimed by Contractor is to a portion of the Work on the critical path of the Work schedule.

§ 8.3.4 No monetary recovery may be obtained by Contractor for delay. Time extensions for delay are limited to the specific causes set forth in Section 8.3.1 and then, only upon compliance with the notice and proof requirements of Section 8.3.1 and 8.3.2.

§ 8.3.5 Contractor waives any claim against Owner, Architect, or Construction Manager for the consequences of any delay resulting from directions given or not given by Architect or Construction Manager including scheduling and coordination of the Work or resulting from Architect's preparation of Drawings and Specifications or review of Shop Drawings.

§ 8.3.6 When the Contract Time has been extended, as provided under this Section 8.3, such extension of time shall not be considered as justification for extra compensation to the Contractor for administrative costs or other similar reasons.

§ 8.3.7 The intent of the Contracts is for the Work to follow a logical sequence; however, the Contractor may be required by Architect to temporarily omit or leave out any section of Work, or perform Work out of sequence. All such out-of-sequence Work and come back time to these areas shall be performed at no additional cost to the Owner.

ARTICLE 9 PAYMENTS AND COMPLETION

§ 9.1 Contract Sum

§ 9.1.1 The Contract Sum is stated in the Agreement and, including authorized adjustments, is the total amount payable by the Owner to the Contractor for performance of the Work under the Contract Documents.

§ 9.1.2 If unit prices are stated in the Contract Documents or subsequently agreed upon, and if quantities originally contemplated are changed so that application of such unit prices to the actual quantities causes substantial inequity to the Owner, the applicable unit prices shall be equitably adjusted as set forth in Section 7.1.4.3.

§ 9.2 Schedule of Values

Where the Contract is based on a stipulated sum or Guaranteed Maximum Price, the Contractor shall submit a schedule of values to the Construction Manager, at least sixty (60) days before the first Application for Payment, allocating the entire Contract Sum to the various portions of the Work. The schedule of values shall be prepared in the form, and supported by the data to substantiate its accuracy, required by the Construction Manager and the Architect. This schedule, unless objected to by the Construction Manager or Architect, shall be used as a basis for reviewing the Contractor's Applications for Payment. The Construction Manager shall forward to the Architect the Contractor's schedule of values. Any changes to the schedule of values shall be submitted to the Construction Manager and supported by such data to substantiate its accuracy as the Construction Manager and the Architect may require, and upon written approval by the Construction Manager or the Architect, shall be used as a basis for reviewing the Contractor's subsequent Applications for Payment.

§ 9.3 Applications for Payment

§ 9.3.1 At least fifteen days before the date established for each progress payment, the Contractor shall submit to the Construction Manager an itemized Application for Payment prepared in accordance with the schedule of values, if required under Section 9.2, for completed portions of the Work. The application shall be notarized, if required, and

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supported by all data substantiating the Contractor's right to payment that the Owner, Construction Manager or Architect require, such as copies of requisitions, releases of waivers of lien from Subcontractors and suppliers, certified payroll information in accordance with NYS law, and shall reflect retainage if provided for in the Contract Documents.

§ 9.3.1.1 As provided in Section 7.3.9, such applications may include requests for payment on account of changes in the Work that have been properly authorized by Construction Change Directives, or by interim determinations of the Construction Manager and Architect, but not yet included in Change Orders.

§ 9.3.1.2 Applications for Payment shall not include requests for payment for portions of the Work for which the Contractor does not intend to pay a Subcontractor or supplier, unless such Work has been performed by others whom the Contractor intends to pay.

§ 9.3.1.3 Until Substantial Completion, the Owner shall pay ninety-five percent (95%) of the amount due to the Contractor on account of progress payments and withhold an amount necessary to satisfy any claims, liens, or judgements against the Contractor which have not been resolved, settled, or discharged.

§ 9.3.1.4 The Contractor shall supply with each of its applications for payment any information reasonably requested by the Architect, Owner, or Construction Manager, including but not limited to such as lien waivers for work performed to date by subcontractors and suppliers, and certified payroll information.

§ 9.3.1.5 When the work or major portions thereof as contemplated by the terms of the Contract are substantially complete, the Contractor shall submit to the Construction Manager and Architect a requisition for payment of the remaining amount of the Contract balance for that major portion of the Work. Upon receipt of such requisition, the Owner shall approve and promptly pay the remaining amount of the Contract less two times the value of any remaining items to be completed, including close-out documentation/items and work, and an amount necessary to satisfy any claims, liens or judgments against the Contractor, which have not been suitably discharged, as determined by the Architect in conjunction with the Construction Manager. Any claims, liens or judgments referred to in this clause shall pertain to the Project and shall be filed in accordance with the terms of the Contract, and applicable laws.

§ 9.3.2 Unless otherwise provided in the Contract Documents, payments shall be made on account of materials and equipment delivered and suitably stored at the site for subsequent incorporation in the Work. If approved in advance by the Owner, payment may similarly be made for materials and equipment suitably stored off the site at a location agreed upon in writing. Payment for materials and equipment stored on or off the site shall be conditioned upon compliance by the Contractor with procedures satisfactory to the Owner to establish the Owner's title to such materials and equipment or otherwise protect the Owner's interest, and shall include the costs of applicable insurance, storage, and transportation to the site, for such materials and equipment stored off the site.

§ 9.3.3 The Contractor warrants that title to all Work covered by an Application for Payment will pass to the Owner free and clear of all liens, claims, security interests or encumbrances in favor of the Contractor, Subcontractors, material suppliers, or other persons or entities making a claim by reason of having provided labor, materials and equipment relating to the Work, no later than the time of payment. The Contractor further warrants that upon submittal of an Application for Payment, all Work for which Certificates for Payment have been previously issued and payments received from the Owner shall be free and clear of all liens, claims, security interests, or encumbrances, in favor of the Contractor, Subcontractors, suppliers, or other persons or entities making a claim by reason of having provided labor, materials and equipment relating to the Work.

§ 9.3.4 The Contractor further expressly undertakes to defend the Owner, at the Contractor's sole expense, against any actions, lawsuits or proceedings brought against Owner as a result of liens filed against the Work, the site of any of the Work, the project site and any improvements thereon, payments due the Contractor or any portion of the property of the Owner, including but not limited to the public fund in connection with the Work (referred to collectively as liens in Section 9.3.3). The Contractor hereby agrees to indemnify and hold Owner harmless against any such liens or claims of lien and agrees to pay any judgment or lien resulting from any such actions, lawsuits or proceedings and reimburse Owner for all legal fees and costs incurred by Owner in connection with any such actual or threatened action, lawsuit or proceeding.

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§ 9.3.5 The Owner shall release any payments withheld due to a lien or a claim of lien if the Contractor obtains security acceptable to the Owner or a lien bond which is: (1) issued by a surety acceptable to the Owner, (2) in form and substance satisfactory to the Owner, and (3) in an amount not less than One Hundred Ten percent (110%) of such lien claim. By posting a lien bond or other acceptable security, however, the Contractor shall not be relieved of any responsibilities or obligations under this Section 9.3, including, without limitation, the duty to defend and indemnify the Owner. The cost of any premiums incurred in connection with such bonds and security shall be the responsibility of the Contractor and shall not be part of, or cause any adjustment to, the Contract Sum.

§ 9.3.6 The Contractor agrees to waive any right which it may have to assert a mechanic's or other lien against the Project site and any improvements thereon or the public fund created in connection with the Project, including, without limit, the Work itself. Furthermore, the Contractor will cause a similar provision, waiving any right to a mechanic's or other lien against the property, to be included in all of its subcontracts, any subcontracts and all contracts with material suppliers. Upon execution of the Agreement, the Contractor shall also execute the waiver of lien attached to the Agreement and made a part thereof as an Exhibit.

§ 9.4 Certificates for Payment

§ 9.4.1 Where there is only one Contractor, the Construction Manager will, within seven days after the Construction Manager's receipt of the Contractor's Application for Payment, review the Application, certify the amount the Construction Manager determines is due the Contractor, and forward the Contractor's Application and Certificate for Payment to the Architect. Within seven days after the Architect receives the Contractor's Application for Payment from the Construction Manager, the Architect will either (1) issue to the Owner a Certificate for Payment, in the full amount of the Application for Payment, with a copy to the Construction Manager; or (2) issue to the Owner a Certificate for Payment for such amount as the Architect determines is properly due, and notify the Construction Manager and Owner of the Architect's reasons for withholding certification in part as provided in Section 9.5.1; or (3) withhold certification of the entire Application for Payment, and notify the Construction Manager and Owner of the Architect's reason for withholding certification in whole as provided in Section 9.5.1. The Construction Manager will promptly forward to the Contractor the Architect's notice of withholding certification.

§ 9.4.2 Where there is more than one Contractor performing portions of the Project, the Construction Manager will, within seven days after the Construction Manager receives all of the Contractors' Applications for Payment: (1) review the Applications and certify the amount the Construction Manager determines is due each of the Contractors; (2) prepare a Summary of Contractors' Applications for Payment by combining information from each Contractor's application with information from similar applications for progress payments from the other Contractors; (3) prepare a Project Application and Certificate for Payment; (4) certify the amount the Construction Manager determines is due all Contractors; and (5) forward the Summary of Contractors' Applications for Payment and Project Application and Certificate for Payment to the Architect.

§ 9.4.2.1 Within seven days after the Architect receives the Project Application and Project Certificate for Payment and the Summary of Contractors' Applications for Payment from the Construction Manager, the Architect will either (1) issue to the Owner a Project Certificate for Payment, with a copy to the Construction Manager; or (2) issue to the Owner a Project Certificate for Payment for such amount as the Architect determines is properly due, and notify the Construction Manager and Owner of the Architect's reasons for withholding certification in part as provided in Section 9.5.1; or (3) withhold certification of the entire Project Application for Payment, and notify the Construction Manager and Owner of the Architect's reason for withholding certification in whole as provided in Section 9.5.1. The Construction Manager will promptly forward the Architect's notice of withholding certification to the Contractors.

§ 9.4.3 The Construction Manager's certification of an Application for Payment or, in the case of more than one Contractor, a Project Application and Certificate for Payment, shall be based upon the Construction Manager's evaluation of the Work and the data in the Application or Applications for Payment. The Construction Manager's certification will constitute a representation that, to the best of the Construction Manager's knowledge, information, and belief, the Work has progressed to the point indicated, the quality of the Work is in accordance with the Contract Documents, and that the Contractor is, or Contractors are, entitled to payment in the amount certified.

§ 9.4.4 The Architect's issuance of a Certificate for Payment or, in the case of more than one Contractor, Project Application and Certificate for Payment, shall be based upon the Architect's evaluation of the Work, the recommendation of the Construction Manager, and data in the Application for Payment or Project Application for Payment. The Architect's certification will constitute a representation that, to the best of the Architect's knowledge, information, and belief, the Work

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has progressed to the point indicated, the quality of the Work is in accordance with the Contract Documents, and that the Contractor is, or Contractors are, entitled to payment in the amount certified.

§ 9.4.5 The representations made pursuant to Sections 9.4.3 and 9.4.4 are subject to an evaluation of the Work for conformance with the Contract Documents upon Substantial Completion, to results of subsequent tests and inspections, to correction of minor deviations from the Contract Documents prior to completion, and to specific qualifications expressed by the Construction Manager or Architect.

§ 9.4.6 The issuance of a Certificate for Payment or a Project Certificate for Payment will not be a representation that the Construction Manager or Architect has (1) made exhaustive or continuous on-site inspections to check the quality or quantity of the Work; (2) reviewed construction means, methods, techniques, sequences, or procedures; (3) reviewed copies of requisitions received from Subcontractors and suppliers and other data requested by the Owner to substantiate the Contractor's right to payment; or (4) made examination to ascertain how or for what purpose the Contractor has used money previously paid on account of the Contract Sum.

§ 9.5 Decisions to Withhold Certification

§ 9.5.1 The Construction Manager or Architect may withhold a Certificate for Payment or Project Certificate for Payment in whole or in part, to the extent reasonably necessary to protect the Owner, if in the Construction Manager's or Architect's opinion the representations to the Owner required by Section 9.4.3 and 9.4.4 cannot be made. If the Construction Manager or Architect is unable to certify payment in the amount of the Application, the Construction Manager will notify the Contractor and Owner as provided in Section 9.4.1 and 9.4.2. If the Contractor, Construction Manager and Architect cannot agree on a revised amount, the Architect will promptly issue a Certificate for Payment or a Project Certificate for Payment for the amount for which the Architect is able to make such representations to the Owner. The Construction Manager or Architect may also withhold a Certificate for Payment or, because of subsequently discovered evidence, may nullify the whole or a part of a Certificate for Payment or Project Certificate for Payment previously issued, to such extent as may be necessary in the Construction Manager's or Architect's opinion to protect the Owner from loss for which the Contractor is responsible, including loss resulting from the acts and omissions described in Section 3.3.2 because of

- **.1** defective Work not remedied;
- **.2** third party claims filed or reasonable evidence indicating probable filing of such claims, unless security acceptable to the Owner is provided by the Contractor;
- **.3** failure of the Contractor to make payments properly to Subcontractors or suppliers for labor, materials or equipment;
- **.4** reasonable evidence that the Work cannot be completed for the unpaid balance of the Contract Sum;
- **.5** damage to the Owner or a Separate Contractor or other Contractor;
- **.6** reasonable evidence that the Work will not be completed within the Contract Time, and that the unpaid balance would not be adequate to cover actual or liquidated damages for the anticipated delay;
- **.7** repeated failure to carry out the Work in accordance with the Contract Documents; or
- **.8** failure to comply with applicable federal, state or local law or regulations, including but not limited to laws requiring the delivery of certified payrolls to the Owner.

§ 9.5.2 When either party disputes the Architect's decision regarding a Certificate for Payment under Section 9.5.1, in whole or in part, that party may submit a Claim in accordance with Article 15.

§ 9.5.3 When the reasons for withholding certification are removed, certification will be made for amounts previously withheld.

§ 9.5.4 If the Architect or Construction Manager withholds certification for payment under Section 9.5.1, the Owner may, at its sole option, issue joint checks to the Contractor and to any Subcontractor or supplier to whom the Contractor failed to make payment. If the Owner makes payments by joint check, the Owner shall notify the Architect and the Construction Manager, and both will reflect such payment on the next Certificate for Payment. Payments made by the Owner to any Subcontractor of the Contractor under this Article 9 shall be deemed to be payments made to the Contractor for the purposes of this Contract.

§ 9.5.5 Notwithstanding anything above to the contrary, the Owner has the right to withhold payment to protect itself against damages incurred or which may be incurred as the result of the Contractor's breach of Contract or negligence, including, but not limited to, the items set forth in Section 9.5.1.

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§ 9.6 Progress Payments

§ 9.6.1 After the Architect has issued a Certificate for Payment or Project Certificate for Payment, the Owner shall make payment in the manner and within the time provided in the Contract Documents, and shall so notify the Construction Manager and Architect.

§ 9.6.2 The Contractor shall pay each Subcontractor, no later than seven days after receipt of payment from the Owner, the amount to which the Subcontractor is entitled, reflecting percentages actually retained from payments to the Contractor on account of the Subcontractor's portion of the Work. The Contractor shall, by appropriate agreement with each Subcontractor, require each Subcontractor to make payments to Sub-subcontractors in a similar manner.

§ 9.6.3 The Construction Manager will, on request, furnish to a Subcontractor, if practicable, information regarding percentages of completion or amounts applied for by the Contractor and action taken thereon by the Owner, Construction Manager and Architect on account of portions of the Work done by such Subcontractor.

§ 9.6.4 The Owner has the right to request written evidence from the Contractor that the Contractor has properly paid Subcontractors and suppliers amounts paid by the Owner to the Contractor for subcontracted Work. If the Contractor fails to furnish such evidence within seven days, the Owner shall have the right to contact Subcontractors and suppliers to ascertain whether they have been properly paid and charge any costs or expenses, including but not limited to attorneys' fees and disbursements, incurred by the Owner as a result of the Contractor's failure to furnish such evidence. Neither the Owner, Construction Manager nor Architect shall have an obligation to pay, or to see to the payment of money to, a Subcontractor or supplier, except as required by law.

§ 9.6.5 The Contractor's payments to suppliers shall be treated in a manner similar to that provided in Sections 9.6.2, 9.6.3 and 9.6.4.

§ 9.6.6 A Certificate for Payment, a progress payment, or partial or entire use or occupancy of the Project by the Owner shall not constitute acceptance of Work not in accordance with the Contract Documents.

§ 9.6.7 Unless the Contractor provides the Owner with a payment bond in the full penal sum of the Contract Sum, payments received by the Contractor for Work properly performed by Subcontractors or provided by suppliers shall be held by the Contractor for those Subcontractors or suppliers who performed Work or Furnished materials, or both, under contract with the Contractor for which payment was made by the Owner. Nothing contained Herein shall require money to be placed in a separate account and not commingled with money of the Contractor, create any fiduciary liability or tort liability on the part of the Contractor for breach of trust, or entitle any person or entity to an award of punitive damages against the Contractor for breach of the requirements of this provision.

§ 9.6.8 Provided the Owner has fulfilled its payment obligations under the Contract Documents, the Contractor shall defend and indemnify the Owner from all loss, liability, damage or expense, including reasonable attorney's fees and litigation expenses, arising out of any lien claim or other claim for payment by any Subcontractor or supplier of any tier. Upon receipt of notice of a lien claim or other claim for payment, the Owner shall notify the Contractor. If approved by the applicable court, when required, the Contractor may substitute a surety bond for the property against which the lien or other claim for payment has been asserted.

§ 9.7 Failure of Payment

If the Construction Manager and Architect do not issue a Certificate for Payment or a Project Certificate for Payment, through no fault of the Contractor, within fourteen days after the Construction Manager's receipt of the Contractor's Application for Payment, or if the Owner does not pay the Contractor within seven days after the date established in the Contract Documents, the amount certified by the Construction Manager and Architect or awarded by binding dispute resolution, then the Contractor may, upon seven additional days' written notice to the Owner, Construction Manager and Architect, stop the Work until payment of the amount owing has been received. The Contract Time shall be extended appropriately, and the Contract Sum shall be increased by the amount of the Contractor's reasonable costs of shutdown, delay and start-up, plus interest as provided for in the Contract Documents. This Section 9.7 shall not apply to the extent that the Contractor owes the Owner any amount pursuant to the indemnification or other provisions of the Contract Documents, or the Owner is required to incur any cost or expense to purchase additional insurance or pay premiums for the Contractor's insurance as a result of a failure of the Contractor to obtain or maintain insurance meeting the requirements set forth in the Contract Documents.

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§ 9.8 Substantial Completion

§ 9.8.1 The Date of Substantial Completion of the Project or a designated portion thereof is the date when construction is sufficiently complete in accordance with the Drawings and Specifications so the Owner can occupy or utilize the entire Project (or such portion thereof as Owner earlier elects to occupy or utilize) for the uses for which it is intended. Substantial Completion shall not be deemed to exist until the Owner receives a Certificate of Occupancy for the Project (or such portion as elected by Owner) if such Certificate of Occupancy is required, and any other permits, approvals, licenses and any other documents from governmental authorities having jurisdiction therefore necessary for the beneficial occupancy of the project and the Contractor, Architect and Owner have agreed upon a schedule to provide the Owner with all as built drawings, operating manuals and warranties. Warranties called for by the Agreement or by the Drawings and Specifications shall commence on the date of Substantial Completion of the Project or designated portion thereof, or any later date that the parties agree. This date shall be established by a Certificate of Substantial Completion signed by the Owner, Architect and Contractor and shall state their respective responsibilities for security, maintenance, heat utilities, damage to the Work and insurance. This Certificate shall also list the items to be completed or corrected together with a price for each item and a time for their completion and correction.

§ 9.8.2 When the Contractor considers that the Work, or a portion thereof which the Owner agrees to accept separately, is substantially complete, the Contractor shall notify the Construction Manager, and the Contractor and Construction Manager shall jointly prepare and submit to the Architect a comprehensive written list of items to be completed or corrected which shall identify all non-conforming, defective and incomplete Work and establish the date of commencement of warranties in connection with any such Work prior to final payment. Failure to include an item on such list does not alter the responsibility of the Contractor to complete all Work in accordance with the Contract Documents.

§ 9.8.3 Upon receipt of the list, the Architect, assisted by the Construction Manager, will make an inspection to determine whether the Work or designated portion thereof is substantially complete. If the Architect's inspection discloses any item, whether or not included on the list, which is not sufficiently complete in accordance with the Contract Documents so that the Owner can occupy or utilize the Work or designated portion thereof for its intended use, the Contractor shall, before issuance of the Certificate of Substantial Completion, complete or correct such item upon notification by the Architect. In such case, the Contractor shall then submit a request for another inspection by the Architect, assisted by the Construction Manager, to determine Substantial Completion.

- **§ 9.8.3.1** Per Owner/architect contract, the Architect will perform one substantial completion inspection and one final inspection. All other required inspections are additional services and if the fault of the contractor, they will be responsible for additional amounts owed to the architect.

§ 9.8.4 When the Architect, assisted by the Construction Manager, determines that the Work of all of the Contractors, or designated portion thereof, is substantially complete, the Construction Manager will prepare, and the Construction Manager and Architect shall execute, a Certificate of Substantial Completion that shall establish the date of Substantial Completion; establish responsibilities of the Owner and Contractor for security, maintenance, heat, utilities, damage to the Work and insurance; and fix the time within which the Contractor shall finish all items on the list accompanying the Certificate. Warranties required by the Contract Documents shall commence on the date of Substantial Completion of the Work or designated portion thereof unless otherwise provided in the Certificate of Substantial Completion.

§ 9.8.5 The Certificate of Substantial Completion shall be submitted to the Owner and Contractor for their written acceptance of responsibilities assigned to them in such Certificate. Upon such acceptance, and upon the Owner's receipt of the consent of surety with respect to any bond furnished by the Contractor pursuant to the Agreement, the Owner shall promptly pay that portion of the Contract Sum not yet paid less an amount equal to two (2) times the value of any items of Work remaining to be completed and the amount necessary to satisfy any claims, liens, or judgments against the Contractor that have not been discharged.

§ 9.9 Partial Occupancy or Use

§ 9.9.1 The Owner may occupy or use any completed or partially completed portion of the Work at any stage when such portion is designated by separate agreement with the Contractor, provided such occupancy or use is consented to

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by the insurer and authorized by public authorities having jurisdiction over the Project. Such partial occupancy or use may commence whether or not the portion is substantially complete, provided the Owner and Contractor have accepted in writing the responsibilities assigned to each of them for payments, retainage if any, security, maintenance, heat, utilities, damage to the Work and insurance, and have agreed in writing concerning the period for correction of the Work and commencement of warranties required by the Contract Documents. When the Contractor considers a portion substantially complete, the Contractor and Construction Manager shall jointly prepare and submit a list to the Architect as provided under Section 9.8.2. Consent of the Contractor to partial occupancy or use shall not be unreasonably withheld. The stage of the progress of the Work shall be determined by written agreement between the Owner and Contractor or, if no agreement is reached, by decision of the Architect after consultation with the Construction Manager.

§ 9.9.2 Immediately prior to such partial occupancy or use, the Owner, Construction Manager, Contractor, and Architect shall jointly inspect the area to be occupied or portion of the Work to be used in order to determine and record the condition of the Work.

§ 9.9.3 Unless otherwise agreed upon, partial occupancy or use of a portion or portions of the Work shall not constitute acceptance of Work not complying with the requirements of the Contract Documents and shall not constitute substantial completion.

§ 9.10 Final Completion and Final Payment

§ 9.10.1 Upon completion of the Work, the Contractor shall forward to the Construction Manager a notice that the Work is ready for final inspection and acceptance, and shall also forward to the Construction Manager a final Contractor's Application for Payment. Upon receipt, the Construction Manager shall perform an inspection to confirm the completion of Work of the Contractor. The Construction Manager shall make recommendations to the Architect when the Work of all of the Contractors is ready for final inspection, and shall then forward the Contractors' notices and Application for Payment or Project Application for Payment, to the Architect, who will promptly make such inspection. When the Architect finds the Work acceptable under the Contract Documents and the Contract fully performed, the Construction Manager and Architect will promptly issue a final Certificate for Payment or Project Certificate for Payment stating that to the best of their knowledge, information and belief, and on the basis of their on-site visits and inspections, the Work has been completed in accordance with the Contract Documents and that the entire balance found to be due the Contractor and noted in the final Certificate is due and payable. The Construction Manager's and Architect's final Certificate for Payment or Project Certificate for Payment will constitute a further representation that conditions listed in Section 9.10.2 as precedent to the Contractor's being entitled to final payment have been fulfilled.

§ 9.10.2 Neither final payment nor any remaining retained percentage shall become due until the Contractor submits to the Architect through the Construction Manager (1) an affidavit that payrolls, bills for materials and equipment, and other indebtedness connected with the Work for which the Owner or the Owner's property might be responsible or encumbered (less amounts withheld by Owner) have been paid or otherwise satisfied, (2) a certificate evidencing that insurance required by the Contract Documents to remain in force after final payment is currently in effect, (3) a written statement that the Contractor knows of no reason that the insurance will not be renewable to cover the period required by the Contract Documents, (4) consent of surety, if any, to final payment (5) documentation of any special warranties, such as manufacturers' warranties or specific Subcontractor warranties, and (6), other data establishing payment or satisfaction of obligations, such as receipts and releases and waivers of liens, claims, security interests, or encumbrances arising out of the Contract, including but not limited to: AIA G706-1994, Contractor's Affidavit of Payment of Debts and Claims; AIA G706A-1994, Contractor's Affidavit of Release of Liens; AIA G707-1994, Consent of Surety to Final Payment; AIA Document G904-2022, Unconditional Waiver and Release on Final Payment; AIA Document G907-2022, Sworn Construction Statement; and additional lien waivers and releases from the Contractor and all subcontractors and materials suppliers as requested by Owner. If a Subcontractor refuses to furnish a release or waiver required by the Owner, the Contractor may furnish a bond satisfactory to the Owner to indemnify the Owner against such lien, claim, security interest, or encumbrance. If a lien, claim, security interest, or encumbrance remains unsatisfied after payments are made, the Contractor shall refund to the Owner all money that the Owner may be compelled to pay in discharging the lien, claim, security interest, or encumbrance, including all costs and reasonable attorneys' fees.

§ 9.10.3 If, after Substantial Completion of the Work, final completion thereof is materially delayed through no fault of the Contractor or the Contractor's Subcontractors or Sub-subcontractors, or any other person for whom the Contractor

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shall be responsible, or by issuance of Change Orders affecting final completion, and the Construction Manager and Architect so confirm, the Owner shall, upon application by the Contractor and certification by the Construction Manager and Architect, and without terminating the Contract, make payment of the balance due for that portion of the Work fully completed, corrected, and accepted. If the remaining balance for Work not fully completed or corrected is less than retainage stipulated in the Contract Documents, and if bonds have been furnished, the written consent of the surety to payment of the balance due for that portion of the Work fully completed and accepted shall be submitted by the Contractor to the Architect through the Construction Manager prior to certification of such payment. Such payment shall be made under terms and conditions governing final payment, except that it shall not constitute a waiver of Claims.

§ 9.10.4 The making of final payment shall constitute a waiver of Claims by the Owner except those arising from

- **.1** liens, Claims, security interests, or encumbrances arising out of the Contract and unsettled;
- **.2** failure of the Work to comply with the requirements of the Contract Documents;
- **.3** terms of special warranties required by the Contract Documents; or
- **.4** audits performed by the Owner after final payment.

§ 9.10.5 Acceptance of final payment by the Contractor, a Subcontractor, or a supplier, shall constitute a waiver of claims by that payee except those previously made in writing and identified by that payee as unsettled at the time of final Application for Payment.

§ 9.10.6 In the event the Contractor does not achieve final completion within thirty (30) days after the date of substantial completion, allowing for any approved extensions of the contract time, Contractor shall not be entitled to any further payment and Contractor hereby agrees that such failure to complete the work within the time set forth above shall constitute a waiver of all claims by the Contractor to any money that may be due. This provision shall not operate as a waiver by the Owner of any claims or remedies of any nature against the Contractor arising out of the Contract.

§ 9.11 Retainage

§ 9.11.1 Applications for Payment shall include a retainage amount of not less than five percent (5%) of the value of the completed work. Reduction of retainage shall only be approved upon completion of the Work, consent of the Contractor's surety to release of retainage, and when authorized by the Owner in writing.

ARTICLE 10 PROTECTION OF PERSONS AND PROPERTY

§ 10.1 Safety Precautions and Programs

The Contractor shall be responsible for initiating, maintaining, and supervising all safety precautions and programs in connection with the performance of the Contract. The Contractor shall submit the Contractor's safety program to the Construction Manager for review and coordination with the safety programs of other Contractors. The Construction Manager's responsibilities for review and coordination of safety programs shall not extend to direct control over or charge of the acts or omissions of the Contractors, Subcontractors, agents or employees of the Contractors or Subcontractors, or any other persons performing portions of the Work and not directly employed by the Construction Manager.

§ 10.2 Safety of Persons and Property

§ 10.2.1 The Contractor shall take reasonable precautions for safety of, and shall provide reasonable protection to prevent damage, injury, or loss to

- **.1** employees on the Work and other persons who may be affected thereby;
- **.2** the Work and materials and equipment to be incorporated therein, whether in storage on or off the site, under care, custody, or control of the Contractor, the Contractor's Subcontractors or Sub-subcontractors, when appropriate using coverings and other protective measures sufficient to insure the integrity and security of the Work and such materials and equipment;
- **.3** other property at the site or adjacent thereto, such as trees, shrubs, lawns, walks, pavements, roadways, structures, and utilities not designated for removal, relocation, or replacement in the course of construction; and
- **.4** construction or operations by the Owner, Separate Contractors, or other Contractors.

§ 10.2.2 The Contractor shall comply with, and give notices required by applicable laws, statutes, ordinances, codes, rules and regulations, and lawful orders of public authorities, bearing on safety of persons or property or their protection from damage, injury, or loss, including but not limited to all infectious disease exposure precautions. The

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Contractor represents and warrants to the Owner that its services and compensation contemplate compliance with all of the Owner's applicable policies and procedures and all current and reasonably foreseeable federal, state, and local orders, regulations, and guidance related to limiting the spread of the COVID-19 virus, including but not limited to regulations and guidance from the NYS Education Department and the NYS Department of Health. Accordingly, the Contractor hereby waives any claim for an increase in compensation or a change to the Substantial Completion date due to said compliance.

§ 10.2.2.1 The Contractor acknowledges that certain applicable laws, including, but not limited to, Sections 240 and 241 of New York State Labor Law, may impose liability on the Owner for injuries to persons employed by the Contractor or by its Subcontractors or Sub-subcontractors. As between the Owner and the Contractor (or any of the Contractor's Subcontractors or Sub-subcontractors or any persons for which any of them shall be responsible), the Contractor shall be solely responsible for compliance with all such laws to the extent they pertain to the safety or protection of persons on the Project site or performing the Work. Any claim, charge, penalty or cause of action arising out of or on account of any such law shall be subject to Section 3.18.

§ 10.2.3 The Contractor shall implement, erect, and maintain, as required by existing conditions and performance of the Contract, reasonable safeguards for safety and protection, including posting danger signs and other warnings against hazards; promulgating safety regulations; and notifying the owners and users of adjacent sites and utilities of the safeguards.

§ 10.2.4 When use or storage of explosives or other hazardous materials or equipment or unusual methods are necessary for execution of the Work, the Contractor shall exercise utmost care and carry on such activities under supervision of properly qualified personnel.

§ 10.2.5 The Contractor shall promptly remedy damage and loss (other than damage or loss insured under property insurance required by the Contract Documents) to property referred to in Sections 10.2.1.2, 10.2.1.3 and 10.2.1.4 caused in whole or in part by the Contractor, a Subcontractor, a Sub-subcontractor, or anyone directly or indirectly employed by any of them, or by anyone for whose acts they may be liable and for which the Contractor is responsible under Sections 10.2.1.2, 10.2.1.3 and 10.2.1.4. The Contractor may make a Claim for the cost to remedy the damage or loss to the extent such damage or loss is attributable to acts or omissions of the Owner, Construction Manager or Architect or anyone directly or indirectly employed by any of them, or by anyone for whose acts any of them may be liable, and not attributable to the fault or negligence of the Contractor. The foregoing obligations of the Contractor are in addition to the Contractor's obligations under Section 3.18. The Contractor shall also be responsible, at the Contractor's sole cost and expense, for all measures necessary to protect any property adjacent to the Project and improvements therein. Any damage to such property or improvements shall be promptly replaced by the Contractor.

§ 10.2.6 The Contractor shall designate a responsible member of the Contractor's organization at the site whose duty shall be the prevention of accidents. This person shall be the Contractor's superintendent unless otherwise designated by the Contractor in writing to the Owner, Construction Manager and Architect.

§ 10.2.7 The Contractor shall not permit any part of the construction or site to be loaded so as to cause damage or create an unsafe condition.

§ 10.2.8 Injury or Damage to Person or Property
If the Contractor suffers injury or damage to person or property because of an act or omission of the Owner, written notice of the injury or damage, whether or not insured, shall be given to the Owner within a reasonable time not exceeding seven (7) calendar days after discovery. The notice shall provide sufficient detail to enable the Owner to investigate the matter.

§ 10.2.9 The Contractor shall promptly report in writing to the Owner, Architect, and Construction Manager, all accidents arising out of or in connection with the Work which cause death, personal injury, or property damage, giving full details and statements of any witnesses. In addition, if death, serious personal injuries, or serious property damages are caused, the accident shall be reported immediately by telephone or messenger to the Owner and the Architect.

§ 10.2.10 The Contractor shall be solely responsible for the conditions which develop during construction and in the event any structure is dislocated, over strained, or damaged so as to affect is usefulness, the Contractor shall be solely

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responsible. The Contractor shall take whatever steps necessary to strengthen, relocate or rebuild the structure to meet requirements.

§ 10.2.11 The Contractor is responsible for restoration and/or repair of utilities, private property, buildings, pavement, walkways, roads, etc. damaged by its activities, or by its Subcontractors or Sub-subcontractors under this Agreement.

§ 10.3 Hazardous Materials

§ 10.3.1 The Contractor is responsible for compliance with any requirements included in the Contract Documents regarding hazardous materials or substances. If the Contractor encounters a hazardous material or substance not addressed in the Contract Documents and if reasonable precautions will be inadequate to prevent foreseeable bodily injury or death to persons resulting from a material or substance, including but not limited to asbestos or polychlorinated biphenyl (PCB), encountered on the site by the Contractor, the Contractor shall, upon recognizing the condition, immediately stop Work in the affected area and report the condition to the Owner, Construction Manager and Architect in writing. The Contractor shall take all reasonable precautions and measures to prevent any further contamination of the Project site or the Work by hazardous materials or substances it encounters and to prevent the further spread or disturbance of such materials or substances.

§ 10.3.2 Upon receipt of the Contractor's written notice, the Owner shall obtain the services of a licensed laboratory to verify the presence or absence of the material or substance reported by the Contractor and, in the event such material or substance is found to be present, to cause it to be rendered harmless. Unless otherwise required by the Contract Documents, the Owner shall furnish in writing to the Contractor, Construction Manager and Architect the names and qualifications of persons or entities who are to perform tests verifying the presence or absence of the material or substance or who are to perform the task of removal or safe containment of the material or substance. The Contractor, the Construction Manager and the Architect will promptly reply to the Owner in writing stating whether or not any of them has reasonable objection to the persons or entities proposed by the Owner. If the Contractor, Construction Manager or Architect has an objection to a person or entity proposed by the Owner, the Owner shall propose another to whom the Contractor, the Construction Manager and the Architect have no reasonable objection. When the material or substance has been rendered harmless, Work in the affected area shall resume upon written agreement of the Owner and Contractor. By Change Order, the Contract Time shall be extended appropriately, and the Contract Sum shall be increased by the amount of the Contractor's reasonable additional costs of shutdown, delay, and start-up.

§ 10.3.3 To the fullest extent permitted by law, the Owner shall indemnify and hold harmless the Contractor, Subcontractors, Construction Manager, Architect, their consultants, and agents and employees of any of them from and against claims, damages, losses, and expenses, including but not limited to attorneys' fees, arising out of or resulting from performance of the Work in the affected area if in fact the material or substance presents the risk of bodily injury or death as described in Section 10.3.1 and has not been rendered harmless, provided that such claim, damage, loss, or expense is attributable to bodily injury, sickness, disease or death, or to injury to or destruction of tangible property (other than the Work itself), except to the extent that such damage, loss, or expense is due to the fault or negligence of the party seeking indemnity. Exception is made for the Contractor expressly retained for the removal of lead, asbestos or polychlorinated (PCB) from the site. In this condition, all Contract Specifications and Drawings shall govern the handling of this material.

§ 10.3.4 The Owner shall not be responsible under this Section 10.3 for hazardous materials or substances the Contractor brings to the site unless such materials or substances are required by the Contract Documents. The Owner shall be responsible for hazardous materials or substances required by the Contract Documents, except to the extent of the Contractor's fault or negligence in the use and handling of such materials or substances.

§ 10.3.5 The Contractor shall reimburse the Owner for the cost and expense the Owner incurs (1) for remediation of hazardous materials or substances the Contractor brings to the site and negligently handles, or (2) where the Contractor fails to perform its obligations under Section 10.3.1, except to the extent that the cost and expense are due to the Owner's fault or negligence.

(Paragraph deleted)

§ 10.4 Emergencies

In an emergency affecting safety of persons or property, the Contractor shall act, at the Contractor's discretion, to prevent threatened damage, injury, or loss. Additional compensation or extension of time claimed by the Contractor on account of an emergency shall be determined as provided in Article 15 and Article 7.

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ARTICLE 11 INSURANCE AND BONDS

§ 11.1 Contractor's Liability Insurance

§ 11.1.1 The Contractor shall purchase from and maintain in a company or companies lawfully authorized to do business in the jurisdiction in which the Project is located and one to which the Owner has no reasonable objection, such insurance as will protect the Contractor from claims set forth below which may arise out of or result from the Contractor's operations and completed operations under the Contract and for which the Contractor may be legally liable, whether such operations be by the Contractor or by a Subcontractor or by anyone directly or indirectly employed by any of them, or by anyone for whose acts any of them may be liable:

.1 Claims under workers' compensation, disability benefit and other similar employee benefit acts which are applicable to the Work to be performed;

.2 Claims for damages because of bodily injury, occupational sickness or disease, or death of the Contractor's employees;

.3 Claims for damages because of bodily injury, sickness or disease, or death of any person other than the Contractor's employees;

.4 Claims for damages insured by usual personal injury liability coverage;

.5 Claims for damages, other than to the Work itself, because of injury to or destruction of tangible property, including loss of use resulting therefrom;

.6 Claims for damages because of bodily injury, death of a person or property damage arising out of ownership, maintenance or use of a motor vehicle;

.7 Claims for bodily injury or property damage arising out of completed operations;

.8 Claims involving contractual liability insurance applicable to the Contractor's obligations under Section 3.18;

.9 Where the Contract or Subcontract involves asbestos, the insurance required by Section 11.1 shall specifically include the words asbestos abatement work and shall specify any limitations on completed operation time period and if there is a limitation, it will be at the Owner's discretion to accept or reject the limitation; and

.10 Insurance must remain in effect at least until final payment and at all times thereafter when Contractor may be correcting, removing, or replacing defective Work.

.11 Contractor agrees to indemnify the Owner for all applicable deductibles and self-insurance retentions.

§ 11.1.2 The insurance required by Section 11.1.1 shall be written for not less than limits of liability specified in the Contract Documents or required by law, whichever coverage is greater. All liability insurance shall be written on an occurrence basis with the Contractor's insurance as primary and the Owner's policies as excess and noncontributory. Coverages shall be maintained without interruption from the date of commencement of the Work until the date of final payment and termination of any coverage required to be maintained after final payment and, with respect to the Contractor's completed operations coverage, until the expiration of the period for correction of Work or for such other period for maintenance of completed operations coverage as specified in the Contract Documents.

§ 11.1.2.1 If there is a lapse in the Contractor's required insurance through cancellation, expiration, failure to renew, or any other cause, the Contractor shall stop performing Work until it is once again in compliance with this Article. The Contractor shall have no claim against the Owner and shall not be entitled to any adjustment in the Contract Time or the Contract Sum as a result of any resulting delays. At its sole option, the Owner shall be permitted to pay the amount of any premium due for a policy of insurance required to be maintained by the Contractor under the Contract Documents or take such other action as may be necessary to prevent a lapse of coverage under any such policy and deduct the amount paid by the Owner from any amounts to be paid or to become payable to Contractor under the Contract Documents.

§ 11.1.2.2 The Contractor shall include coverage for its Subcontractors in its liability insurance policies or submit evidence that each of its Subcontractors has obtained and is maintaining insurance coverage in the amount and of the types required of the Contractor by this Article before such Subcontractor commences any portion of the Work or enters onto the Project site. The Contractor shall not permit any Subcontractor to enter upon or continue the performance of the Work unless such Subcontractor maintains insurance coverage of the types and in the amounts described intis Article.

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§ 11.1.3 Each certificate of insurance must describe the services to be provided by Contractor, be acceptable to the Owner, and shall be submitted to the Construction Manager for transmittal to the Owner with a copy to the Architect prior to commencement of the Work; and thereafter upon renewal or replacement of each required policy of insurance. The certificates and the insurance policies required by this Section 11.1 shall contain a provision that coverages afforded under the policies will not be canceled or allowed to expire until at least 30 days' prior written notice has been given to the Owner. An additional certificate evidencing continuation of liability coverage, including coverage for completed operations, shall be submitted with the final Application for Payment as required by Section 9.10.2 and thereafter upon renewal or replacement of such coverage until the expiration of the time required by Section 11.1.2. Information concerning reduction of coverage shall be furnished by the Contractor with reasonable promptness. The Contractor shall provide written notification to the Owner of the cancellation or expiration of any insurance required by Section 11.1. The Contractor shall provide such written notice within five (5) business days of the date the Contractor is first aware of the cancellation or expiration or is first aware that the cancellation or expiration is threatened or otherwise may occur, whichever comes first.

§ 11.1.3.1 Along with the submission of certificates of insurance, the Contractor shall include written disclosure of any prior and/or pending claims against the submitted policies. In addition, the Contractor shall immediately disclose to Owner in writing, any subsequent claims against the policies.

§ 11.1.3.2 A fully competed New York Construction Certificate of Liability Insurance Addendum (ACORD 855 NY 2014/05) must be included with the certificates of insurance. For any "Yes" answers on Items G through L on this Form – additional details must be provided in writing.

§ 11.1.4 Each Contractor shall maintain the following insurance for the duration of this Agreement and shall maintain Products and Completed Operations insurance coverage in effect for a period of two (2) years after Final Completion of the Work to be performed under the Contract Documents.

§ 11.1.4.1 Comprehensive General Liability Insurance naming the Owner, Architect and Construction Manager as an Additional Insured, containing an Additional Insured Endorsement, and a Waiver of Subrogation Endorsement. The additional insured coverage shall be primary and a non-contributory on a follow form basis to any of the Owner's, Architect's and Construction Manager's insurance policies and shall apply to both ongoing and completed operations on a per project and per location basis:

General Aggregate	$2,000,000
Products Completed Operations Aggregate	$2,000,000
Personal and Advertising Injury	$1,000,000
Each Occurrence	$1,000,000
Fire Damage	$300,000
Medical Expense	$10,000

Including Bodily Injury and Property Damage, Damage for Premises/Operations, Products and Completed Operations and coverage provided by the General Liability coverage form CG00010 1/96 in connection with work to be completed by the Contractor and all subcontractors and consultants, with the Owner, Architect and Construction Manager named as an Additional Insured. Coverage must be provided on a per project, per location basis.

All property damage insurance shall include coverage for explosion, collapse, and underground operations.

§ 11.1.4.2 Commercial Automobile Liability Insurance covering owned and rented vehicles operated by the Contractor with policy limits of not less than one million ($1,000,000) combined single limit and aggregate for bodily injury and property damage. Including Bodily Injury and Property Damage for the operation of Any Auto (Symbol 1) used in connection with Work to be completed by the Contractor and all subcontractors and consultants, with the Owner, Architect, and Construction Manager named as Additional Insureds and a Waiver of Subrogation Endorsement.

§ 11.1.4.3 The Umbrella Liability Insurance coverage shall provide additional limits of liability coverage over and above the General Liability and Automobile Liability coverages required by this Agreement on a follow-form basis with the Owner, Architect, and Construction Manager named as Additional Insureds and a Waiver of Subrogation Endorsement. Umbrella Liability Insurance:

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Each Occurrence Limit	$5,000,000
Aggregate	$5,000,000

§ 11.1.4.4 Worker's Compensation Insurance covering the obligations of the Contractor in accordance with applicable law at statutory limits and Employer's Liability Insurance with a policy limit of not less than required by applicable law, covering all operations under this Agreement, whether performed by the Contractor, its subcontractors or consultants, containing a Blanket Waiver of Subrogation Endorsement.

§ 11.1.4.5 Owner's and Contractor's Protective Liability Insurance **with the Owner listed as the Named Insured**:

Each Occurrence	$1,000,000
Aggregate	$2,000,000

§ 11.1.4.6 Builder's Risk Insurance, the General Contractor shall provide property damage insurance on a builder's risk "all risk" or equivalent policy form in the amount of the initial contract sum plus the value of subsequent contract modifications and the cost of materials supplied or installed by others, comprising the total value for the entire project at the site on a replacement cost basis without optional deductibles. The form of the policy shall be Completed Value. The policy deductible must be no greater than $5,000 per occurrence.

§ 11.1.4.7 If required by the Contract Documents, Contractor shall provide Contractor's Pollution Liability Coverage and Asbestos Abatement Liability Coverage naming the Owner as an Additional Insured, in the amount of $2,000,000 for Each Occurrence, for a period of three (3) years following the acceptance by Owner of a Certificate of Substantial Completion. The Asbestos Abatement Liability Insurance shall specify any limitations on the completed operations time period, subject to the Owner's approval which may be withheld at the Owner's option. The Asbestos Abatement Liability Insurance shall indemnify the Owner and provide the Owner with a defense should there be an occurrence creating potential liability for the Owner. If the Asbestos Abatement Liability Coverage required herein is not available from an insurance carrier licensed to do business in the state of New York, Contractor must notify Owner in writing as soon as practical.

§ 11.1.4.8 The Contractor shall provide to the Owner for each of the insurance coverages required herein one original or one certified copy of the original policy of insurance, including all endorsements, plus one certificate of insurance on ACCORD Form 25S accompanied by AIA Form G715, with a brief description of the project or service. The policies and certificates shall show the Owner, the Architect, and the Construction Manager as an additional insured on the Comprehensive General Liability, Automobile Liability, umbrella or excess policies, and the Owner as the Named Insured on the Owner's Protective Liability Insurance policy. All such insurance shall be written without expense to the Owner by an insurance company authorized to provide insurance in the State of New York with an AM Best rating of A- or better, shall be drawn on standard forms approved by the New York State Insurance Department and shall protect the Contractor, its subcontractors and consultants, and the Owner, the Architect and the Construction Manager from liability for claims for personal injury, death and property damage which may arise from performance under the Contract Documents.

§ 11.1.4.8.1 At the request of the Owner, the issuing insurance company, agents and/or authorized representatives shall set forth in writing that there are no pending claims against the insured and/or that there is ample coverage remaining to cover the insured in the event of a claim.

§ 11.1.4.8.2 At the request of the Owner, the issuing insurance company, agents and/or authorized representatives shall set forth in writing that the insurance: (1) applies to all operations of the Contractor in connection with the Work to be performed under this Agreement; (2) applies on the effective dates stated, whether or not the Agreement between the Contractor and the Owner has been executed; and (3) is written in accordance with the company's regular policies and endorsements.

§ 11.1.4.8.3 Each policy must provide the Owner thirty (30) days advance written notice prior to cancellation, a reduction in coverage, and/or non-renewal of the policy.

§ 11.1.4.8.4 Within three (3) business days of the date the Contractor becomes aware of an impending or actual cancellation or expiration of any insurance required by the Contract Documents, the Contractor shall provide notice directly to the Owner and its bonding company, and separately to the Construction Manager, of such impending

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or actual cancellation or expiration. Upon receipt of notice from the Contractor, the Owner shall, unless the lapse in coverage arises from an act or omission of the Owner, have the right to stop the Work until the lapse in coverage has been cured by the procurement of replacement coverage by the Contractor. The furnishing of notice by the Contractor shall not relieve the Contractor of any contractual obligation to provide any required coverage.

§ 11.2 Waiver of Subrogation

§ 11.2.1 The Contractor waives all rights against (1) Owner and any of its agents, and employees; (2) the Construction Manager and Construction Manager's consultants; (3) the Architect and Architect's consultants for damages caused by fire, or other causes of loss, to the extent those losses are covered by property insurance required by the Agreement or other property insurance applicable to the Project, except such rights as they have to proceeds of such insurance. The policies of insurance purchased and maintained by each person or entity agreeing to waive claims pursuant to this Section 11.2.1 shall not prohibit this waiver of subrogation. This waiver of subrogation shall be effective as to a person or entity (1) even though that person or entity would otherwise have a duty of indemnification, contractual or otherwise, (2) even though that person or entity did not pay the insurance premium directly or indirectly, or (3) whether or not the person or entity had an insurable interest in the damaged property.

(Paragraphs deleted)

§ 11.3 Owner's Insurance

§ 11.3.1 The Owner may purchase and maintain insurance in its discretion.

(Paragraph deleted)

§ 11.4

(Paragraphs deleted)

Performance Bond and Payment Bond

(Paragraphs deleted)

§ 11.4.1 The Contractor must furnish two (2) executed Surety bonds, each in the amount equal to one hundred (100%) percent of the Contract Sum.

§ 11.4.1.1 The Performance Bond shall be furnished as security for the faithful performance by the Contractor of all terms and conditions of the Contract Documents.

§ 11.4.1.2 The Payment Bond shall be furnished as security for the claims of laborers and materials suppliers.

§ 11.4.1.3 Both bonds shall be made out to the Owner, prepared on a modified AIA Form A312-2010 and submitted by the Contractor to the Owner within ten (10) days of notification of contract award with all signatures properly acknowledged by a notary and in strict compliance with applicable New York State law.

§ 11.4.1.3.1 The Performance Bond shall contain the following modification in §16:

Surety hereby waives notice of and consents to any addition, alteration, omission, change, extension of time, or other modification of the Construction Contract. Such addition, alteration, omission, change, extension of time, or other modification of the Construction Contract, or forbearance on the part of either the Owner or the Contractor to the other, shall not release the Surety from its obligations hereunder. Surety further agrees that it is obligated under this bond to any successor, grantee, or assignee of the Owner.

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Surety agrees that in the event of a default by the Owner in the performance of the Owner's obligations to the Contractor under the Construction Contract, the Contractor or Surety shall provide written notice of default to the Owner and the Owner shall have thirty (30) days from receipt of such notice within which to cure such default, or such additional reasonable period of time as may be required if the nature of the default is such that it can't be cured within thirty (30) days.

Notwithstanding anything to the contrary contained in the Construction Contract between the Contractor and the Owner or herein, no meeting among Owner, Contractor, and Surety, or any combination thereof, is required as a pre-condition to Owner declaring Contractor in default or prior to Owner terminating the Construction Contract with Contractor. Any such requirements contained herein are waived by the Contractor and the Surety and are unenforceable against the Owner.

This Bond includes performance by the Contractor of any correction and/or warranty obligations contained in the Construction Contract, including such performance after the date of Substantial or Final Completion.

This Bond is given as a statutory bond or as required by the Construction Contract and section 13 applies without exception.

§ 11.4.1.3.2 The Payment Bond shall contain the following modification in §18:

Surety hereby waives notice of and consents to any addition, alteration, omission, change, extension of time, or other modification of the Construction Contract. Such addition, alteration, omission, change, extension of time, or other modification of the Construction Contract, or forbearance on the part of either the Owner or the Contractor to the other, shall not release the Surety from its obligations hereunder. Surety further agrees that it is obligated under this bond to any successor, grantee, or assignee of the Owner.

Surety agrees that in the event of a default by the Owner in the performance of the Owner's obligations to the Contractor under the Construction Contract, the Contractor or Surety shall provide written notice of default to the Owner and the Owner shall have thirty (30) days from receipt of such notice within which to cure such default, or such additional reasonable period of time as may be required if the nature of the default is such that it can't be cured within thirty (30) days.

This Bond is given as a statutory bond or as required by the Construction Contract and section 14 applies without exception.

§ 11.4.1.4 The Surety thereon must be such Surety company or companies as are authorized and licensed to transact business in the State of New York and included on the Department of the Treasury's Listing of Approved Sureties with an underwriting limit of at least $2,000,000 or the amount of the bond, whichever is higher. Each bond must be properly signed with acknowledgment of the signatures. Attorneys-in-fact who sign bonds must file with each bond a certified copy of their power of attorney to sign said bonds. Every bond must display the Surety's Bond Number.

§ 11.4.1.5 All Bonds shall be maintained in full force for a period of twenty-four (24) months after the date of the Contractor's acceptance of final payment as guarantee that the Contractor will make good any faults or defects in the Work arising from improper or defective workmanship or materials which may appear during the period.

§ 11.4.1.6 The Contractor shall keep the surety informed of the progress of the Work, and, where necessary, obtain the surety's consent to, or waiver of: (1) notice of changes in the Work; (2) request for reduction or release of retention; (3) request for final payment; and (4) any other material required by the surety. The Owner shall be notified by the Contractor, in writing, of all communications with the surety. The Owner may, in the owner's sole discretion, inform surety of the progress of the Work and obtain consents as necessary to protect the Owner's rights, interest, privileges and benefits under any bond issued in connection with the Work.

§ 11.4.2 Upon the request of any person or entity appearing to be a potential beneficiary of bonds covering payment of obligations arising under the Contract or performance under the Contract Documents, the Contractor shall promptly furnish a copy of the bonds and hereby authorizes the Owner to furnish a copy of the bonds.

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ARTICLE 12 UNCOVERING AND CORRECTION OF WORK

§ 12.1 Uncovering of Work

§ 12.1.1 If a portion of the Work is covered contrary to the Construction Manager's or Architect's request or to requirements specifically expressed in the Contract Documents, it must, if requested in writing by either, be uncovered for their examination and be replaced at the Contractor's expense without change in the Contract Time.

§ 12.1.2 If a portion of the Work has been covered that the Construction Manager or Architect has not specifically requested to examine prior to its being covered, the Construction Manager or Architect may request to see such Work and it shall be uncovered by the Contractor. If such Work is in accordance with the Contract Documents, the Contractor shall be entitled to an equitable adjustment to the Contract Sum and Contract Time as may be appropriate. If such Work is not in accordance with the Contract Documents, the costs of uncovering the Work, and the cost of correction, shall be at the Contractor's expense.

§ 12.2 Correction of Work

§ 12.2.1 Before Substantial Completion

The Contractor shall promptly correct Work rejected by the Construction Manager or Architect or failing to conform to the requirements of the Contract Documents, discovered before Substantial Completion, and whether or not fabricated, installed or completed. Costs of correcting such rejected Work, including additional testing and inspections, the cost of uncovering and replacement, and compensation for the Construction Manager's and Architect's services and expenses made necessary thereby, shall be at the Contractor's expense and may be deducted pursuant to a change directive.

§ 12.2.2 After Substantial Completion

§ 12.2.2.1 The Contractor unconditionally warrants the Work and its performance to the Owner. The Contractor shall perform all warranty obligations and responsibilities with respect to the Work. The Contractor, at is sole expense, shall remedy defects due to improper and/or defective workmanship or materials appearing within one (1) year of Final Completion or for such longer period as may be set forth elsewhere in the Contract Documents (the "Correction Period"). Upon Substantial Completion of the Work, the Contractor shall submit to the Owner all written warranties and guaranties from Subcontractors, suppliers, and manufacturers. If a warrant or guaranty delivered to the Owner by a supplier, vendor, or manufacturer shall be available, the Owner will first diligently pursue remedies under such warranty or guaranty before pursuing any remedy against the Contractor pursuant to any such warranty or guaranty, and the Contractor shall fully cooperate with such efforts. The Contractor acknowledges that its obligations to the Owner under this Section are joint and several during the Correction Period with Subcontractors, suppliers, vendors, and manufacturers for all warranties and guaranties supplied with respect to the Work or any portion thereof. Any notice given to the Contractor by the Owner pertaining to any deficiency in the Work covered by a warranty or guaranty described in this Section shall toll the Correction Period until the deficiency has been corrected, and the Correction Period for all corrected Work shall recommence on the date of correction. The obligations of the Contractor pursuant to this Section shall continue notwithstanding the termination of the Contract or of the Contractor for any reason. The rights and remedies of the Owner pursuant to this Section are in addition to and not in lieu of any rights and remedies that may be available to the Owner under the Contract Documents, including but not limited to Section 2.4 of this Agreement, or applicable law. Costs of correcting such rejected Work, including additional testing and inspections, the cost of uncovering and replacement, and compensation for the Construction Manager's and Architect's services and expenses made necessary thereby, shall be at the Contractor's expense and may be deducted pursuant to a change directive.

§ 12.2.2.1.1 Any replacement made under any guarantee required by or included in the Contract Documents, or within one (1) year after the date of substantial completion of the Contract, shall likewise be guaranteed as stipulated above from the date such replacement is accepted by the Owner.

§ 12.2.2.2 The one-year period for correction of Work shall be extended with respect to portions of Work first performed after Substantial Completion by the period of time between Substantial Completion and the actual completion of that portion of the Work.

(Paragraph deleted)

§ 12.2.3 The Contractor shall remove from the site portions of the Work that are not in accordance with the requirements of the Contract Documents and are neither corrected by the Contractor nor accepted by the Owner.

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§ 12.2.3.1 Upon request by the Owner and prior to expiration of one year from the date of Substantial Completion, the Construction Manager and the Architect will conduct, and the Contractor shall attend a meeting with the Owner to review the facility operations and performance.

§ 12.2.4 The Contractor shall bear the cost of correcting destroyed or damaged construction whether completed or partially completed, of the Owner or separate contractors or other Multiple Contractors caused by the Contractor's correction or removal of Work that is not in accordance with the requirements of the Contract Documents. The obligations shall cover any repair and replacement to any part of the Work or other property caused by the defective Work.

§ 12.2.5 Nothing contained in this Section 12.2 shall be construed to establish a period of limitation with respect to other obligations the Contractor has under the Contract Documents. Establishment of the Correction Period as described in Section 12.2.2.1 relates only to the specific obligation of the Contractor to correct the Work, and has no relationship to the time within which the obligation to comply with the Contract Documents may be sought to be enforced, nor to the time within which proceedings may be commenced to establish the Contractor's liability with respect to the Contractor's obligations other than specifically to correct the Work.

§ 12.3 Acceptance of Nonconforming Work

If the Owner prefers to accept Work that is not in accordance with the requirements of the Contract Documents, the Owner may do so instead of requiring its removal and correction, in which case the Contract Sum will be reduced as appropriate and equitable. Such adjustment shall be effected whether or not final payment has been made.

ARTICLE 13 MISCELLANEOUS PROVISIONS

§ 13.1 Governing Law

The Contract shall be governed by the law of the place where the Project is located excluding that jurisdiction's choice of law rules.

§ 13.1.2 The Contractor shall at all times observe and comply with all Federal and State Laws, and all Laws, Ordinances and Regulations of the Owner, in any manner affecting the work, and all such orders decreed as exist at present and those which may be enacted later, by bodies or tribunals having jurisdiction or authority over the Work, and the Contractor shall indemnify and save harmless the Owner and all its officers, agents or servants against any claim or liability arising from, or based on, a violation of any such law, ordinances, regulation or order, whether by its employee or agents.

§ 13.1.3 During the performance of this Contract, the Contractor agrees as follows:

1. The Contractor will not discriminate against any employee or applicant for employment because of age, race, creed, color, national origin, sexual orientation, military status, sex, disability, predisposing genetic characteristics, marital status, or domestic violence victim status.
2. If directed to do so by the Owner or the State Commissioner of Human Rights, the Contractor will send to each labor union or representative of workers which with the Contractor has or is bound by a collective bargaining or other agreement or understanding, a notice, to be provided by the State Commissioner of Human Rights, advising such labor union or representative of the Contractor's agreement under clauses (1) through (6) (hereinafter called "non-discrimination clauses"). If the Contractor was directed to do so by the Owner as part of the bid or negation of this Contract, the Contractor shall request such labor union or representative to furnish a written statement that such labor union or representative will not discriminate because of age, race, creed, color, national origin, sexual orientation, military status, sex, disability, predisposing genetic characteristics, or marital status, and that such labor union or representative will cooperate, within the limits of its legal contractual authority, in the implementation of the policy and provisions of these non-discrimination clauses and that it consents and agrees that the recruitment, employment and the terms and conditions of employment under this Contract shall be in accordance with the purposes and provision of these non-discrimination clauses. If such labor union or representative fails or refuses to comply with such a request that it furnish such a statement, the Contractor shall promptly notify the Owner and the State Commissioner of Human Rights of such failure or refusal.
3. If directed to do so by the Owner or the Commissioner of Human Rights, the Contractor will post and keep posted in conspicuous places, available to employees and applicants for employment, notices to be provided by the State Commissioner of Human Rights setting forth the substance of provisions of

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clauses (1) and (2) and such provision of the State's law against discrimination as the State Commissioner of Human Rights shall determine.

4. The Contractor will state in all solicitations or advertisements for employees placed by or on behalf of the Contractor, that all qualified applicants will be afforded equal employment opportunities without discrimination because of age, race, creed, color, national origin, sexual orientation, military status, sex, disability, predisposing genetic characteristics, marital status, or domestic violence victim status.
5. The Contractor will comply with the provisions of Sections 290-299 of the Executive Law, and with the Civil Rights Law, will furnish all information and reports deemed necessary by the State Commissioner of Human Rights under these non-discrimination clauses and such section of the Executive Law, and will permit access to the Contractor's books, records, and accounts by the Owner, the State Commissioner of Human Rights, the Attorney General and the Industrial Commissioner for the purposes of investigation to ascertain compliance with the non-discrimination clauses and such sections of the Executive Law Civil Rights Law.
6. This Contract may be forthwith cancelled, terminated, or suspended, in whole or in part, by the Owner upon the basis of a finding made by the State Commissioner of Human Rights that the Contractor has not complied with the non-discrimination clauses, and that the Contractor may be declared ineligible for future contracts made by or on behalf of the Owner, the State or a public authority or agency of the State, until the Contractor satisfies the State Commissioner of Human Rights that the Contractor has established and is carrying out a program in conformity with the provisions of these non-discrimination clauses. Such findings may be made by the State Commissioner of the Human Rights after conciliation efforts by the Commissioner have failed to achieve compliance with these non-discrimination clauses and after a verified complaint has been filed with the Commissioner, notice thereof has been given to the Contractor to be heard publicly in accordance with the Executive Law. Such sanctions may be imposed and remedies invoked independently of or in addition to sanctions and remedies otherwise provided by law, and
7. The Contractor will include the provisions of clauses .1 through .6 in every subcontract or purchase order in such a manner that such provisions will be binding upon each subcontractor or vendor as to operations to be performed within the State of New York. The Contractor will take action in enforcing such provisions of such subcontract or purchase order as the State Commissioner of Human Rights or the Owner may direct, including sanctions or remedies for non-compliance. If the Contractor becomes involved or is threatened with litigation with a subcontractor or vendor as a result of such directions by the State Commissioner of Human Rights or the Owner, the Contractor shall promptly so notify the Owner and the Attorney General requesting the Attorney General to intervene and protect the interests of the State of New York.

§ 13.1.4 The parties expressly agree that any claim, dispute, or other controversy of any nature arising out of the Contract or performance of the Work shall be commenced and maintained in the New York State Supreme Court in the County where the Project is located.

§ 13.2 Successors and Assigns

§ 13.2.1 The Owner and Contractor respectively bind themselves, their partners, successors, assigns, and legal representatives to covenants, agreements, and obligations contained in the Contract Documents. The Contractor shall not assign the Contract as a whole without written consent of the Owner. Any assignment or attempted assignment by the Contractor in violation of the provisions of this Section 13.2.1 shall be void and unenforceable and shall be deemed a material breach of this Agreement.

(Paragraph deleted)

§ 13.3 Rights and Remedies

§ 13.3.1 Duties and obligations imposed by the Contract Documents and rights and remedies available thereunder shall be in addition to and not a limitation of duties, obligations, rights, and remedies otherwise imposed or available by law.

§ 13.3.2 No action or failure to act by the Owner, Construction Manager, Architect, or Contractor shall constitute a waiver of a right or duty afforded them under the Contract, nor shall such action or failure to act constitute approval of or acquiescence in a breach thereunder, except as may be specifically agreed upon in writing.

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§ 13.4 Tests and Inspections

§ 13.4.1 Tests, inspections, and approvals of portions of the Work shall be made as required by the Contract Documents and by applicable laws, statutes, ordinances, codes, rules, and regulations or lawful orders of public authorities. Unless otherwise provided, the Contractor shall make arrangements for such tests, inspections, and approvals with an independent testing laboratory or entity acceptable to the Owner, and shall bear all related costs of tests, inspections, and approvals. The Contractor shall give the Construction Manager and Architect timely notice of when and where tests and inspections are to be made so that the Construction Manager and Architect may be present for such procedures. The Owner shall bear costs of tests, inspections, or approvals that do not become requirements until after bids are received or negotiations concluded. The Owner shall directly arrange and pay for tests or inspections where building codes or applicable laws or regulations so require.

§ 13.4.2 If the Construction Manager, Architect, Owner, or public authorities having jurisdiction determine that portions of the Work require additional testing, inspection, or approval not included under Section 13.4.1, the Construction Manager and Architect will, upon written authorization from the Owner, instruct the Contractor to make arrangements for such additional testing, inspection, or approval, by an entity acceptable to the Owner, and the Contractor shall give timely notice to the Construction Manager and Architect of when and where tests and inspections are to be made so that the Construction Manager and Architect may be present for such procedures. Such costs, except as provided in Section 13.4.3, shall be at the Owner's expense.

§ 13.4.3 If procedures for testing, inspection, or approval under Sections 13.4.1 and 13.4.2 reveal failure of the portions of the Work to comply with requirements established by the Contract Documents, all costs made necessary by such failure, including those of repeated procedures and compensation for the Construction Manager's and Architect's services and expenses, shall be at the Contractor's expense.

§ 13.4.4 Required certificates of testing, inspection, or approval shall, unless otherwise required by the Contract Documents, be secured by the Contractor and promptly delivered to the Construction Manager for transmittal to the Architect.

§ 13.4.5 If the Construction Manager or Architect is to observe tests, inspections, or approvals required by the Contract Documents, the Construction Manager or Architect will do so promptly and, where practicable, at the normal place of testing.

§ 13.4.6 Tests or inspections conducted pursuant to the Contract Documents shall be made promptly to avoid unreasonable delay in the Work.

§ 13.5 Interest

Payments due and unpaid under the Contract Documents shall bear interest from the date payment is due in accordance with New York State Law.

§ 13.6 Any material to be furnished shall be subject to inspections and tests in the shop and field by the Architect. Shop inspection shall not relieve the Contractor of the responsibility to furnish satisfactory materials and the right is reserved to reject any material at any time before final acceptance of the work, when in the opinion of the Architect the materials and workmanship do not conform to the Specification requirements.

§ 13.7 General Provisions

§ 13.7.1 Any specific requirement in this Contract that the responsibilities or obligations of the Contractor also apply to a Subcontractor is added for emphasis and are also hereby deemed to include a Subcontractor of any tier. The omission of a reference to a Subcontractor in connection with any of the Contractor's responsibilities or obligations shall not be construed to diminish, abrogate, or limit any responsibilities or obligations of a Subcontractor of any tier under the Contract Documents or the applicable subcontract.

ARTICLE 14 TERMINATION OR SUSPENSION OF THE CONTRACT

§ 14.1 Termination by the Contractor

§ 14.1.1 The Contractor may terminate the Contract if the Work is stopped for a period of 60 consecutive days through no act or fault of the Contractor, a Subcontractor, a Sub-subcontractor, their agents or employees, or any other persons or entities performing portions of the Work, for any of the following reasons:

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.1 Issuance of an order of a court or other public authority having jurisdiction that requires all Work to be stopped; or

.2 An act of government, such as a declaration of national emergency, that requires all Work to be stopped;

(Paragraphs deleted)

§ 14.1.2 The Contractor may terminate the Contract if, through no act or fault of the Contractor, a Subcontractor, a Sub-subcontractor, their agents or employees, or any other persons or entities performing portions of the Work, repeated suspensions, delays, or interruptions of the entire Work by the Owner as described in Section 14.3, constitute in the aggregate more than 100 percent of the total number of days scheduled for completion, or 120 days in any 365-day period, whichever is less.

§ 14.1.3 If one of the reasons described in Section 14.1.1 or 14.1.2 exists, the Contractor may, upon seven days' written notice to the Owner, Construction Manager and Architect, and upon the failure of the Owner to cure the alleged grounds for termination within that seven day period, terminate the Contract and recover from the Owner payment for Work properly and acceptably executed prior to termination.

§ 14.1.4 If the Work is stopped for a period of 60 consecutive days through no act or fault of the Contractor, a Subcontractor, a Sub-subcontractor, or their agents or employees, or any other persons performing portions of the Work because the Owner has repeatedly failed to fulfill the Owner's obligations under the Contract Documents with respect to matters important to the progress of the Work, the Contractor may, upon seven additional days' written notice to the Owner, Construction Manager and Architect, terminate the Contract and recover from the Owner as provided in Section 14.1.3.

§ 14.2 Termination by the Owner for Cause

§ 14.2.1

(Paragraphs deleted)

If, in the opinion of the Owner, the Contractor at any time refuses or fails to provide sufficient skilled workers or materials, timely prosecute the Work, is substantially behind schedule, fails to furnish the Owner with satisfactory assurance evidencing the Contractor's ability to complete the Work in compliance with the requirements of the Contract Documents, make payment to Subcontractors as required by the Contract, by the Contractor's contracts with such third parties, or by applicable law, or comply with any provisions of the Contract Documents, or makes any general assignment for the benefit of creditors, becomes insolvent, makes any filing in any proceeding in bankruptcy, has any involuntary proceeding in bankruptcy commenced for it, or disregards applicable laws, rules, and regulations or Project-specific instructions of the Owner, the Owner may, without prejudice to any other rights or remedies it may have: (a) take reasonable steps to remedy the condition, in which case the Contractor shall be liable to the Owner for the direct and indirect costs. The costs incurred by the Owner in connection with retaining a replacement contractor (on a contingency basis or otherwise) are in addition to any other costs incurred by Owner to remedy the condition (including, without limitation, reasonable legal fees and disbursements) incurred by the Owner in taking such steps; or (b) terminate the Contract. In either event, the Owner may enter the Project site, take possession of all Work and all materials and equipment of the Contractor, require the Contractor to assign to the Owner any or all of its subcontracts and contracts or purchase orders pertaining to the Project or the Work, and complete the Work by itself, through others, or by whatever method or methods the Owner may deem appropriate. In the case of termination for default, the Contractor shall not be entitled to receive any further payment until the Work is fully completed and accepted by the Owner. Any payment then made shall be limited to Work fully performed by the Contractor in accordance with the Contract Documents up to the date of termination, less any charges or other amounts owed by the Contractor to the Owner. If the amount paid by the Owner for completing the Work exceeds the unpaid balance of the Contract Sum, then the Contractor shall pay the Owner the difference within five (5) business days following demand therefor by the Owner. The Contractor shall, in addition, pay all of the Owner's costs of collection, including, without limitation, reasonable legal fees and disbursements. The Contractor's obligations hereunder shall survive the termination of the Contract for any reason.

§ 14.2.2

(Paragraphs deleted)

If the Owner is subsequently determined in any binding dispute resolution proceeding to have improperly or wrongfully exercised its rights under Section 14.2, the Agreement shall be deemed to have been terminated at the Owner's convenience and the Contractor shall be compensated accordingly.

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§ 14.2.3 The Contractor hereby constitutes and appoints the Owner its true and lawful attorney in fact to execute and deliver all instruments and documents and take all such other actions on behalf of the Contractor as the Owner may deem necessary or convenient to the effectuation of the purposes and transactions described in this Article 14 from and after the Owner's termination of the Contract as permitted by this Article 14. Nothing in this Section 14.2.3 and no exercise or assertion by the Owner of any of the authority granted hereunder shall be deemed to relieve the Contractor of any liability or obligation to the Owner under the Contract Documents or otherwise.

(Paragraph deleted)

§ 14.3 Suspension by the Owner for Convenience

§ 14.3.1 The Owner may, without cause, order the Contractor in writing to suspend, delay or interrupt the Work, in whole or in part for such period of time as the Owner may determine.

§ 14.3.2 The Contract Sum and the Contract Time shall be adjusted for increases in the cost and time caused by suspension, delay, or interruption under Section 14.3.1. No adjustment shall be made to the extent:

- **.1** that performance is, was, or would have been, so suspended, delayed, or interrupted, by another cause for which the Contractor is responsible; or
- **.2** that an equitable adjustment is made or denied under another provision of this Contract.

§ 14.4 Termination by the Owner for Convenience

§ 14.4.1 Notwithstanding any other provision to the contrary in this Agreement, the Owner reserves the right at any time and in its absolute discretion to terminate the services of the Contractor and/or the Work for the Owner's convenience and without cause by giving written notice to the Contractor. This termination for the convenience of the Owner provision allows and authorizes the Owner to terminate this Agreement at any time and for any reason or no reason. This right may be exercised by the Owner in its complete discretion.

§ 14.4.2 Upon receipt of written notice from the Owner of such termination for the Owner's convenience, the Contractor shall

- **.1** cease operations as directed by the Owner in the notice;
- **.2** take actions necessary, or that the Owner may direct, for the protection and preservation of the Work; and
- **.3** except for Work directed to be performed prior to the effective date of termination stated in the notice, terminate all existing subcontracts, and purchase orders and enter into no further subcontracts and purchase orders.

§ 14.4.3 In case of such termination for the Owner's convenience, the Contractor shall be entitled to, and the Owner shall reimburse the Contractor for, an equitable pro rata portion of the Contractor's fee based on the portion of the Work properly completed before the effective date of termination. Contractor's payment for all such Work shall be contingent on its performance of such Work in accordance with the Contract Documents as certified by the Architect and Construction Manager and the delivery all required submittals related to the completed Work. Contractor shall be entitled to no other payment and waives any claim for damages.

ARTICLE 15 CLAIMS AND DISPUTES

§ 15.1 Claims

§ 15.1.1 Definition. A Claim is a demand or assertion by one of the parties seeking, as a matter of right, payment of money, or other relief with respect to the terms of the Contract. The term "Claim" also includes other disputes and matters in question between the Owner and Contractor arising out of or relating to the Contract. The responsibility to substantiate Claims shall rest with the party making the Claim. The Owner may, but is not required to, refer a claim to the Construction Manager and or the Architect for their review and assistance.

§ 15.1.2 Notice of Claims. Claims by the Contractor must be initiated by written notice to the Owner and to the Initial Decision Maker with a copy sent to the Construction Manager and Architect. Claims by the Contractor must be initiated within 21 days after occurrence of the event giving rise to such Claim or within 21 days after the Contractor should have been aware of the condition giving rise to the Claim, whichever is later. The notice requirements set forth in this Agreement dealing with Claims and Disputes are in addition to and not a substitution or replacement of any and all notice requirements contained in applicable law.

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§ 15.1.2.1 Claims by the Contractor must be made by written notice in accordance with the following procedures.

.1 The Contractor may submit a Claim concerning a matter properly noticed in accordance with the time requirements of this Contract set forth in Section 15.1.2 and elsewhere;

.2 Failure by the Contractor to furnish the required Claim documentation within the time set forth above shall constitute waiver of the Contractor's right to compensation for such Claim.

.3 Contractor shall furnish three (3) certified copies of the required Claim documentation, with a copy submitted to the Owner, Architect, and Construction Manager. The Claim documentation shall be complete when furnished. The evaluation of the Contractor's Claim will be based, among other things, upon the Owner's Project Records and the Contractor's furnished Claim documentation.

.4 Claim documentation shall conform to Generally Accepted Accounting Principles and shall be in the following format:

a. general introduction;
b. general background discussion
c. issues
   i. index of issues (listed numerically);
   ii. for each issue:
      (1) background
      (2) chronology
      (3) Contractor's position (reason for Owner's potential liability)
      (4) supporting documentation of merit or entitlement
      (5) supporting documentation of damages
      (6) begin each issue on a new page
d. all critical path method schedules (as-planned, monthly updates, schedule revisions and as-built), along with computer disks of all schedules related to the Claim;
e. productivity exhibits (if appropriate); and
f. summary of issues and damages.

.5 Supporting documentation of merit for each issue shall be cited by reference, photocopies or explanation. Supporting documentation may include, but shall not be limited to General Conditions, General Requirements, technical specifications, drawings, correspondence, conference notes, Shop Drawings and submittals, shop drawing logs, survey books, inspection reports, delivery schedules, test reports, daily reports, subcontracts, fragmentary CPM schedules or time impact analyses, photographs, technical reports, requests for information, field instructions and all other related records necessary to support the Contractor's claim.

.6 Supporting documentation of damages for each issue shall be cited, photocopied or explained. Supporting documentation may include, but shall not be limited to, any or all documents related to the preparation and submission of the bid; certified, detailed labor records including labor distribution reports; material and equipment procurement records; construction equipment ownership, cost records or rental records; subcontractor or vendor files and cost records; service cost records; purchase orders; invoices; Project as-planned and as-built cost records; general ledger records; variance reports; accounting adjustment records, and any other accounting material necessary to support the Contractor's Claims.

.7 Each copy of the Claim documentation shall be certified by a responsible officer of the Contractor in accordance with the requirements of these Contract Documents.

§ 15.1.3 Continuing Contract Performance. Pending final resolution of a Claim, except as otherwise agreed in writing or as provided in Section 9.7 and Article 14, the Contractor shall proceed diligently with performance of the Contract and the Owner shall continue to make payments in accordance with the Contract Documents. The Construction Manager will prepare Change Orders and the Architect will issue a Certificate for Payment or Project Certificate for Payment in accordance with the decisions of the Initial Decision Maker.

(Paragraphs deleted)

§ 15.1.4 Claims for Additional Cost. If the Contractor wishes to make a Claim for an increase in the Contract Sum, written notice as provided Herein shall be given before proceeding to execute the Work. Prior notice is not required for Claims relating to an emergency endangering life or property arising under Section 10.3. Claims for additional compensation relating to Contractor's non-compliance with its representations and warranties in this Contract will not be allowed.

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(Paragraphs deleted)

§ 15.1.5 Claims for Additional Time

§ 15.1.5.1 If the Contractor wishes to make a Claim for an increase in the Contract Time, written notice as provided Herein shall be given. The Contractor's Claim shall include an estimate of probable effect of delay on progress of the Work. In the case of a continuing delay only one Claim is necessary. Claims for an extension of time relating to Contractor's non-compliance with its representations and warranties in this Contract will not be allowed.

§ 15.1.5.2 If adverse weather conditions are the basis for a Claim for additional time, such Claim shall be documented by data substantiating that weather conditions were abnormal for the period of time, could not have been reasonably anticipated and had an adverse effect on the scheduled construction.

§ 15.1.6 Claims for Consequential Damages. The Contractor waives all Claims for consequential damages arising out of or relating to this Contract. This waiver includes, but is not limited to:

- **.1** damages incurred by the Contractor for principal office expenses including the compensation of personnel stationed there, for losses of financing, business and reputation, and for loss of profit; and
- **.2** all consequential damages incurred by the Contractor as a result of Owner's termination in accordance with Article 14.

(Paragraphs deleted)

§ 15.2 Initial Decision

§ 15.2.1 Claims shall be referred to the Initial Decision Maker for initial decision. The Architect will serve as the Initial Decision Maker, unless otherwise indicated in the Agreement. Except for those Claims excluded by this Section 15.2.1, an initial decision shall be required as a condition precedent to mediation of any Claim arising prior to the date final payment is due, unless 30 days have passed after the Claim has been referred to the Initial Decision Maker with no decision having been rendered. Unless the Initial Decision Maker and all affected parties agree, the Initial Decision Maker will not decide disputes between the Contractor and persons or entities other than the Owner.

§ 15.2.2 The Initial Decision Maker will review Claims and within ten days of the receipt of a Claim take one or more of the following actions: (1) request additional supporting data from the claimant or a response with supporting data from the other party, (2) reject the Claim in whole or in part, (3) approve the Claim, (4) suggest a compromise, or (5) advise the parties that the Initial Decision Maker is unable to resolve the Claim if the Initial Decision Maker lacks sufficient information to evaluate the merits of the Claim or if the Initial Decision Maker concludes that, in the Initial Decision Maker's sole discretion, it would be inappropriate for the Initial Decision Maker to resolve the Claim.

§ 15.2.3 In evaluating Claims, the Initial Decision Maker may, but shall not be obligated to, consult with or seek information from either party or from persons with special knowledge or expertise who may assist the Initial Decision Maker in rendering a decision. The Initial Decision Maker may request the Owner to authorize retention of such persons at the Owner's expense.

§ 15.2.4 If the Initial Decision Maker requests a party to provide a response to a Claim or to furnish additional supporting data, such party shall respond, within ten days after receipt of such request, and shall either (1) provide a response to the requested supporting data, or (2) advise the Initial Decision Maker that no supporting data will be furnished. Upon receipt of the response or supporting data, if any, the Initial Decision Maker will either reject or approve the Claim in whole or in part.

§ 15.2.5 The Initial Decision Maker will render an initial decision approving or rejecting the Claim, or indicating that the Initial Decision Maker is unable to resolve the Claim. This initial decision shall (1) be in writing; (2) state the reasons therefor; and (3) notify the parties and the Architect and Construction Manager, if the Architect or Construction Manager is not serving as the Initial Decision Maker, of any change in the Contract Sum or Contract Time or both. The initial decision shall be final and binding on the parties but subject to mediation and, if the parties fail to resolve their dispute through mediation, to binding dispute resolution.

§ 15.2.6 Either party may file for mediation of an initial decision, subject to the terms of Section 15.2.6.1.

§ 15.2.6.1 Either party may, within 30 days from the date of an initial decision, demand in writing that the other party file for mediation within 60 days of the initial decision. If such a demand is made and the party receiving the demand

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fails to file for mediation within the time required, then both parties waive their rights to mediate with respect to the initial decision.

§ 15.2.7 In the event of a Claim against the Contractor, the Owner may, but is not obligated to, notify the surety, if any, of the nature and amount of the Claim. If the Claim relates to a possibility of a Contractor's default, the Owner may, but is not obligated to, notify the surety and request the surety's assistance in resolving the controversy.

§ 15.2.8 If a Claim relates to or is the subject of a mechanic's lien, the party asserting such Claim may proceed in accordance with applicable law to comply with the lien notice or filing deadlines.

§ 15.3 Mediation

§ 15.3.1 Claims, disputes, or other matters in controversy arising out of or related to the Contract except those waived as provided for in Sections 9.10.4, 9.10.5, and 15.1.6 are subject to mediation upon mutual agreement of the parties.

§ 15.3.2 The parties shall endeavor to resolve their Claims by mediation which, unless the parties mutually agree otherwise, shall be administered in accordance with the Construction Industry Mediation Procedures of the American Arbitration Association in effect on the date of this Agreement. However, the American Arbitration Association will not be involved in the mediation unless the parties mutually agree. A request for mediation shall be made in writing, delivered to the other party to the Contract. The parties shall select a mutually acceptable mediator. The request may be made concurrently with the filing of binding dispute resolution proceedings but, in such event, mediation shall proceed in advance of binding dispute resolution proceedings, which shall be stayed pending mediation for a period of 60 days from the date of filing, unless stayed for a longer period by agreement of the parties or court order.

§ 15.3.3 The parties shall share the mediator's fee and any filing fees equally. The mediation shall be held in the place where the Project is located, unless another location is mutually agreed upon. Agreements reached in mediation shall be enforceable as settlement agreements in any court having jurisdiction thereof.

(Paragraph deleted)

§ 15.4 Litigation

If for any reason the Claim or dispute is not resolved by the mediation or the parties fail to agree on mediation as a dispute resolution process, then the Claim or dispute shall be resolved in New York State Supreme Court in the County where the Project is located. The Owner shall be entitled to recover its reasonable attorney's fees and costs if it prevails in the litigation. The Owner and the Contractor consent to exclusive jurisdiction of the New York State Supreme Court with jurisdiction over the County in which the Project is located and waive any and all objections to the jurisdiction of such court.

(Paragraphs deleted)

§ 15.5 SAVING CLAUSE

If, during the term of this Contract, it is found that a specific clause of the Contract is illegal under Federal or State law, the remainder of the Contract not affected by such a ruling shall remain in full force and effect.

ARTICLE 16 PROVISIONS REQUIRED BY LAW

§ 16.1 PROVISIONS DEEMED INSERTED

Each and every provision or obligation required by law and/or required to be inserted in the Contract shall be deemed to be inserted Herein and the Contract shall be read and enforced as though it were included Herein and in the event any such provision is not inserted or is not correctly inserted then, upon the application of either party, this Contract shall forthwith be physically amended to make such insertion or correction.

§ 16.2 MINIMUM RATE OF WAGE AND SUPPLEMENT

§16.2.1 The minimum hourly wage rates (including supplements) to be paid shall not be less than that designated by the New York State Department of Labor, Bureau of Public Works and any redetermination of the prevailing rate of wages after the Contract is approved shall be deemed to be incorporated Herein by reference as of the effective date of redetermination and shall form a part of these Contract Documents.

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§16.2.2 The minimum hourly supplement to be paid shall be in accordance with the prevailing practices in the locality where the work is located and shall be not less than that designated by the Industrial Commissioner. Supplements as defined in Section 220 of the Labor Law, as amended, means all remuneration for employees paid in any medium other than cash or reimbursements for expenses or any payments which are not wages within the meaning of the law, including, but not limited to, health, welfare, non-occupational disability, retirement, vacation benefits, holiday pay and life insurance.

§16.2.3 The Contract shall be forfeited by a Contractor and he shall not be entitled to receive any sum of money for any work performed hereunder on his or her second conviction for willfully paying less than the stipulated wage scale (including supplements) as provided in the Labor Law, Section 220, as amended, or the stipulated minimum hourly wage scale (including supplements) as provided in the Labor Law, Section 220-d, as amended.

§ 16.3 APPRENTICES

Where required by law apprentices must be registered, individually, under a bona fide program registered with the New York State Department of Labor. The allowable ratio of apprentices to journeymen in any craft classification shall not be greater than the ratio permitted to the contractor as to his or her work force on any job under the registered program. Any employee, who is not registered as above, shall be paid the prevailing wage rate for the classification of work he actually performed. The contractor or subcontractor will be required to furnish written evidence of the registration of his or her program and apprentices as well as of the appropriate ratios and wage rates for the area of construction, prior to using any apprentices on the contract work. (See Section 220.3-e).

§ 16.4 ASSIGNMENT OF PUBLIC CONTRACTS

As provided in Section 109 of the General Municipal Law, the Contractor is prohibited from assigning, transferring, conveying, subletting or otherwise disposing of this Contract, or of his or her right title, or interest therein, or his or her power to execute such contract or any other person or corporation without the previous consent in writing of the officer, board or agency awarding the Contract. If any Contractor, to whom any contract is let, granted and awarded, as required by law, by any officer, board or agency in a political subdivision, or of any district therein, shall without the previous written consent specified in subdivision one of this section, assign, transfer, convey, sublet or otherwise dispose of such contract, or his or her right, title or interest therein, or his or her power to execute such contract, to any other person or corporation, the officer, board or agency which let, made, granted, or awarded such contract shall revoke and annul such contract, and the political subdivision or district therein, as the case may be, and such officer, board or agency shall be relieved and discharged form any and all liability and obligations growing out of such contract to such contractor, and to the person or corporation to which such contract shall have been assigned, transferred, conveyed, sublet or otherwise disposed of, and such contractor, and his or her assignees, transferees or sublessees shall forfeit and lose all moneys, theretofore earned under such contract, except so much as may be required to pay his or her employees. The provisions of this section shall not hinder, prevent, or affect an assignment by any such contractor for the benefit of his or her creditors made pursuant to the laws of this state."

§ 16.5 FINGERPRINTING

Pursuant to the Safe Schools Against Violence in Education Act ("SAVE" legislation) and Part 87 of the Regulations of the Commissioner of Education, any individual who, as a result of their work on this capital project, will move (or migrate) in and out of student occupied areas for more than five (5) days a year, must be fingerprinted. All contractors shall be responsible for full compliance with the applicable fingerprinting provisions of New York's SAVE Legislation and Part 87 of the Regulations of the Commissioner of Education at their sole cost and expense.

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PAGE 1

Waverly Central School District
Additions and Alterations to Junior-Senior High School
15 Fredrick Street
Waverly, New York 14892
Tetra Tech Project Number: 339070-22003

...

LeChase Construction Services, LLC
11849 East Corning Road Suite 102
Corning, New York 14830

...

Waverly Central School District
15 Fredrick Street
Waverly, New York 14892

...

Tetra Tech Engineers, Architects & Landscape Architects, P.C.
d/b/a Tetra Tech Architects & Engineers
10 Brown Road
Ithaca, New York 14850

PAGE 2

15 CLAIMS AND DISPUTES

16 PROVISIONS REQUIRED BY LAW

PAGE 3

§ 1.1.1 The Contract Documents. The Contract Documents are enumerated in the Agreement between the Owner and Contractor (hereinafter the Agreement) and consist of the Agreement, Conditions of the Contract (General, Supplementary and other Conditions), Drawings, Specifications, ~~Addenda~~ the Project Manual addenda issued prior to execution of the Contract, other documents listed in the Agreement, and Modifications issued after execution of the ~~Contract.~~ Contract and Performance and Payment Bonds. A Modification is (1) a written amendment to the Contract signed by both parties, (2) a Change Order, (3) a Construction Change Directive, or (4) a written order for a minor change in the Work issued by the Architect. ~~Unless specifically enumerated in the Agreement, the Contract Documents do not~~ The Contract Documents do include the advertisement or invitation to bid, Instructions to Bidders, sample forms, other information furnished by the Owner in anticipation of receiving bids or proposals, ~~the Contractor's bid or proposal, or portions of addenda relating to bidding or proposal requirements.~~and the Contractor's bid or proposal. The Contract Documents form the Contract for Construction. The Contract Documents represent the

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entire and integrated agreement between the parties hereto and supersedes prior negotiations, representations, or agreements, either written or oral. The Contract Documents may be amended or modified only by a Modification. The Contract Documents shall not be construed to create a contractual relationship of any kind between any persons or entities other than the Owner and Contractor. The Construction Manager and Architect shall, however, be entitled to performance and enforcement of obligations under the Contract Documents intended to facilitate performance of their duties.

§ 1.1.2 The Contract. ~~The Contract Documents form the Contract for Construction. The Contract represents the entire and integrated agreement between the parties hereto and supersedes prior negotiations, representations, or agreements, either written or oral. The Contract may be amended or modified only by a Modification. The Contract Documents shall not be construed to create a contractual relationship of any kind (1) between the Contractor and the Architect or the Architect's consultants, (2) between the Owner and the Construction Manager or the Construction Manager's consultants, (3) between the Owner and the Architect or the Architect's consultants, (4) between the Contractor and the Construction Manager or the Construction Manager's consultants, (5) between the Owner and a Subcontractor or Sub-subcontractor (6) between the Construction Manager and the Architect, or (7) between any persons or entities other than the Owner and Contractor. The Construction Manager and Architect shall, however, be entitled to performance and enforcement of obligations under the Contract intended to facilitate performance of their duties.~~

§1.1.2 The Contract. Where the term "Agreement" or "Contract" is used in the General Conditions, and other Contract Documents, it shall mean the separate Owner-Contractor Agreement between the Owner and each Contractor identified in Conditions of the Contract (General, Supplementary and other conditions).

...

§ 1.1.5 Contractors. Contractors are persons or entities, other than ~~the Contractor or~~ Separate Contractors, who perform Work under contracts with the Owner that are administered by the Architect and Construction Manager.
PAGE 4

§ 1.1.11 Milestone Schedule. The Milestone Schedule prepared by the Architect and Construction Manager contained in the Bid Documents which is intended to coordinate the completion of the Work on the Project.

§ 1.1.12 Construction Milestone. A due date or benchmark for critical path work items identified by the Architect and Construction Manager which Contractors must satisfy in order to complete the Project by the substantial completion date.

§ 1.1.13 Construction Schedule. A comprehensive schedule of all of the Work which each individual Contractor must complete in order to complete their Work in accordance with the Milestone Schedule. This Construction Schedule must be in sufficient detail breaking down items of Work and in an electronic format with predecessor logic in a format reasonably requested by the Construction Manager.

§ 1.1.14 Coordinated Construction Schedule. The Coordinated Schedule created by the Construction Manager based upon each Contractor's approved Construction Schedule which coordinates all of the Work activities to be completed by the substantial completion date.

§ 1.1.15 Project Schedule. The Project Schedule which incorporates and includes the Architect's design work through the substantial completion of the Project.

§ 1.1.16 MISCELLANEOUS DEFINITIONS

§1.1.16.1 The term "Herein" shall mean the contents of the Contract Documents and / or the contents of the particular section where this term appears.

§1.1.16.2 The term "Indicated" as used Herein shall mean shown on the Drawings or described in the Contract Documents.

§1.1.16.3 The term "Concealed" as used Herein shall mean items hidden from sight in such locations as trenches,

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chases, shafts, furred spaces, walls, slabs, above ceilings and where in sight in crawl spaces or service tunnels.

§1.1.16.4 The term "Exposed" as used Herein shall mean not "concealed" as defined Herein and the spaces behind normally closed doors such as interiors of cabinets.

§1.1.16.5 The term "Product" as used Herein shall include materials, systems and / or equipment."

§1.1.16.6 The term "Furnish" as used Herein shall mean furnish and deliver to the jobsite all products necessary that are connected with the Work including unloading, handling, transporting unwrapping and inspecting those products to be installed.

§1.1.16.7 The term "Install" as used Herein shall mean furnish all labor and perform all operations connected with assembly, erection, anchoring, installation of products or work, finishing, curing, finishing, cleaning and similar operations including supplying all necessary tools, rigging and equipment to do the work, and connect up, test, place in operation and service such products.

§1.1.16.8 The term "Provide" as used Herein shall mean furnish, without limitation, all labor, products, materials, equipment, transportation, services, etc. required to install, complete the work, and /or to test and place in operation/service.

§1.1.16.9 The term "Piping" as used Herein shall mean pipe, rigid conduit, fittings, valves, hangers and other accessories, which comprise a system.

§1.1.16.10 The terms "equal", "proper", "satisfactory", "workmanlike" and words of similarly implied interpretation, judgment or opinion, shall be understood to mean "in the opinion of the Architect.

§1.1.16.11 As used Herein, the terms "General Contractor" and "General Construction Contractor" have the same meaning.

§1.1.16.12 Persistently fails. The phrase "persistently fails" and other similar expressions, as used in reference to the Contractor, shall be interpreted to mean any combination of acts and omissions, that cause the Owner and/or the Owner's Authorized Representative to reasonably conclude that the Contractor will not complete the Work within the Contract Time, for the Contract Sum or in what they reasonably deem not to be in substantial compliance with the requirements of the Contract Documents.

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§1.2.4 Where items are specified by the use of a reference standard not bound in the specifications, the date of the reference standard shall be the latest edition at the time of signing the Contract except as specifically indicated otherwise.

§1.2.5 The reference in the Specifications regarding the division or separation of the Work among types of trades or occupations is only for the suggested purpose of coordinating the Work of the different trades, etc. but it shall be the Contractor's entire responsibility for the proper coordination and completion of all the Work described in the "Specifications" whether performed by the Contractor or Subcontractors, if any.

§1.2.6 In the event of inconsistencies within or between parts of the Contract Documents or between the Contract Documents and applicable standards, codes and ordinances, the Contractor shall (1) provide the better quality or greater quantity of work or (2) comply with the more stringent requirements; either or both in accordance with the Architect's interpretation. The terms and provisions of this Section, however, shall not relieve the Contractor of any of the obligations set forth elsewhere Herein.

.1 On the Drawings, given dimensions shall take precedence over scaled measurements and large scale drawings over small scale Drawings.

.2 Before ordering any materials or doing any work, the Contractor and each Subcontractor shall verify measurements at the Project Site and shall be responsible for the correctness of such measurements. No extra

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charge or compensation will be allowed on account of differences between actual dimensions and the dimensions indicated on the Drawings. Any difference which may be found shall be submitted to the Architect for resolution before proceeding with the Work.

.3 If a minor change in the Work is found necessary due to actual field conditions, the Contractor shall submit detailed drawings of such departure for the approval by the Architect before making the change.

§1.2.7 Execution of the Contract by the Contractor is a representation that the Contractor has carefully examined the Contract Documents and the site, and represents that the Contractor is thoroughly familiar with the nature and location of the Work, the site, the specific conditions under which the Work is to be performed, and all matters which may in any way affect the Work or its performance. The Contractor further represents that as a result of such examinations and investigations, the Contractor thoroughly understands the Contract Documents and their intent and purpose, and is familiar with all applicable codes, ordinances, laws, regulations, and rules as they apply to the Work, and that the Contractor will abide by same. Claims for additional time or additional compensation as a result of the Contractor's failure to follow the foregoing procedure and to familiarize itself with all conditions and the Contract Documents will not be permitted.

Terms capitalized in these General Conditions include those that are (1) specifically defined, (2) the titles of numbered articles, or (3) the titles of other documents published by the American Institute of Architects. Capitalized terms in other Contract Documents shall be defined as found Herein.

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§ 1.5.1 The Architect and the Architect's consultants shall be deemed the authors and owners of their respective Instruments of Service, including the Drawings and Specifications, and retain all common law, statutory, and other reserved rights in their Instruments of Service, including copyrights. The Contractor, Subcontractors, ~~sub-subcontractors,~~ Sub-subcontractors, and suppliers shall not own or claim a copyright in the Instruments of Service. Submittal or distribution to meet official regulatory requirements or for other purposes in connection with the Project is not to be construed as publication in derogation of the Architect's or Architect's consultants' reserved rights.

...

§ 1.6.1 Except as otherwise provided in Section 1.6.2, where the Contract Documents require one party to notify or give notice to the other party, such notice shall be provided in writing to the designated representative of the party listed in Article 8 of the Agreement to whom the notice is addressed and shall be deemed to have been duly served if delivered in person, by mail, by courier, or by electronic transmission if a method for electronic transmission is set forth in the Agreement.

§ 1.6.2 Notice of Claims as provided in Section ~~15.1.3~~ 15.1.2.1 shall be provided in writing and shall be deemed to have been duly served only if delivered to the designated representative of the party to whom the notice is addressed by certified or registered mail, or by courier providing proof of delivery.

...

§ 1.9 Disclaimer

In no event shall the Owner or the Architect have any responsibility for the Contractor's construction means, methods, techniques, sequences, procedures or for safety or for safety precautions and programs in connection with the Work notwithstanding any of the rights and authority granted the Owner in the Contract Documents.

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~~**§ 2.1.2** The Owner shall furnish to the Contractor, within fifteen days after receipt of a written request, information necessary and relevant for the Contractor to evaluate, give notice of, or enforce mechanic's lien rights. Such information shall include a correct statement of the record legal title to the property on which the Project is located, usually referred to as the site, and the Owner's interest therein.~~

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~~**§ 2.2 Evidence of the Owner's Financial Arrangements**~~
~~**§ 2.2.1** Prior to commencement of the Work, and upon written request by the Contractor, the Owner shall furnish to the Contractor reasonable evidence that the Owner has made financial arrangements to fulfill the Owner's obligations under the Contract. The Contractor shall have no obligation to commence the Work until the Owner provides such evidence. If commencement of the Work is delayed under this Section 2.2.1, the Contract Time shall be extended appropriately.~~

~~**§ 2.2.2** Following commencement of the Work and upon written request by the Contractor, the Owner shall furnish to the Contractor reasonable evidence that the Owner has made financial arrangements to fulfill the Owner's obligations under the Contract only if (1) the Owner fails to make payments to the Contractor as the Contract Documents require; (2) the Contractor identifies in writing a reasonable concern regarding the Owner's ability to make payment when due; or (3) a change in the Work materially changes the Contract Sum. If the Owner fails to provide such evidence, as required, within fourteen days of the Contractor's request, the Contractor may immediately stop the Work and, in that event, shall notify the Owner that the Work has stopped. However, if the request is made because a change in the Work materially changes the Contract Sum under (3) above, the Contractor may immediately stop only that portion of the Work affected by the change until reasonable evidence is provided. If the Work is stopped under this Section 2.2.2, the Contract Time shall be extended appropriately and the Contract Sum shall be increased by the amount of the Contractor's reasonable costs of shutdown, delay and start-up, plus interest as provided in the Contract Documents.~~

~~**§ 2.2.3** After the Owner furnishes evidence of financial arrangements under this Section 2.2, the Owner shall not materially vary such financial arrangements without prior notice to the Contractor.~~

~~**§ 2.2.4** Where the Owner has designated information furnished under this Section 2.2 as "confidential," the Contractor shall keep the information confidential and shall not disclose it to any other person. However, the Contractor may disclose "confidential" information, after seven (7) days' notice to the Owner, where disclosure is required by law, including a subpoena or other form of compulsory legal process issued by a court or governmental entity, or by court or arbitrator(s) order. The Contractor may also disclose "confidential" information to its employees, consultants, sureties, Subcontractors and their employees, Sub-subcontractors, and others who need to know the content of such information solely and exclusively for the Project and who agree to maintain the confidentiality of such information.~~

§ 2.2 Intentionally Omitted

§ 2.3.1 Except for permits and fees that are the responsibility of the Contractor under the Contract Documents, including those required under Section 3.7.1, the Owner shall secure and pay for necessary approvals, easements, assessments and charges required for construction, use or occupancy of permanent structures or for permanent changes in existing facilities. Unless otherwise provided under the Contract Documents, the Owner, assisted by the Construction ~~Manager,~~ Manager and Architect, shall secure and pay for the building permit.

...

§ 2.3.4 If the employment of the Construction Manager or Architect terminates, the Owner shall employ a successor construction manager or architect ~~to whom the Contractor has no reasonable objection and~~ whose status under the Contract Documents shall be that of the Construction Manager or Architect, respectively.

§ 2.3.5 ~~The~~ Upon the request of the Architect, the Owner shall furnish surveys describing physical characteristics, legal limitations and utility locations for the site of the Project, and a legal description of the site. The Contractor shall be entitled to rely on the accuracy of information furnished by the Owner except to the extent that the Contractor knows or reasonably should know such information to be inaccurate or incomplete, but shall exercise proper precautions relating to the safe performance of the Work. Contractor shall be responsible for laying out the Work, shall protect and preserve the established reference points and shall make no changes or relocations without the prior written approval of the Owner. Contractor shall report to the Architect whenever any reference point is lost or destroyed, or requires relocation because of necessary changes in grades or locations, and shall be responsible for the accurate replacement or relocation of such reference points by professionally qualified personnel.
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If the Contractor fails to correct Work that is not in accordance with the requirements of the Contract Documents as required by Section 12.2 or ~~repeatedly~~ fails to carry out Work in accordance with the Contract Documents, as

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determined by the Architect, the Owner, or the Construction Manager, the Owner may issue a written order to the Contractor to stop the Work, or any portion thereof, until the cause for such order has been eliminated; however, the right of the Owner to stop the Work shall not give rise to a duty on the part of the Owner to exercise this right for the benefit of the Contractor or any other person or entity, except to the extent required by Section 6.1.3.

~~§ 2.5 Owner's Right to Carry Out the Work~~

~~If the Contractor defaults or neglects to carry out the Work in accordance with the Contract Documents and fails within a ten-day period after receipt of notice from the Owner to commence and continue correction of such default or neglect with diligence and promptness, the Owner may, without prejudice to other remedies the Owner may have, correct such default or neglect. Such action by the Owner and amounts charged to the Contractor are both subject to review by the Construction Manager and prior approval of the Architect, and the Construction Manager or Architect may, pursuant to Section 9.5.1, withhold or nullify a Certificate for Payment in whole or in part, to the extent reasonably necessary to reimburse the Owner for the reasonable cost of correcting such deficiencies, including Owner's expenses and compensation for the Construction Manager's and Architect's and their respective consultants' additional services made necessary by such default, neglect, or failure. If current and future payments are not sufficient to cover such amounts, the Contractor shall pay the difference to the Owner. If the Contractor disagrees with the actions of the Owner or the Architect, or the amounts claimed as costs to the Owner, the Contractor may file a Claim pursuant to Article 15.~~

§ 2.5 The Owner's Right to Carry Out the Work

§ 2.5.1 If the Contractor defaults, fails or neglects to carry out the Work in accordance with the Contract Documents and fails within a three (3) calendar day period after receipt of written notice from the Owner to commence and continue correction of such default, failure or neglect with diligence and promptness, including the submission of an acceptable recovery schedule if required by the Construction Manager, the Owner may, without further notice (except to inform the Contractor its attempt to cure is inadequate) and without prejudice to other remedies the Owner may have, correct such deficiencies. Such action by the Owner and amounts charged to the Contractor are both subject to review by the Construction Manager and prior approval of the Architect. In such case an appropriate Change Order shall be issued (without the requirement for a signature by the Contractor) deducting from Payments then or thereafter due the Contractor the cost of correcting such deficiencies, including compensation for the Architect, the Construction Manager, Attorneys, and others, and expenses made necessary by such default, neglect or failure. The expenses incurred by the Owner in connection with retaining a replacement contractor (on a contingency basis or otherwise) are in addition to any other expenses incurred by Owner to remedy the deficiencies and shall be deducted from Payments then or thereafter due the Contractor. The Construction Manager and/or the Architect, pursuant to Section 9.5.1, may withhold or nullify a Certificate for Payment in whole or in part, to the extent reasonably necessary to reimburse the Owner for the cost of correcting such deficiencies, the cost of retaining a replacement contractor, and Owner's expenses and compensation for the Construction Manager and Architect and their respective consultants' additional services made necessary by such default, neglect, or failure. If current and future payments are not sufficient to cover such amounts, the Contractor shall pay the difference to the Owner. If the Contractor disagrees with the actions of the Owner or the Architect, or the amounts claimed as costs due to the Owner, the Contractor may file a Claim pursuant to Article 15. Such action by the Owner and amounts charged to the Contractor shall be equally binding upon the Contractor's Performance and Payment Bonds Surety.

§ 2.5.2 In the event Contractor fails, refuses or neglects to perform closeout obligations, including without limitation performance of punch-list items, within thirty (30) calendar days following the date of Substantial Completion, the Owner, after notice to Contractor and without prejudice to other remedies the Owner may have, may correct such deficiencies. In such case, the Contractor shall be liable to the Owner for the costs of correcting such deficiencies, including compensation for the Architect, the Construction Manager, Attorneys, and others, and expenses made necessary by such default, neglect or failure. If Payments due the Contractor then or thereafter due are not sufficient to cover such amounts, the Contractor shall pay the difference to the Owner. Such action by the Owner and amounts charged to the Contractor shall be equally binding upon the Contractor's Performance and Payment Bonds Surety.

§ 2.5.3 Should there be, in the opinion of the Architect or Initial Decision Maker, unwarranted delay on the part of any Contractor in completion of incomplete Work or other Contractor requirements, the Owner may have full or partial use and occupancy of any or all portions of buildings as required for moving in or installing furniture, fixtures, supplies or equipment and for general cleaning and maintenance work. In such event Contractor whose unfinished work is performed subsequently shall be responsible for the prevention of any damage to such Owner's installation. Such use or occupancy by the Owner shall in no instance constitute acceptance of any of the Work.

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~~§ 3.2.1 Execution of the Contract by the Contractor is a representation that the Contractor has visited the site, become generally familiar with local conditions under which the Work is to be performed, and correlated personal observations with requirements of the Contract Documents.~~

§ 3.2.1 By executing the Contract, Contractor represents and warrants to the Owner that:

.1 Contractor is and will be financially responsible and has and will have sufficient liquidity to meet its financial responsibilities under the Contract and for all other Projects in which Contractor is or may become involved;

.2 Contractor has carefully examined the Contract Documents and has visited and examined the site;

.3 from Contractor's investigation, Contractor has satisfied itself as to the nature and location of the proposed Work, general and local conditions, and all matters which may in any way affect the Work or its performance;

.4 Contractor fully understands the intent and purpose of the Contract Documents; and

.5 The Contractor acknowledges that the Owner is a school district which is subject to various laws and regulations of the State of New York. The Contractor will, in each phase of the Contract, in accordance with applicable standards, comply with applicable laws and regulations as they pertain to the bidding and construction of the Project, including, without limitation, the requirements of Article 5-A of the General Municipal Law; Article 9 of the Education Law; and Sub-Chapter J, Part 155 of Title 8, Chapter II of the Codes, Rules and Regulations of the State of New York.

§ 3.2.2 Because the Contract Documents are complementary, the Contractor shall, before starting each portion of the Work, carefully study and compare the various Contract Documents relative to that portion of the Work, as well as the information furnished by the Owner pursuant to Section 2.3.5, shall take field measurements of any existing conditions related to that portion of the Work, and shall observe any conditions at the site affecting it. ~~These obligations are for the purpose of facilitating coordination and construction by the Contractor and are not for the purpose of discovering errors, omissions, or inconsistencies in the Contract Documents; however, the~~ The Contractor shall promptly report to the Construction Manager and Architect any errors, inconsistencies or omissions discovered by or made known to the Contractor as a request for information submitted to the Construction Manager in such form as the Construction Manager and Architect may require. It is recognized that the Contractor's review is made in the Contractor's capacity as a contractor and not as a licensed design professional, unless otherwise specifically provided in the Contract Documents.

§ 3.2.2.1 The Contractor shall promptly notify the Architect, in writing, of any inconsistencies or errors to provide the Architect ample time for observation, investigation, detail drawings, etc.

§ 3.2.2.2 All Contractors submitting bid proposals shall be presumed to have examined the site to consider fully all conditions, which may have a bearing on the work, and to have accounted for these conditions in their bid proposals.

§ 3.2.2.3 When required, off-site storage is the responsibility of the Contractor.

§ 3.2.2.4 The exactness of grades, elevations, dimensions or locations indicated on the Drawings or of Work installed by others is not guaranteed by the Architect or the Owner.

§ 3.2.2.5 Except as to any reported errors, inconsistencies, nonconformities or omissions, and to concealed or unknown conditions referred to in Section 3.7.4, by executing the Agreement, the Contractor represents the following:

.1 The Contract Documents are sufficiently complete and detailed for the Contractor to (1) perform the Work required to produce the results intended by the Contract Documents and (2) comply with all the requirements of the Contract Documents.

.2 The Work required by the Contract Documents, including, without limitation, all construction details, construction means, methods, procedure and techniques necessary to perform the Work, use of

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materials, selection of equipment and requirements of product manufacturers are consistent with: (1) good and sound practices within the construction industry; (2) generally prevailing and accepted industry standards applicable to Work; (3) requirements of any warranties applicable to the Work; and (4) all laws, ordinances, regulations, rules, and orders, and Owner's policies and procedures which bear upon the Contractor's performance of the Work.

§ 3.2.2.6 The Contractor shall satisfy itself as to the accuracy of all grades, elevations, dimensions and locations indicated on the Drawings. Where the Work of this Contract connects or interfaces with existing or other work Contractor shall verify at the site all conditions of such existing or other work. Any errors due to the Contractor's failure to verify such information shall be promptly remedied by the Contractor at no additional cost to the Owner.

§ 3.2.2.7 Before ordering any materials or doing any Work, the Contractor and each Subcontractor shall verify all existing conditions and measurements. Any differences, which may be found, between actual measurements and dimensions indicated on the Drawings shall be submitted to the Architect for resolution before proceeding with the Work. No extra compensation will be allowed for such discrepancies.

§ 3.2.2.8 If the Contractor performs any construction activity which involves a recognized error, inconsistency or omission in the Contract Documents without first providing notice to the Owner, Architect and Construction Manager of such condition and receiving authorization to proceed, the Contractor shall assume responsibility for such performance and shall bear an appropriate amount of the attributable costs for correction.

§ 3.2.3 The Contractor is not required to ascertain that the Contract Documents are in accordance with applicable laws, statutes, ordinances, codes, rules and regulations, or lawful orders of public authorities, but the Contractor shall promptly report to the Construction Manager and Architect any nonconformity discovered by or made known to the Contractor as a request for information submitted to Construction Manager in writing in such form as the Construction Manager and Architect may require.

§ 3.2.4 If the Contractor believes that additional cost or time is involved because of clarifications or instructions the Architect issues in response to the Contractor's notices or requests for information pursuant to Sections 3.2.2 or 3.2.3, the Contractor shall submit Claims in writing as provided in Article 15. If the Contractor fails to perform the obligations of Sections 3.2.2 or 3.2.3, the Contractor shall pay such costs and damages to the Owner, ~~subject to section 15.1.7,~~ as would have been avoided if the Contractor had performed such obligations. If the Contractor performs those obligations, the Contractor shall not be liable to the Owner or Architect for damages resulting from errors, ~~inconsistencies~~ inconsistencies, or omissions in the Contract Documents, for differences between field measurements or conditions and the Contract Documents, or for nonconformities of the Contract Documents to applicable laws, statutes, ordinances, codes, rules and regulations, and lawful orders of public authorities.

§ 3.2.5 The Owner is entitled to reimbursement from the Contractor for amounts paid to the Construction Manager and Architect for evaluating and responding to the Contractor's requests for information that are not prepared in accordance with the Contract Documents or where the requested information is available to the Contractor from a careful study and comparison of the Contract Documents, field conditions, other Owner-provided information, Contractor-prepared coordination drawings, or prior Project correspondence or documentation.

§ 3.2.6 Where existing conditions are obscured or concealed from the Owner or Architect's view prior to the start of this Project's construction activities, portrayal of such conditions in the documents is based on reasonable implications and assumptions. The Owner and Architect do not imply or guarantee to the Contractor in any way that such portrayals in the Documents are accurate or true.

§ 3.2.6.1 If the Contractor, during the progress of the work, discovers any discrepancies between the Drawings and the Specifications, errors and/or omissions on the Drawings, or any discrepancies between physical condition of the work and the Drawings, he shall immediately notify the Architect in writing who shall promptly adjust same. Whether or not an error is believed to exist, deviations from the Drawings and dimensions given thereon shall be made only after approval in writing is obtained from the Architect. Any work performed after such discovery without the approval of the Architect shall be at the Contractor's risk and expense.

§ 3.2.6.2 The Contractor may submit requests for information to the Architect to help facilitate the Contractor's performance of the contract. Prior to submitting each request for information, the Contractor shall first carefully study and compare the Contract Documents, field conditions, other Owner provided information, Contractor prepared

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Coordination Drawings, and prior Project correspondence and documentation to determine that the information to be requested is not reasonably obtainable from such sources.

§ 3.2.6.3 Each request for information shall be submitted to the Architect, in writing, with a copy to the Construction Manager. Each request for information shall identify the specific sources which were reviewed by the Contractor in an effort to determine the information requested, and a statement to the effect that the information being requested could not be determined from such sources.

§ 3.2.6.4 The Contractor shall submit each request for information sufficiently in advance of the date by which such information is requested in order to allow the Architect sufficient time, in the Architect's professional judgment, to permit adequate review and response and to permit Contractor compliance with the latest Construction Schedule.

§ 3.2.6.5 The Contractor shall reimburse the Owner amounts charged to the Owner by the Architect or Construction Manager for responding to Contractor requests for information where such information is available to the Contractor from a careful study and comparison of the Contract Documents, field conditions, other Owner provided information.

§ 3.2.7 Whenever the Drawings show existing or other construction not required as part of the Contract Work, it is understood that it is so shown as a matter of information and that the Owner, while believing such information to be substantially correct, assumes no responsibility thereof. The Contractor shall become familiar with all conditions affecting the nature and manner of conducting the Work.

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§ 3.3.1 The Contractor shall supervise and direct the Work, using the Contractor's best skill and attention. The Contractor shall be solely responsible for, and have control over, construction means, methods, techniques, sequences, and procedures, and for coordinating all portions of the Work under the ~~Contract.~~ Contract, subject to overall coordination of the Project by the Construction Manager. If the Contract Documents give specific instructions concerning construction means, methods, techniques, sequences, or procedures, the Contractor shall evaluate the jobsite safety thereof and shall be solely responsible for the jobsite safety of such means, methods, techniques, sequences, or procedures. If the Contractor determines that such means, methods, techniques, ~~sequences~~ sequences, or procedures may not be safe, the Contractor shall give timely written notice to the Owner, the Construction Manager, and the Architect, and shall propose alternative means, methods, techniques, sequences, or procedures. The Architect shall evaluate the proposed alternative solely for conformance with the design intent for the completed construction. The Construction Manager shall review the proposed alternative for sequencing, constructability, and coordination impacts on the other Contractors. ~~Unless the Architect or the Construction Manager objects to the Contractor's proposed alternative,~~ Architect and Construction Manager shall advise Contractor in writing if Contractor's proposed alternative is acceptable as referenced above, in which case the Contractor shall perform the Work using its alternative means, methods, techniques, sequences, or procedures.

§ 3.3.1.1 The Contractor shall be responsible for and coordinate any and all inspections required by any governmental body having jurisdiction over the project. Failure to obtain any permits, licenses or other approvals because of the failure of the Contractor to conform to this requirement shall not extend the Contract time, and the Contractor shall not be entitled to any increase in the Contract Sum therefor. In addition, any additional costs and/or expenses of any nature incurred by the Owner as a result of the Contractor's failure to conform to this requirement shall constitute a charge against the Contractor's Contract.

§ 3.3.1.2 Coordination: Each Contractor shall be fully responsible for the coordination of the relationship of the Work of its Subcontractors and other Contractors and shall cross check all of its Instructions, Specifications, Drawings, Shop Drawings, Instruments of Service and installations with those of other Contractors and with existing conditions.

.1 The General Construction Contractor shall Furnish and erect all necessary batter boards, establish all lines and levels and connection therewith, and run all subsequent lines and levels as the work progresses in order to assure careful and accurate work true to the proper lines in accordance with the Contract Documents. Any batter boards, monuments, or marks of reference, which may for any reason become disturbed or destroyed, whether such displacement or destruction is caused by carelessness, accident, or by the elements, shall at all times, be promptly and accurately re-established by the General Construction Contractor.

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.2 The General Construction Contractor shall establish finished floor elevations and finished grade lines for the building for all trades when requested to do so; and shall establish center lines of all interior partitions on floor forms before concrete is placed in order that Mechanical/Electrical Contractors will be able to place sleeves, etc., in proper locations.

.3 Each Contractor shall be required to establish centerlines, elevations and location of its Work when it is required for other Contractors to coordinate location of their work.

§ 3.3.1.3 The Contractor shall:

.1 Review all specified construction or installation procedures, including those recommended by manufacturers,

.2 Advise the Architect:

- If the specified procedure deviates from good construction practice,
- If following the procedure will affect any warranties, including the Contractor's general warranty,
- Or of any objections the Contractor may have to the procedure; and
- Propose any alternative procedure, which the Contractor will warrant.

§ 3.3.1.4 Preconstruction Meetings: Prior to commencing the Work and before commencing certain portions of the Work, Contractors and their Subcontractors shall be required to participate in preconstruction meetings when deemed necessary by the Construction Manager and the Architect to coordinate Work between trades or to address concerns of the Owner.

§ 3.3.2 The Contractor shall be responsible to the Owner for acts and omissions of the Contractor's employees, Subcontractors and their agents and employees, and other persons or entities performing portions of the Work for, or on behalf of, the Contractor or any of its Subcontractors. Contractor shall provide all on-site workers and the workers shall wear and prominently display a photo-identification badge at all times for identification and security purposes along with proof of their OSHA 10-hour training certification with their badge.

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§ **3.3.4** Shut Downs: Such Work as connections to existing sewers, plumbing, heating and electric systems, shall be done at a time agreeable to the Owner and the Architect, and shall be determined and agreed to well in advance of the actual doing of such Work so as to interfere as little as possible with the operation and use of existing facilities. Shut downs must be coordinated through the designated representative of the Owner. The continued uninterrupted operation of all facilities of the building is essential.

.1 If any existing facilities must be interrupted, the Contractor for the Work shall provide all necessary temporary facilities and connections necessary for maintaining these existing facilities at no increase in Contract price except as otherwise specified.

.2 No mechanical, heating, plumbing, sprinkler or electric services shall be interrupted at any time, except as approved in advance by the Owner. All communication systems must be maintained without interruption. As much related Work as possible shall be performed prior to shut-downs, so as to minimize the period of shut-down.

.3 All material and manpower to do the Work involved shall be at the job prior to interruption of services.

§ 3.3.5 The Contractor, its employees and subcontractors shall be subject to such rules and regulations for the conduct of the Work as the Owner may establish. The Contractor shall be responsible for the enforcement of same among his or her employees and those of its Subcontractors.

§ 3.3.6 Where equipment, lines of piping and/or conduit are shown diagrammatically, the Contractor shall be responsible for the coordination and orderly arrangement of the various lines of exposed piping and conduit included in the Work of the Contract. Contractor shall coordinate the Work of several Subcontractors and prevent all interferences between equipment, lines of piping, architectural features, and avoid any unsightly arrangements in the exposed Work.

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~~**§ 3.4.2** Except in the case of minor changes in the Work approved by the Architect in accordance with Section 3.12.8 or ordered by the Architect in accordance with Section 7.4, the Contractor may make substitutions only with the consent of the Owner, after evaluation by the Architect, in consultation with the Construction Manager, and in accordance with a Change Order or Construction Change Directive.~~

§ 3.4.2 After the Contract has been executed, the Architect in conjunction with the Construction Manager, will consider a formal request for the substitution of products in place of those specified only under the conditions set forth in the Specifications. Substitutions shall satisfy the following conditions:

1. The materials, products and equipment described in the Contract Documents establish the standard of required quality, function, dimension and appearance expected.
2. Requests for substitutions must be submitted prior to, and acceptance provided by Architect prior to, time that bids are received (see below for post-bid substitution requests).
3. Substitution requests will be considered only if standards are met or exceeded as described above and are subsequently approved by the Architect and Owner.
4. Each such request shall include the name of the material, product or equipment item for which substitution is requested and a complete description of the proposed substitute, including drawings, cuts, performance and test data and any other information necessary for a complete evaluation.
5. Each such request shall include a statement setting forth any changes in other materials, product or equipment or other work that incorporation of the substitution would require.
6. The burden of proof of the merit of the proposed substitution is upon the proposer.
7. The Architect's decision of approval or disapproval of a proposed substitution shall be final and will be set forth in writing.
8. Additional substitution requests, during construction, will be considered only if substitution is caused by specific material, product or equipment's subsequent removal from, or unavailability in the marketplace, and only if the substitution(s) complies with the requirements Herein and each is at "no change" or "credit" to Contract amount.
9. Contractor's Responsibilities: If any of the following conditions occur due to substitutions, the contractor making the substitution shall bear the cost of such conditions, including payment for services rendered by the Architect and/or Construction Manager:
   (a) Redesign required for any of the Work.
   (b) Material or quantity changes for any of the Work.
   (c) Delays in any of the Work.
   (d) Request for information generated due to substitutions.

§ 3.4.2.1 In the event that Contractor wants to make a substitution and Architect requires additional compensation to evaluate same, Contractor agrees to have the cost of a reasonable Architect's fee (for this additional service) deducted from its Contract Sum. By proposing a substitution, the Contractor is deemed to represent and warrant to the Owner that the proposed substitution is appropriate for the purposes for which the Contractor proposes its use. Substitutions may be rejected by the Owner for any reason or for no reason, without explanation.

§ 3.4.3 The Contractor shall enforce strict discipline and good order among the Contractor's employees and other persons carrying out the Work. The Contractor shall not permit employment of unfit persons or persons not properly skilled in tasks assigned to them. There shall be no harassment of any kind by Contractor's employees or other persons carrying out the Work, including but not limited to sexual, ethnic, or religious harassment. If the Owner determines and notifies the Contractor that an employee or other person carrying out the Work is not acceptable within the meaning of this Article, Contractor shall remove the employee or other person from each project site within 24 hours.

§ 3.4.4 The Contractor shall comply with the most current Contract Requirements and Prevailing Wage Rate Schedules as published by the Bureau of Public Works, State of New York, Department of Labor established for this Project.

§ 3.4.4.1 The Contractor shall provide the labor necessary to install its work within the terms of this Contract. The Owner assumes no responsibility for any expense due to so-called "overtime."

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§ 3.4.5 On receipt of signed Contract, the Prime Contractor will be expected to place firm orders with vendors for needed materials, including Subcontractors and major material suppliers. If deemed necessary to assure delivery of materials at times needed, Contractor may accept delivery of such materials at any time, and may include the cost of such materials in its next monthly application for payment, provided such materials have actually been delivered to Contractor and properly stored by him with approval or under direction of the Architect and Construction Manager either at the job site or in an approved storage shed or warehouse, as provided elsewhere in these General Conditions. No materials or supplies for the Work shall be purchased by the Contractor or by any subcontractor subject to any chattel mortgage or under a conditional sale or other agreement by which an interest is retained by the seller. The Contractor warrants that he has full title to all materials and supplies used by him in the Work, or resold to the Owner, Pursuant to this Contract Document, free from all liens, claims or encumbrances.

§ 3.4.6 All materials used permanently in the Work shall be new unless otherwise specified. The apparent silence of the Specifications as to any detail described concerning any Work to be done and materials to be Furnished shall be regarded as meaning that only the best general practice is to prevail and that only material and workmanship of the first quality are to be used, and all interpretations of the Specifications shall be made on this basis. All material incorporated in the Work shall be clean and exhibit no appearance of aging, exposure to weather, prior use, handling or damage of any kind.

§ 3.4.6.1 All Work shall be executed in a thorough, substantial, workmanlike manner, in complete accordance with the manufacturer's most recent written recommendations unless otherwise specified or permitted by the Architect. A sufficient force of competent workmen, foremen, and superintendents shall be employed at all times to permit the Work to be pursued with diligence until completion.

§ 3.4.7 Manufacturer's identifications shall be inconspicuous, but where nameplates contain information relative to characteristics or maintenance, they shall be clearly visible and located for easy access.

§ 3.4.8 Equipment intended for permanent installation shall not be operated for temporary purposes without the written permission of the Architect.

§ 3.4.9 Materials shall be delivered in manufacturer's original sealed containers, with complete identification of contents and manufacturer, and kept sealed in original containers until used. Labels shall not be removed until materials have been installed and inspected.

§ 3.4.1 0 Whenever the Contract Documents require delivery by the Contractor of any materials, equipment or other items, the term delivery shall be deemed to include unloading and storing with proper protection where directed.

§ 3.4.11 Materials shall be applied or installed under proper climactic conditions, not when they may be affected by temperature, moisture, humidity or dust.

§ 3.4.12 As defined by Federal and State Laws, no materials incorporated into the Project Work shall contain asbestos. Material shall be "asbestos-free" containing zero percent (0%) asbestos. The Architect reserves the right to request certification from the material manufacturer through the Contractor for certification that materials installed contain zero percent (0%) asbestos.

§ 3.4.13 Equivalent Products: Except as otherwise specified, whenever a material, article or piece of equipment is identified on the Drawings or in the Specifications by reference to manufacturer's or vendors' names, trade names, catalog numbers, or the like, it is so identified for the purpose of establishing a standard, and any material, article, or piece of equipment of other manufacturers' or vendors which will perform adequately the duties imposed by the general design may be considered equally acceptable provided the material, article, or piece of equipment so proposed is, in the opinion of the Architect, of equal substance, appearance, size, function and performance. Such proposed product shall not be purchased or installed until approved by the Architect.

.1 The Architect will be allowed a reasonable time within which to evaluate each proposed substitution. The Architect will be the sole judge of equivalence, and no substitution shall be ordered, installed or utilized without the Architect's review process having been completed and the product accepted by written notification.

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.2 Owner may require Contractor to furnish at the Contractor's expense a special performance guarantee or other surety with respect to any substitution.

.3 The Architect will record time required by the Architect and the Architect's Consultants in evaluating substitutions proposed by the Contractor and in making changes in the Contract Documents occasioned thereby. Whether or not the Architect accepts a proposed substitution, Contractor shall reimburse the Owner for the charges of the Architect, and the Architect's Consultants for evaluating each proposed substitution.

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§ 3.5.1 The Contractor warrants to the Owner, Construction Manager, and Architect that materials and equipment ~~furnished~~ Furnished under the Contract will be of good quality and new unless the Contract Documents require or permit otherwise. The Contractor further warrants that the Work will conform to the requirements of the Contract Documents and will be free from defects, except for those inherent in the quality of the Work the Contract Documents require or permit. Work, materials, or equipment not conforming to these ~~requirements may~~ requirements, including substitutions not properly approved and authorized, shall be considered defective. The Contractor's warranty excludes remedy for damage or defect caused by abuse, alterations to the Work not executed by the Contractor, improper or insufficient maintenance, improper operation, or normal wear and tear and normal usage. If required by the Construction Manager or Architect, the Contractor shall furnish satisfactory evidence as to the kind and quality of materials and equipment. Contractor shall perform the Work in strict accordance with the Contract Documents and best industry practices. All materials are to be new, unless specified otherwise. Contractor, at its expense, shall remove and replace materials not meeting specifications or materials failing to perform as represented or warranted by the manufacturer, regardless of whether incorporated into the Work. Contractor shall promptly replace or correct any work or materials which Owner, Construction Manager or Architect shall reject as failing to conform to the requirements of the Contract Documents. The foregoing warranty obligations are not limited by the provisions of Article 12, and are in addition to and not in limitation of any other warranty set forth in the Contract Documents or otherwise prescribed by law.

...

§ 3.5.3 Neither final payment, nor provision in Contract Documents, nor partial or entire occupancy of premises by Owner shall constitute an acceptance of Work not done in accordance with Contract Documents or relieve the Contractor of liability in respect to any express warranties or responsibility for faulty materials or workmanship.

§ 3.5.4 The Contractor shall warrant all materials and operating systems to be free from any defects and faulty equipment for a period of one (1) year from the date the Architect recommends final payment, or where the performance of materials, system or equipment is documented, from the date that such materials, systems, or equipment perform satisfactorily, whichever date is later. The Performance and Payment bonds shall remain in full force and effect through the guarantee period.

§ 3.5.5 In emergencies occurring during the guarantee period, the Owner may correct any defect immediately and charge the cost to the Contractor. The Owner shall at once notify the Contractor, who may take over the Work and make any corrections remaining after his or her forces arrive at the Work. Any repair work not started within seven days following notice to the Contractor of any defect shall be considered an emergency.

§ 3.5.6 The Contractor shall obtain and furnish to the Architect written Manufacturer's Warranties in the name of the Owner for all major materials and for all equipment. The terms of the warranty shall be as individually specified for the item. If no term is specified, the term shall be for a minimum of one year.

§ 3.6 ~~Taxes~~Exempt From Sales Tax

§ 3.6.1 Owner represents that it is an organization operated for purposes that make it exempt from New York Sales and Compensating Use Tax pursuant to Section 1115(a) (15) of the tax law, as amended by laws of New York 1974, CH. 513 and 514. The Contractor is advised that the Owner is exempt from payment of all State and Local sales and compensating use taxes of the State of New York, cities and counties on the purchase of all materials and supplies incorporated in and becoming an integral component part of the structures, buildings or real property, pursuant to the provisions of this Contract. Such taxes are not to be included in the Contract price, bid or costs to be reimbursed, as the case may be. This exemption does not, however, apply to tools, machinery, equipment or other property leased by or to

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the Contractor or a subcontractor or to supplies and materials which, even though they are consumed in the performance of the Contract, are not incorporated into the completed permanent work, and the Contractor and his or her subcontractors shall be responsible for and pay any and all applicable taxes, including sales and compensating use taxes, on such leased tools, machinery, equipment or other property upon all such unincorporated supplies and materials. Owner shall deliver to Contractor the appropriate exemption certificate required to be supplied by the Owner and Contractor and his or her subcontractors and material men shall be solely responsible for obtaining or delivering any and all exemption or other certificates and for furnishing a Contractor Exempt Purchase Certificate or other appropriate certificates to all persons, firms, or corporations from whom they purchase supplies, materials, and equipment for the performance of the Work.

§ 3.6.2 Except as otherwise specified, all Federal, State and Local taxes are to be included in the Contract price. ~~The Contractor shall pay sales, consumer, use and similar taxes for the Work or portions thereof provided by the Contractor that are legally enacted when bids are received or negotiations concluded, whether or not yet effective or merely scheduled to go into effect.~~**§ 3.6.3** Assessments and Taxes on Wages: Each Contractor shall pay and include in his or her proposal all costs and liabilities for the amounts assessed, or which may be assessed by the Federal, State and local governments under any and all Acts or Laws upon the wages and salaries paid or to be paid all employees of the Contractor and his or her subcontractors under this Contract.

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§ 3.7.1 Unless otherwise provided in the Contract Documents, the Owner, assisted by the Architect and Construction Manager, shall secure and pay for the State Education Department building permit. The Contractor shall secure and pay for other permits, fees, licenses, and inspections by government agencies necessary for proper execution and completion of the Work that are customarily secured after execution of the Contract and legally required at the time bids are ~~received or negotiations concluded.~~received.

§ 3.7.2 The Contractor shall comply with and give notices required by applicable laws, statutes, ordinances, codes, rules and regulations, and lawful orders of public authorities applicable to performance of the ~~Work.~~Work , including but not limited to all infectious disease exposure precautions.

§ 3.7.3 If the Contractor performs Work ~~knowing~~ and knows or should have known it to be contrary to applicable laws, statutes, ordinances, codes, rules and regulations, or lawful orders of public authorities, the Contractor shall assume appropriate responsibility for such Work and shall bear the costs attributable to ~~correction.~~correction , including applicable fines and/or penalties.

§ 3.7.4 Concealed or Unknown Conditions. If the Contractor encounters conditions at the site that are (1) subsurface or otherwise concealed physical conditions that differ materially from those indicated in the Contract Documents or (2) unknown physical conditions of an unusual nature that differ materially from those ordinarily found to exist and generally recognized as inherent in construction activities of the character provided for in the Contract Documents, the Contractor shall promptly provide written notice to the Owner, Construction Manager, and the Architect before conditions are disturbed or affected work is performed, and in no event later than ~~14~~ 7 days after first observance of the conditions. The Architect and Construction Manager will promptly investigate such conditions and, if the Architect, in consultation with the Construction Manager, determines that they differ materially and cause an increase or decrease in the Contractor's cost of, or time required for, performance of any part of the Work, will recommend that an equitable adjustment be made in the Contract Sum or Contract Time, or both. If the Architect, in consultation with the Construction Manager, determines that the conditions at the site are not materially different from those indicated in the Contract Documents and that no change in the terms of the Contract is justified, the Architect shall promptly notify the Owner, Construction Manager, and ~~Contractor,~~ Contractor in writing, stating the reasons. If the Owner or Contractor disputes the Architect's determination or recommendation, either party may submit a Claim as provided in Article 15.

§ 3.7.5 If, in the course of the Work, the Contractor encounters human remains or recognizes the existence of burial markers, archaeological sites or wetlands not indicated in the Contract Documents, the Contractor shall immediately suspend any operations that would affect them and shall notify the Owner, Construction Manager, and Architect. ~~Upon receipt of such notice, the Owner shall promptly take any action necessary to obtain governmental authorization required to resume the operations.~~ The Contractor shall continue to suspend such operations until otherwise instructed by the Owner but shall continue with all other operations that do not affect those remains or features. Requests for adjustments in the Contract Sum and Contract Time arising from the existence of such remains or features may be made as provided in Article 15. No adjustment in the Contract Time or Contract Sum will be permitted, however, in

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connection with a concealed or unknown condition that does not differ materially from those conditions disclosed or that reasonably should have been disclosed by the Contractor's (1) prior inspections, test, and reviews, or (2) inspections, tests, and reviews the Contractor had the opportunity to make or should have performed in connection with the Project.

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§ 3.8.1 The Contractor shall include in the Contract Sum all allowances stated in the Contract Documents. Items covered by allowances shall be supplied for such amounts and by such persons or entities as the Owner may ~~direct, but the Contractor shall not be required to employ persons or entities to whom the Contractor has reasonable objection.~~direct.

§ 3.8.2 ~~Unless otherwise provided in the Contract Documents:~~

~~**.1** allowances shall cover the cost to the Contractor of materials and equipment delivered at the site and all required taxes, less applicable trade discounts;~~Contract Sum Permitted Allowance costs shall include the direct cost to the Contractor and Subcontractor for labor, materials and equipment, including delivery, unloading, storage, handling and installation. Allowance costs do not include the Contractor's

~~**.2** Contractor's costs for unloading and handling at the site, labor, installation costs, overhead, profit, and other expenses contemplated for stated allowance amounts shall be included in the Contract Sum but not in the allowances; and~~

~~**.3** whenever costs are more than or less than allowances, the Contract Sum shall be adjusted accordingly by Change Order. The amount of the Change Order shall reflect (1) the difference between actual costs and the allowances under Section 3.8.2.1 and (2) changes in Contractor's costs under Section 3.8.2.2.~~overhead and profit, including the costs of bonds, insurance, administration and supervision, which costs should be carried as part of the Contract Sum.

...

§ 3.9.1 The Contractor shall employ a competent ~~superintendent~~ Superintendent and necessary assistants who shall be in attendance at the Project site during performance of the ~~Work. The superintendent~~ Work, and shall attend all Project meetings, whether held prior to or after Substantial Completion of the Work. The Superintendent shall represent the Contractor, and communications given to the superintendent shall be as binding as if given to the Contractor. The Contractor shall delegate to the Superintendent decision making authority to facilitate coordination of multiple contractors and coordination of the Work.

§ 3.9.2 ~~The Contractor, as soon as practicable after award of the Contract, shall notify the Owner and Architect, through the Construction Manager, of the name and qualifications of a proposed superintendent. Within 14 days of receipt of the information, the Construction Manager may notify the Contractor, stating whether the Owner, the Construction Manager, or the Architect (1) has reasonable objection to the proposed superintendent or (2) require additional time for review. Failure of the Construction Manager to provide notice within the 14-day period shall constitute notice of no reasonable objection.~~Prior to starting the Work, the Contractor shall designate a Project Manager, a non-working on-site Superintendent, and other key individuals who shall be assigned to the Project through and including final completion. Such designations shall be in writing and provided to the Architect and Owner. The Superintendent shall be in attendance at the Project site throughout the Work, remain on the Project site not less than eight hours per day, five days per week, until termination of the Contract, unless the job is suspended, Work is stopped by the Owner, or no Work is scheduled. The Superintendent shall be approved by the Owner in its sole discretion. Said representatives shall be qualified in the type of work to be undertaken and shall not be changed during the course of construction without the prior written consent of the Owner. Should a representative leave the Contractor's employ, the Contractor shall promptly designate a new representative. The Owner shall have the right, at any time, to direct a change in the Contractor's representatives if their performance is unsatisfactory. In the event of such a demand, the Contractor shall within three days after notification thereof, replace said individual(s) with an individual(s) satisfactory to Owner, in Owner's sole discretion. If said replacement is disapproved, the Contractor may, at Owner's option, be terminated for cause. The Owner shall have no obligation to direct or monitor the Contractor's employees. All references Herein to the Superintendent shall be taken to mean the Contractor's superintending staff. Each Subcontractor shall designate a Project Manager, Superintendent, and other key individuals who shall be assigned to the Project.

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§ 3.9.3 The ~~Contractor shall not employ a proposed superintendent to whom the Owner, Construction Manager, or Architect has made reasonable and timely~~ Contractor, as soon as practicable after award of the Contract, shall notify the Owner and Architect, through the Construction Manager, of the name and qualifications of a proposed Superintendent. Within 14 days of receipt of the information, the Construction Manager may notify the Contractor, stating whether the Owner, the Construction Manager, or the Architect (1) has reasonable objection to the proposed Superintendent or (2) require additional time for review. Failure of the Construction Manager to provide notice within the 14-day period shall constitute notice of no reasonable objection. The Contractor shall not change the ~~superintendent without the Owner's consent, which shall not unreasonably be withheld or delayed.~~Superintendent without prior written notice to the Architect and Owner at least thirty (30) days prior to the proposed date of the change.

§ 3.9.4 The Contractor shall not employ a proposed Superintendent to whom the Owner, Construction Manager, or Architect has made reasonable and timely objection. The Contractor shall not change the Superintendent without the Owner's written consent.

§ 3.9.5 The Contractor shall not reduce or terminate supervision of the Work, nor change the Superintendent without the prior written approval of the Owner and Architect.

§ 3.9.6 If, for any reason, the Contractor takes an action resulting in any of the changes noted in Section 3.9.5, the Owner or their Agent may take remedial action to ensure continued progress of the Work, including the hiring of suitable supervisory personnel, and charge the Contractor all costs associated with these remedial actions including the costs of legal, and Architectural services.

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§ 3.10.1 The Contractor, promptly after being awarded the Contract, shall submit for the Owner's and Architect's information, and the Construction Manager's use in developing the Project schedule, a Contractor's construction schedule for the ~~Work.~~ Work in electronic format with predecessor logic. The schedule shall contain detail appropriate for the Project, including (1) the date of commencement of the Work, interim schedule milestone dates, and the date of Substantial Completion; (2) an apportionment of the Work by construction activity; and (3) the time required for completion of each portion of the Work. The schedule shall provide for the orderly progression of the Work to completion and shall not exceed time limits current under the Contract Documents. The schedule shall be revised at appropriate intervals as required by the conditions of the Work and Project. The Contractor shall cooperate with the Construction Manager in scheduling and performing the Contractor's Work to avoid conflict with, and as to cause no delay in, the work or activities of other Contractors, or the construction or operations of the Owner's own forces or Separate Contractors. Failure by a Contractor to furnish any required schedule or schedule revision in a timely manner shall entitle the Construction Manager to prepare a schedule for that Contractor's Work, to which said Contractor shall be bound.

§ 3.10.2 The Contractor, promptly after being awarded the Contract shall submit (as determined by Architect) long lead items for construction, and thereafter as necessary to maintain a current submittal schedule, shall submit a submittal schedule for the Construction Manager's and Architect's approval. The Architect and Construction Manager's approval shall not be unreasonably delayed or withheld. The submittal schedule shall (1) be coordinated with the Contractor's construction schedule, and (2) allow the Construction Manager and Architect reasonable time to review submittals. If the Contractor fails to submit a submittal schedule, or fails to provide submittals in accordance with the approved submittal schedule, the Contractor shall not be entitled to any increase in Contract Sum or extension of Contract Time based on the time required for review of submittals.

...

§ 3.10.4 The Contractor shall perform the Work in ~~general~~ accordance with the most recent schedules submitted to the Owner, Construction Manager, and Architect, and incorporated into the approved Project schedule.

§ 3.10.5 Procedure and Schedule of Work:

.1 Unless otherwise stated the Work on the entire project shall be performed continuously without interruption, so that all Work can be completed in the time set forth in the Contract Documents.

.2 The Contractor shall cooperate with the Owner, and the sequence of operation shall be scheduled with

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the Owner so as to interfere as little as possible with the Owner's use of existing site and existing structures and the Owner's approval shall be obtained prior to the starting of such operations.

.3 Time of Completion: All Work shall be completed on or before the date set forth in the Agreement, except as otherwise specified or modified by Change Order.

.4 Job Meetings: During the course of construction, job meetings will be held with representatives of the Owner, the Architect and Engineers, the Construction Manager and the Contractors to discuss the progress of the Work, any problems of construction, timing or procedure, so as to expedite all phases of the Work to completion. Contractors and Subcontractors are to be represented at such meetings.

.5 Overtime Work: Each Contractor shall take into account the possible need for overtime work in order to meet the Contract Completion Date and shall include the costs associated with said overtime work in their Contract Sum.

§ 3.10.6 Project Scheduling

.1 After the Contractor has received from the Owner a notice to proceed or a letter of intent, a preconstruction conference will be held. The procedures and scheduling of the Work will be discussed.

.2 At the preconstruction conference, using the Project Schedule in Contract Documents, each Contractor shall submit a Construction Schedule to the Construction Manager of its own Work indicating starting dates and estimated completion dates of each phase of the Work and indicating information described in Contract (General, Supplementary and other conditions) "Submittals", using the time of completion set forth in the Contract Documents. The Project Schedule submitted by each Contractor shall be in electronic format with predecessor logic and durations specified for each of the Work activities set forth on the Schedule of Values.

.3 Procedures and requirements described in the Contract (General, Supplementary and other conditions) Section on "Submittals" shall be followed by all Contractors and the Architect to develop a Project Schedule.

.4 Once a Project Schedule is published by the Architect and approved by the Owner, it shall be strictly enforced until the Project is completed, unless it becomes necessary to revise it by an appropriate modification.

Upon issuance of the approved Project Schedule, each Contractor shall be responsible for interfacing and/or integrating its Work with that of other Contractors and the Owner and for completing its Work in the allotted time.

In the event that the Contractors do not create and/or agree on an integrated Project Schedule, the Contractors will abide by the Project schedule previously developed by the Architect and contained in the bid documents.

.5 NO PAYMENTS will be made on any of the Contracts until the scheduling procedures in this Section 3.10.6 have been completed.

§ 3.10.7 Continuing Performance and Schedule Adjustments

.1 In the event the Owner and Architect determine that performance of the Work has not progressed to the level of completion required by the Project Schedule the Owner shall have the right to order the Contractor to take corrective action necessary to expedite the progress of construction including without limitation overtime work, additional work shifts, supplying additional manpower or equipment as well as other extraordinary measures. Such extraordinary measures shall continue until the progress of the Work conforms to milestone dates set forth in the Project Schedule.

.2 The Contractor shall not be entitled to additional compensation in connection with such extraordinary measures required by the Owner except when Work progress has been delayed by events such as labor strikes or natural catastrophes. The Owner reserves the right to withhold payments due under the Contract Documents until the Contractor submits a Project Schedule Recovery Plan including a daily work schedule to complete all Work in compliance with the Project Schedule. The Contractor shall be responsible for all costs of preparing and performing the Work identified in the Project Schedule Recovery Plan.

.3 The Owner shall have the right to direct the Contractor to delay, postpone or reschedule any portion of the Work that may interfere with or disrupt the operations of the Owner.

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§ 3.12.1 Shop Drawings are drawings, diagrams, schedules, and other data specially prepared for the Work by the Contractor or a Subcontractor, Sub-subcontractor, manufacturer, supplier, or distributor to illustrate some portion of the Work. Each submittal shall bear written confirmation that Contractor has satisfied Contractor's obligations under the Contract Documents with respect to Contractor's review and approval of the submittal. Reproducing Architect's construction drawing is not acceptable for shop drawing submittals.

§ 3.12.2 Product Data are illustrations, standard schedules, performance charts, instructions, brochures, diagrams, operating and maintenance procedures, and other information furnished by the Contractor to illustrate materials or equipment for some portion of the Work.

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§3.12.4.1 The Contractor represents and warrants that all Shop drawings shall be prepared by a person or entity possessing expertise and experience in the trade for which the shop drawing has been prepared and, if required by the Contract Documents or law, by a licensed professional engineer.

§ 3.12.5 The Contractor shall review for compliance with the Contract Documents, ~~approve,~~ indicate review and approval in writing, and submit to the Construction Manager, Shop Drawings, Product Data, Samples, and similar submittals required by the Contract Documents, in accordance with the Project submittal schedule approved by the Construction Manager and Architect or, in the absence of an approved Project submittal schedule, with reasonable promptness and in such sequence as to cause no delay in the Work or in the activities of other Contractors, Separate Contractors, or the Owner's own forces. The Contractor shall cooperate with the Construction Manager in the coordination of the Contractor's Shop Drawings, Product Data, Samples, and similar submittals with related documents submitted by other Contractors. No extension of time will be granted to the Contractor because of failure to have Shop Drawings, product data, and samples submitted in ample time to allow for review by the Architect or their Consultants.

...

§ 3.12.7 ~~The Contractor shall perform no portion of the Work for which the Contract Documents require submittal and review of Shop Drawings, Product Data, Samples, or similar submittals, until the respective submittal has been reviewed and approved by the Architect.~~Work performed without approved Shop Drawings, product data, samples or similar submittals as required by the Specifications is subject to all comments and conditions of approval regardless of Work progress. Completed work must be in accordance with all comments and conditions of approval regardless of Work progress. Any portion of the Work performed prior to review and approval by the Architect of required Shop Drawings, Product Data, Samples, or other Submittals, is performed at Contractor's risk. No Contract adjustments will be made to correct or modify Work installed without approval.

§ 3.12.8 The Work shall be in accordance with approved submittals except that the Contractor shall not be relieved of responsibility for deviations from the requirements of the Contract Documents by the Architect's approval of Shop Drawings, Product Data, Samples, or similar submittals, unless the Contractor has specifically notified the Construction Manager and Architect in writing of such deviation at the time of submittal and (1) the Architect has given written approval to the specific deviation as a minor change in the Work, or (2) a Change Order or Construction Change Directive has been issued authorizing the deviation. The Contractor shall not be relieved of responsibility for errors or omissions in Shop Drawings, Product Data, Samples, or similar submittals, by the Architect's approval thereof.

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§ 3.12.10.1 If professional design services or certifications by a design professional related to systems, materials, or equipment are specifically required of the Contractor by the Contract Documents, the Owner and the Architect will specify all performance and design criteria that such services must satisfy. The Contractor shall be entitled to rely upon the adequacy and accuracy of the performance and design criteria provided in the Contract Documents. The Contractor shall cause such services or certifications to be provided by an appropriately licensed design professional, whose signature and seal shall appear on all drawings, calculations, specifications, certifications, Shop Drawings, and other submittals prepared by such professional. Shop Drawings, and other submittals related to the Work, ~~designed~~ designed, or certified by such professional, if prepared by others, shall bear such professional's written approval when submitted to the Architect. The Owner, the Architect, and the Construction Manager shall be entitled to rely upon the

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adequacy and accuracy of the services, certifications, and approvals performed or provided by such design professionals, provided the Owner and Architect have specified to the Contractor the performance and design criteria that such services must satisfy. Pursuant to this Section 3.12.10, the Architect will review and approve or take other appropriate action on submittals only for the limited purpose of checking for conformance with information given and the design concept expressed in the Contract Documents. The Construction Manager shall review submittals for sequencing, constructability, and coordination impacts on other Contractors.

...

§ 3.12.10.3 If it is the position of the Contractor, or his or her licensed design professional, that the Owner and Architect have not provided all performance and design criteria, the Contractor shall request additional criteria in writing before proceeding with the professional services described in 3.12.10. Proceeding with the professional services shall be evidence that the Owner and Architect have provided all necessary performance and design criteria.

...

§ 3.13.1.1 Use of Buildings and Site:

.1 Each Contractor shall cooperate with the Owner in making available for the Owner's use, areas of the completed or partially completed building(s) or site as provided for in Article 9, Section 9.9. The Owner shall have the right to take possession of and to use any completed or partially completed portions of the building or site even though the time of completing the entire Work or such portion of the Work may not have expired. Such use shall not constitute acceptance thereof. Such occupancy shall in no way abrogate any specified warranties or guaranties for materials, workmanship or operation of equipment pertaining to the occupied portions.

.2 Each Contractor shall cooperate with the Owner in making available for the Owner's use such building services as heating, ventilating, cooling, water, lighting and telephone for the space or spaces to be occupied, and if the equipment required to furnish such services is not entirely completed at the time the Owner desires to occupy the aforesaid space or spaces, the Contractor shall make every reasonable effort to complete such part of its Work as soon as possible to the extent that the necessary equipment can be put into operation and use.

.3 Mutually acceptable arrangements shall be made as to the warranties or guaranties affecting all Work associated therewith.

.4 Such occupancy or use shall not commence prior to a time mutually agreed to by the Owner and Contractor and to which the insurance company or companies providing the property insurance have consented by endorsement to the policy or policies. Such occupancy shall be documented with an appropriately executed Certificate of Substantial Completion.

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§ 3.14.1.1 The word "new" used Herein shall mean Work which has been or is to be installed under the terms of Contract for this project. The word "existing" used Herein shall mean existing conditions previous to the award of a Contract for this project.

§ 3.14.1.2 In order to eliminate cutting and patching as much as possible, each Contractor shall, during the progress of the Work Furnish to the General Construction Contractor who shall then install them, proper sleeves, inserts, etc. as required for his or her new Work and shall give proper and detailed instructions to others where Work may be affected by their Work, with adequate notice prior to the erection of new Work. Cutting and patching Work as required to install new work or remove existing Work shall be done carefully and neatly with as little damage as possible

§ 3.14.1.3 Unless otherwise specified in the Contract (General, Supplementary and other conditions, or the plans and specifications) each Contractor is responsible for their own cutting, removals and patching required for the proper installation or execution of their Work, as defined in the Specifications. Core drilling remains the responsibility of

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each Contractor.

§ 3.14.1.4 Any costs caused by defective or ill-timed Work shall be borne by the Contractor responsible, therefore. Any Contractor who is required to cut and patch his or her new Work to provide conditions for other Contractors to complete their new Work and who was not given adequate prior notice of the conditions required for completion of such Work before doing his or her work, shall charge the Contractor in default the documented cost of the cutting and patching Work plus 15% for overhead and profit unless otherwise specified.

§ 3.14.1.5 Cutting and patching of any Work shall be made in such a manner as to not breach any provisions of any guarantee or warranty on existing work left in place or guaranty or warranty required for his or her new Work. Patching of Work shall match existing adjacent surfaces and patchwork shall be disguised completely to hide any trace of patching.

...

§ 3.15.1 The Contractor shall keep the premises and surrounding area free from accumulation of waste materials and rubbish caused by operations under the Contract. At completion of the Work, the Contractor shall remove waste materials, rubbish, the Contractor's tools, construction equipment, machinery, and surplus materials from and about the Project. If the Contractor fails to clean up as provided in the Contract Documents, the Owner, or Construction Manager with the Owner's approval, may do so and the Owner shall be entitled to reimbursement from the Contractor.

~~**§ 3.15.2** If the Contractor fails to clean up as provided in the Contract Documents, the Owner, or Construction Manager with the Owner's approval, may do so and the Owner shall be entitled to reimbursement from the Contractor.~~

§ 3.15.2 All debris required to be removed from the Project shall be removed in accordance with all applicable rules, regulations and statutes, which may pertain thereto & in accordance with the authority having jurisdiction. The Contractor shall warrant that all debris shall be disposed of in accordance with all rules, regulations and statutes applicable thereto and at a facility permitted and authorized to receive materials of the type and nature so removed from the premises. The Contractor shall hold the Owner free and harmless of, from or concerning any claimed liability resulting from the improper or unlawful removal and/or disposal of such debris. Contractors are encouraged to recycle as much material as is practical.

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§ 3.18.1 To the fullest extent permitted by law, the Contractor shall indemnify and hold harmless the Owner, Construction Manager, Architect, ~~Construction Manager's and Architect's consultants, and agents and employees of any of them from and against claims, damages, losses,~~ and their respective directors, trustees, officers, employees, agents, consultants, interim administrators, authorized volunteers and committee members, students, teachers, auxiliary instructors, and members of the Board of Education (collectively "Indemnitees") from and against claims, damages, losses and expenses, including but not limited to attorneys' fees, arising out of or resulting from performance of the Work, ~~provided that~~ when such claim, damage, ~~loss,~~ loss or expense is attributable to bodily injury, sickness, ~~disease~~ disease, or death, or to injury to or destruction of tangible property (other than the Work ~~itself), but only to the extent caused by the negligent acts or omissions~~ itself, and including loss of use), but only to the extent caused, in whole or part, by the acts or omissions, or other culpable conduct, of the Contractor, a Subcontractor, anyone directly or indirectly employed by them, or anyone for whose acts they may be liable, regardless of whether or not such claim, damage, loss, or expense is caused in part by an Indemnitee. The Contractor agrees to include the following indemnity provision in each and every contract it enters into with a subcontractor, and to require that subcontractor to include such provision in each contract it enters into with any lower tier subcontractor: To the fullest extent permitted by law, Subcontractor shall indemnify and hold harmless the Contractor, Owner, Construction Manager , Architect, and each of their respective representatives, employees, directors, officers, consultants and agents, from and against any and all claims, suits, actions, debts, damages, fines, penalties, costs, charges and expenses, including attorneys' fees and court costs, arising out of, relating to or resulting from the performance of this Subcontract, including, but not limited to, bodily injury and/or property damage, to the extent caused, in whole or in part, by acts, actions, omissions, fault or breach of the Subcontractor, its employees, agents, subcontractors, suppliers and/or materialmen, regardless of whether or not such claim is caused in part by a party indemnified hereunder.~~Such~~

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~~obligation shall not be construed to negate, abridge, or reduce other rights or obligations of indemnity that would otherwise exist as to a party or person described in this Section 3.18.~~

§ 3.18.1.1 To the maximum extent permitted by law, the Contractor hereby assumes the entire responsibility and liability for any and all damage (liquidated, direct or consequential) and injury (including death), disease or sickness of any kind or nature whatsoever, to all persons, whether or not employees of the Contractor, and to all property and business or businesses, caused by, resulting from, arising out of, or occurring in connection with:

a. the Work;
b. the performance or intended performance of the Work;
c. the performance or failure to perform the Contract;
d. the failure to complete the Work by the date set for Substantial Completion;
e. any occurrence which happens in or about the area where the Work is being performed by the Contractor, either directly or through a Subcontractor, or while any of Contractor's property, equipment or personnel is in or about such area; or
f. New York State Labor Law, Article 10, including without limitation sections 240, 241, 241-a and 241-b, thereof, as amended, regardless of whether or not such claim, damage, loss or expense is caused in part by a party indemnified hereunder.

§ 3.18.1.2 Except to the extent, if any, expressly prohibited by law, should any such damage or injury referred to in Section 3.18.1.1 be sustained, suffered, or incurred by Owner, Architect, or Construction Manager, or should any claim for such damage or injury be made or asserted against any of them, whether or not such claim is based upon Owner's, Architect's, or Construction Manager's alleged active or passive negligence or participation in the wrong or upon any alleged breach of any statutory duty or obligation on the part of the Owner, Architect, or Construction Manager, Contractor shall indemnify and hold harmless Owner, Architect, and Construction Manager along with their Board of Education, Administration officers, agents, partners, and employees (hereinafter collectively referred to as "Indemnitees"), of, from and against any and all other loss, cost, expense, and liability, including without limitation, legal fees and disbursements, that Indemnitees may directly or indirectly sustain, suffer or incur as a result of such damages, injuries and claims; and Contractor agrees to assume, on behalf of any and all Indemnitees the defense (with counsel satisfactory to the party indemnified) of any action at law or in equity, or other legal proceeding, which may be brought against any Indemnitee upon or by reason of such damage, injury or claim and to pay on behalf of every Indemnitee, the amount of any judgment, decree, award, or order that may be entered against each said Indemnitee in any such action or proceeding. In the event that any such claim, loss, cost, expense, liability, damage or injury is sustained, suffered, or incurred by, or is made, asserted or threatened against any Indemnitee, Owner shall, in addition to all other rights and remedies, have the right to withhold from any payments due and to become due to Contractor an amount sufficient in Owner's judgment to protect and indemnify the Indemnitee(s) from and against any and all such claim, loss, cost, expense, liability, damage or injury, including legal fees and disbursements; or Owner, in its discretion, may require Contractor to furnish a surety bond satisfactory to Owner guaranteeing such protection which bond shall be furnished by Contractor within 5 days after written demand has been made therefore. In the event more than one Contractor is connected with an event or occurrence (or series of events or occurrences) covered by this indemnification, then all such Contractors shall be jointly and severally responsible to the Indemnitee, and the ultimate responsibility among such indemnifying Contractors shall be settled or otherwise determined by separate proceedings and without loss, expense or damage to any Indemnitee.

§ 3.18.2 In claims against any person or entity indemnified under this Section 3.18 by an employee of the Contractor, a Subcontractor, anyone directly or indirectly employed by ~~them,~~ them or anyone for whose acts they may be liable, the indemnification obligation under Section ~~3.18.1~~ 3.18 shall not be limited by a limitation on amount or type of damages, compensation, insurance proceeds, or benefits payable by or for the Contractor or a Subcontractor under workers' compensation acts, disability benefit ~~acts,~~ acts or other employee benefit acts.

§ 3.18.3 In any and all claims against the Owner, the Architect, the Construction Manager, or their agents or employees by third parties, the indemnification obligation under this § 3.18 shall apply and shall not be limited by limitation or amount of or type of damages, compensation, insurance proceeds, or benefits payable by or for the Contractor or Subcontractors.

§ 3.18.4 Contractor shall comply with, and cooperate with, Architect, Construction Manager, and Owner in complying with legal requirements. Among other things, Contractor shall be responsible for performing corrective work within any abatement periods prescribed by governmental entities including but not limited to OSHA, appealing from

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decisions or orders, requesting extensions on abatement periods, and furnishing such information or evidentiary material as may be necessary or as may be requested by Architect, Construction Manager, or Owner to fully protect the rights and interests of Owner, Architect, and Construction Manager with respect to possible, threatened or pending proceedings or orders.

§ 3.18.5 Natale Patent Rights. With respect to any Contractor performing asbestos abatement as part of its Scope of Work.

.1 Contractor shall hold a valid current license to perform Work using the negative pressure system covered by the Natale Patent or provide and Indemnity Agreement as follows:

.2 Indemnity Agreement: Contractor and Contractor's surety agree to protect, indemnify and hold harmless the Owner, the Architect, and the Board of Education, Administration directors, officers, agents, employees, and assigns of the Architect from any and all claims, judgments, liabilities, expenses, attorney fees, court costs, or losses of any nature, resulting from claims of patent right infringement including but not limited to U.S. Patent Number 4,604,111, commonly known as the Natale Patent, arising out of the performance of Work on the Project.

(a) The provisions of this Indemnity Agreement shall protect the Indemnitees against all claims arising out of the subject matter or performance of this Contract and Contract Documents, including, without limitation, allegations or findings that the Indemnitees, or any of them, were guilty of negligence in the issuance of such Contract.

(b) The provisions of this Indemnity Agreement shall be in addition to and shall in no way delete any provisions, including warranty and indemnity provisions of the Agreement.

§ 3.18.6 The Contractor accepts assignment of, and liability for, all purchase orders and other agreements for procurement of materials and equipment that are identified as part of the Contract Documents. The Contractor shall be responsible for such pre-purchased items, if any, as if the Contractor were the original purchaser. The Contract Sum includes, without limitation, all costs and expenses in connection with delivery, storage, insurance, installation and testing of items covered in any assigned purchase orders or agreements. All warranty and correction of the Work obligations under the Contract Documents shall also apply to any pre-purchased items, unless the Contract Documents specifically provide otherwise.

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§ 4.1.1 The ~~Architect is the person or entity retained by the Owner pursuant to Section 2.3.2 and identified as such in the Agreement.~~Owner shall retain an architect lawfully licensed to practice architecture or an entity lawfully practicing architecture in the jurisdiction where the Project is located. That person or entity is identified as the Architect in the Agreement and is referred to throughout the Contract Documents as if singular in number. All changes in the work must be processed through the Architect.

§ 4.1.2 The Construction Manager is the ~~person or entity retained by the Owner pursuant to Section 2.3.3 and identified as such in the Agreement.~~firm set forth on page 1 hereof.

§ 4.1.3 Duties, responsibilities, and limitations of authority of the Construction Manager and Architect as set forth in the Contract Documents shall not be restricted, modified, or extended without written consent of the ~~Owner, Construction Manager, Architect, and Contractor. Consent shall not be unreasonably withheld.~~Owner.

...

§ 4.2.1 The Construction Manager and Architect will provide administration of the Contract as described in the Contract Documents and will be the Owner's representatives during construction until the date the Architect issues the final Certificate for ~~Payment.~~ Payment and during the Correction Period described in Article 12. The Construction Manager and Architect will have authority to act on behalf of the Owner only to the extent provided in the Contract Documents.

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§ 4.2.2 The Architect will visit the site at intervals appropriate to the stage of construction, or as otherwise agreed with the Owner, to become generally familiar with the progress and quality of the portion of the Work ~~completed,~~ completed or in progress, and to determine in general if the Work observed is being performed in a manner indicating that the Work, when fully completed, will be in accordance with the Contract Documents. However, the Architect will not be required to make exhaustive or continuous on-site inspections to check the quality or quantity of the Work. On the basis of the site visits, the Architect will keep the Owner and the Construction Manager reasonably informed about the progress and quality of the portion of the Work completed, and promptly report to the Owner and Construction Manager
(1) known deviations from the Contract Documents and from the most recent Project schedule prepared by the Construction Manager, and (2) defects and deficiencies observed in the Work.

§ 4.2.2.1 The Contractor shall reimburse the Owner for compensation paid to the Architect for additional site visits made necessary by the fault, neglect, or request of the Contractor.

§ 4.2.2.2 On the basis of onsite observations and otherwise, The Architect shall keep the Owner informed of the progress of the work in accordance with the Owner/Architect contract terms
§ 4.2.2.3 The Architect will promptly report to the Owner any observed defects or deficiencies of the Work.

§ 4.2.3 The Construction Manager shall provide one or more representatives who shall be in attendance at the Project site whenever the Work is being ~~performed.~~ performed or as otherwise directed by the Owner. The Construction Manager will determine in general if the Work observed is being performed in accordance with the Contract Documents, will keep the Owner and Architect reasonably informed of the progress of the Work, and will promptly report to the Owner and Architect known deviations from the Contract Documents and the most recent Project schedule, and defects and deficiencies observed in the Work.
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§ 4.2.5 The Construction Manager, except to the extent required by Section 4.2.4, and Architect will not have control over, or charge of, ~~or responsibility for,~~ the construction means, methods, techniques, sequences or procedures, or for the safety precautions and programs in connection with the Work, since these are solely the Contractor's rights and responsibilities under the Contract Documents, except as provided in Section 3.3.1, and neither will be responsible for the Contractor's failure to perform the Work in accordance with the requirements of the Contract ~~Documents.~~ Documents except to the extent that any such failure shall be directly attributable to the negligent or wrongful act or omission of the Construction Manager or the Architect. Neither the Construction Manager nor the Architect will have control over or charge of, or be responsible for acts or omissions of, the Contractor, Subcontractors, or their agents or employees, or of any other persons or entities performing portions of the Work. Nothing contained in this Section 4.2.5 shall limit the duties of the Architect or the Construction Manager to the Owner under any other provision of the Contract Documents. If the Architect or the Construction Manager believes that the Contractor is failing to perform the Work in accordance with the requirements of the Construction Documents, it shall promptly disclose such failure to the Owner in writing.

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§ 4.2.8 The Architect and Construction Manager have authority and responsibility to reject Work that does not conform to the Contract Documents, and will notify each other about the rejection. The Construction Manager shall determine whether the Work of the Contractor is being performed in accordance with the requirements of the Contract Documents and notify the Owner, Contractor and Architect of defects and deficiencies in the Work. Whenever the Construction Manager considers it necessary or advisable, the Construction Manager will have authority to require inspection or testing of the Work in accordance with Sections 13.4.2 and 13.4.3, upon written authorization of the Owner, whether or not the Work is fabricated, installed or completed. The foregoing authority of the Construction Manager will be subject to the provisions of Sections 4.2.18 through 4.2.20 inclusive, with respect to interpretations and decisions of the Architect. However, neither the Architect's nor the Construction Manager's authority to act under this Section 4.2.8 nor a decision made by either of them in good faith either to exercise or not to exercise such authority shall give rise to a duty or responsibility of the Architect or the Construction Manager to the Contractor, Subcontractors, suppliers, their agents or employees, or other persons performing any of the Work.

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§ 4.2.10 The Construction Manager will receive and ~~promptly~~ promptly, in such a manner as to cause no delay in the progress of the Work, review for conformance with the submittal requirements of the Contract Documents, all submittals from the Contractor such as Shop Drawings, Product Data, and Samples. Where there are ~~other~~ Multiple Contractors, the Construction Manager will also check and coordinate the information contained within each submittal received from the Contractor and other Multiple Contractors, and transmit to the Architect those recommended for approval. By submitting Shop Drawings, Product Data, Samples, and similar submittals, the Construction Manager represents to the Owner and Architect that the Construction Manager has reviewed and recommended them for approval. The Construction Manager's actions will be taken in accordance with the Project submittal schedule approved by the Architect or, in the absence of an approved Project submittal schedule, with reasonable promptness while allowing sufficient time to permit adequate review by the Architect.

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§ 4.2.11.1 If the Architect is required to review more than two (2) submittals by a Contractor for the reason that the submittal and one (1) re-submittal failed to conform to the information given or the design concept expressed in the Contract Documents, the Contractor shall reimburse the Owner for the amount of compensation paid by the Owner to the Architect for such additional reviews. The Owner shall be entitled to withhold from any payment due the Contractor any such amount due from the Contractor.

§ 4.2.12 Review of the Contractor's submittals by the Construction Manager and Architect is not conducted for the purpose of determining the accuracy and completeness of other details such as dimensions and quantities, or for substantiating instructions for installation or performance of equipment or systems, all of which remain the responsibility of the Contractor as required by the Contract Documents. The Construction Manager and Architect's review of the Contractor's submittals shall not relieve the Contractor of the obligations under Sections 3.3, 3.5, and 3.12. The Construction Manager and Architect's review shall not constitute approval of safety precautions ~~or~~ or, unless otherwise specifically stated by the Construction Manager and Architect, of any construction means, methods, techniques, sequences, or procedures. The Architect's approval of a specific item shall not indicate approval of an assembly of which the item is a component.

§ 4.2.13 The Construction Manager and the Architect will prepare Change Orders and Construction Change ~~Directives.~~Directives as set forth in the agreements between the Owner-Architect and Owner-Construction Manager.

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§ 4.2.19 Interpretations and decisions of the Architect will be consistent with the intent of, and reasonably inferable from, the Contract Documents and will be in writing or in the form of drawings. When making such interpretations and decisions, the Architect will endeavor to secure faithful performance by ~~both Owner and~~ Contractor, ~~will not show partiality to either,~~ and will not be liable for results of interpretations or decisions so rendered in good faith.

§ 4.2.19.1 If Work is described or indicated in a manner which makes it impossible to carry out the requirements of the Contract Documents, or should discrepancies appear among the Contract Documents, the Contractor shall request interpretation before proceeding with the Work. If Contractor fails to make such a request, no excuse will be entertained for failure to carry out the Work of the Contract Documents. Should a conflict occur in or between Contract Documents, the Contractor is deemed to have estimated on the more expensive way of doing the Work.

§ 4.2.20 The Architect's ~~decisions~~ decisions, after consultation with the Owner, on matters relating to aesthetic effect will be final if consistent with the intent expressed in the Contract Documents.

...

§ 5.2.1 The Contractor shall not award work to any one Subcontractor in excess of 50 percent of the Contract Sum, without prior written approval of the Owner. Unless otherwise stated in the Contract Documents, the Contractor, ~~as soon as practicable~~ within ten (10) calendar days after award of the Contract, shall ~~notify~~ furnish in writing the Construction Manager, for review by the Owner, Construction Manager and Architect, of the persons or entities proposed for each principal portion of the Work, including those who are to ~~furnish~~ Furnish materials or equipment fabricated to a special design. Within 14 days of receipt of the information, the Construction Manager may notify the Contractor whether the Owner, the Construction Manager or the Architect (1) has reasonable objection to any such proposed person or entity or, (2) requires additional time or information for review. Failure of the Construction Manager to provide notice within the 14-day period shall constitute notice of no reasonable objection.

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§ 5.2.1.1 Unless otherwise expressly set forth in the Contract Documents, a Subcontractor proposed by a Contractor shall not be acceptable unless the Contractor submits evidence to the Construction Manager with its proposal of the Subcontractor that the proposed Subcontractor has satisfactorily completed similar contracts or subcontracts and has the necessary experience, personnel, equipment, licensing, and financial ability to complete the subcontract in accordance with the Project Schedule. The substitution of a different proposed Subcontractor shall not entitle the Contractor to any upward adjustment in the Contract Sum or the Contract Time.

§ 5.2.2 The Contractor shall not contract with a proposed person or entity to whom the Owner, Construction Manager or Architect has made reasonable and timely objection. The Contractor shall not be required to contract with anyone to whom the Contractor has made reasonable objection. Contractor shall provide proposed substitute within five (5) days of notice of such reasonable objection.

§ 5.2.3 ~~If the Owner, Construction Manager or Architect has reasonable objection to a person or entity proposed by the Contractor, the Contractor shall propose another to whom the Owner, Construction Manager or Architect has no reasonable objection. If the proposed but rejected Subcontractor was reasonably capable of performing the Work, the Contract Sum and Contract Time shall be increased or decreased by the difference, if any, occasioned by such change, and an appropriate Change Order shall be issued before commencement of the substitute Subcontractor's Work. However, no increase in the Contract Sum or Contract Time shall be allowed for such change unless the Contractor has acted promptly and responsively in submitting names as required.~~The Contractor shall not substitute a Subcontractor, person, or entity for one previously selected if the Owner, Construction Manager or Architect makes reasonable objection to such substitution.

~~**§ 5.2.4** The Contractor shall not substitute a Subcontractor, person, or entity for one previously selected if the Owner, Construction Manager or Architect makes reasonable objection to such substitution.~~

§ 5.2.4 Maintenance of the Project Schedule is critical. Contractors shall award subcontracts to entities capable of performing in a manner that will maintain the Project Schedule and require its subcontractors to complete their work in accordance with the Project Schedule.

By appropriate written agreement, the Contractor shall require each Subcontractor, to the extent of the Work to be performed by the Subcontractor, to be bound to the Contractor by terms of the Contract ~~Documents,~~ Documents including but not limited to all deadlines and substantial completion dates, and to assume toward the Contractor all the obligations and responsibilities, including the responsibility for safety of the Subcontractor's Work, that the Contractor, by these Contract Documents, assumes toward the Owner, Construction Manager and Architect. Each subcontract agreement shall preserve and protect the rights of the Owner, Construction Manager and Architect under the Contract Documents with respect to the Work to be performed by the Subcontractor so that subcontracting thereof will not prejudice such rights, and shall allow to the Subcontractor, unless specifically provided otherwise in the subcontract agreement, the benefit of all rights, remedies, and redress against the Contractor that the Contractor, by the Contract Documents, has against the Owner. Where appropriate, the Contractor shall require each Subcontractor to enter into similar agreements with Sub-subcontractors. The Contractor shall make available to each proposed Subcontractor, prior to the execution of the subcontract agreement, copies of the Contract Documents to which the Subcontractor will be bound, and, upon written request of the Subcontractor, identify to the Subcontractor terms and conditions of the proposed subcontract agreement that may be at variance with the Contract Documents. Subcontractors will similarly make copies of applicable portions of such documents available to their respective proposed Sub-subcontractors.

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§ 5.4.2 Upon such ~~assignment, if the Work has been suspended for more than 30 days, the Subcontractor's compensation shall be equitably adjusted for increases in cost resulting from the suspension.~~assignment to the Owner under this Section 5.4, the Owner may further assign the subcontract to a successor Contractor or other entity.

~~**§ 5.4.3** Upon assignment to the Owner under this Section 5.4, the Owner may further assign the subcontract to a successor Contractor or other entity. If the Owner assigns the subcontract to a successor Contractor or other entity, the Owner shall nevertheless remain legally responsible for all of the successor Contractor's obligations under the subcontract.~~

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§ 6.2.3 The Contractor shall reimburse the Owner for costs the Owner incurs, including costs that are payable to a Separate Contractors or to other Contractors, because of the Contractor's delays, improperly timed activities or defective construction. ~~The Owner shall be responsible to the Contractor for costs the Contractor incurs because of delays, improperly timed activities, damage to the Work or defective construction by the Owner's own forces, Separate Contractors, or other Contractors.~~

§ 6.2.4 The Contractor shall promptly remedy damage that the Contractor ~~wrongfully~~ causes to completed or partially completed construction, or to property of the Owner, Separate Contractors, or other Contractors as provided in Section 10.2.5.

...

§ 6.2.6 Claims and other disputes and matters in question between the Contractor and a Separate Contractor shall be subject to the provisions of Article 15 as amended provided the separate contractor has reciprocal obligations.

...

§ 7.1.1 Changes in the Work may be accomplished after execution of the Contract, and without invalidating the Contract, by Allowance Use Authorization, Change Order, Construction Change ~~Directive~~ Directive, or order for a minor change in the Work, subject to the limitations stated in this Article 7 and elsewhere in the Contract Documents.

...

§ 7.1.2.1 See other subsections for Allowance Use provisions and permitted costs for the Allowance Uses.

§ 7.1.4 Unit Prices

§ 7.1.4.1 Unit prices shall be submitted in the Bid Form for various items set forth therein.

§ 7.1.4.2 Unit prices set forth shall be used to determine equitable adjustment of the Contract price in connection with additional Work or Work omitted or reduced by the Architect. The Unit Prices quoted shall include all labor, materials, equipment, applicable taxes and shall apply to all Work added or Work deducted.

§ 7.1.4.3 If any one of the unit prices quoted by a Contractor is excessively high in the opinion of the Architect, the Owner and Architect will have the right to adjust such unit prices to a fair and reasonable amount.

§ 7.1.5 Changes in the Work involving additional Work or deletion of Work whether or not resulting in an addition to or subtraction from the Contract Sum shall not be made until the Contractor submits to the Architect the cost of the added or deleted Work with a complete and detailed listing of all Subcontractors involved, all materials, labor and equipment.

§ 7.1.5.1 Overhead and profit as described in 7.1.7.1 and 7.1.7.2-a may be added to the cost of a claim for additional Work *only* when the source of monies for such additional work is not a Contingency Allowance included in the Contract Sum or any other monies for Work included in the Contract Sum.

§ 7.1.5.2 Changes in the Work whether or not involving additions or deductions from the Contract Sum shall not be made until an appropriate Change Order or Change Directive has been issued.

§ 7.1.5.3 Where quoted unit prices are not applicable as set forth in Section 7.1.4 and the extra cost is to be determined under clause 7.3.3.3, the mark-ups (above actual cost) for overhead and profit shall be as specified in Section 7.1.7 and as qualified in 7.1.5.1 above.

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§ 7.1.6 Labor costs shall include items incidental to labor such as workmen's compensation insurance, social security, fringe benefits (exclusive of transportation) and all mandatory costs paid in connection with labor.

§ 7.1.7 Overhead shall include insurance other than those incidental to labor mentioned above, premiums on bonds required by the Contract, Contractor's Supervisory employees, home and field office expenses, transportation costs and both manual and power small tools and manual and power small equipment. Material and equipment costs shall be as described in 7.3.4.

§ 7.1.7.1 For Work done by the Contractor's own forces, mark-up for combined overhead and profit on materials and on cost of labor shall be as set forth in Section 7.5 hereof.

§ 7.1.7.2 For Work done by the subcontractors, mark-up of costs as defined Herein by subcontractors for combined overhead and profit on materials and on cost of labor shall be as set forth in Section 7.5 hereof.

§ 7.1.8 Material costs shall be as described in 7.3.4.

§ 7.1.9 To facilitate reviewing quotations for either extra charges or deductions, all proposals shall be accompanied by a complete itemization of costs including labor, materials, subcontracts, and if allowed, mark-ups for overhead and profit. Subcontracts shall be similarly itemized.

§ 7.1.10.1 If requested, the Contractor shall submit detailed quotations from material suppliers.

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§ 7.2.1 All Change Orders must have the approval of the Owner, Architect, and Construction Manager in writing.

§ 7.2.2 Agreement on any Change Order shall constitute a final settlement of all matters relating to the change in the Work which is the subject of the Change Order, including, but not limited to, all direct and indirect costs associated with such change and any all adjustments to the Contract Sum and the contract time.

§ 7.2.3 Methods used in determining adjustments to the Contract Sum may include these, those listed in Section 7.3 with its subsections and Section 7.5 with its subsections.

§ 7.2.4 In order to facilitate checking of quotations for extras or credits, all proposals, except those so minor that their propriety can be seen by inspection, shall be accompanied by a complete itemization of costs including labor, materials and subcontracts. Labor and materials shall be itemized in the manner prescribed above. Where major cost items are Subcontracts, they shall be itemized also.

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§ 7.3.4 If the Contractor does not respond promptly or disagrees with the method for adjustment in the Contract Sum, the Construction Manager shall determine the adjustment on the basis of reasonable expenditures and savings of those performing the Work attributable to the change, including, in case of an increase in the Contract Sum, an amount for overhead and profit as set forth in ~~the Agreement, or if no such amount is set forth in the Agreement, a reasonable amount.~~ Section 7.5. In such case, and also under Section 7.3.3.3, the Contractor shall keep and present, in such form as the Construction Manager may prescribe, an itemized accounting together with appropriate supporting data. Unless otherwise provided in the Contract Documents, costs for the purposes of this Section 7.3.4 shall be limited to the following:

.1 Costs of labor, including applicable payroll taxes, social security, unemployment insurance, fringe benefits required by agreement or custom, ~~workers' compensation insurance,~~ and workers' compensation insurance directly related to the work of the change, and other employee costs approved by the Construction Manager and Architect;

.2 Costs of materials, supplies, and equipment, including cost ~~of transportation,~~ of transportation directly related to the work of the change, whether incorporated or consumed;

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.3 Rental costs of machinery and equipment, exclusive of hand tools, whether rented from the Contractor or ~~others;~~others directly related to the work of the change;

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§ 7.3.11 Lump sum adjustment described in clause 7.3.3.1 shall be substantiated by submitting evidence of actual costs to the Architect for evaluation for the following:

.1 Costs described in Section 7.3.4, including labor and other costs of subcontractors, itemized by trades.

...

§ 7.5 OVERHEAD AND PROFIT

§ 7.5.1 The combined overhead and profit included in the total cost of a Change Order to the Owner shall be based on the following schedule:

§ 7.5.1.a Contractor: For Work performed by the Contractor's own forces, markup shall not exceed a total of fifteen percent (15%), of the value of labor and materials (L+M).

. 1 Example: Total Contractor Amount= (L+M) + 15% O&P

§ 7.5.1.b Contractor's Subcontractor(s): For Work performed by the Subcontractor's own forces, markup shall not exceed a total often percent (10%) of their value of labor and material (L+M). For the Contractor, for work performed by that Contractor's Subcontractor, markup shall not exceed five percent (5%) for the value of the Subcontractor amount.

.1 Example: Total Subcontractor Amount= (L+M) + 10% O&P
.2 Example: Total Contractor Amount= Total Subcontract Amount+ 5% O&P

§ 7.5.1.c Contractor's Subcontractor's Sub-subcontractor(s): For Work performed by the Sub-subcontractor's own forces, markup shall not exceed a total of five percent (5%) of their value of labor and materials (L+M). For the Subcontractor, for work performed by the Sub-subcontractor, markup shall not exceed a total of five percent (5%) of their value of labor and materials (L+M) for work performed by the Sub-subcontractor. For the Subcontractor, markup shall not exceed a total of five percent (5%) of the Sub-subcontractor amount. For the Contractor, markup shall not exceed 5% of the Subcontractor Amount.

.1 Example: Total Sub-subcontractor Amount= (L+M) + 5% O&P
.2 Example: Total Subcontractor Amount= Sub-subcontractor Amount+ 5% O&P
.3 Example: Total Contractor Amount= Subcontractor Amount+ 5% O&P

§ 7.5.2 Performance and Payment Bond Adjustments: Do not itemize increases for bond premiums for each individual Change Order per General Conditions of the Contract, Section 11.1.1. No Information in Section 11.1.1 that refers to bond adjustments.

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§ 8.2.1 ~~Time limits stated in the Contract Documents are of the essence of the Contract.~~ TIME IS OF THE ESSENCE IN THE COMMENCEMENT, PROSECUTION AND COMPLETION OF THE WORK. If the Contractor shall neglect, fail, or refuse to complete the Work within the time specified for Substantial Completion of the Contract or abandon the Work prior to Substantial Completion unless such delay is approved in advance in writing by the Owner, Owner may be damaged and the Contractor does hereby agree, as partial consideration for the awarding of this Contract, to pay to the Owner, as liquidated inconvenience and disruption damages and not as a penalty, the sum of One Thousand Dollars ($1,000.00) per day for each calendar day beyond five (5) days after the date specified Herein for Substantial Completion that the Contractor fails to achieve Substantial Completion for the Project or One Thousand Dollars ($1,000) per day for each calendar day after the date Contractor abandons the Work until actual Substantial Completion of the Work. Pursuit of liquidated inconvenience and disruption damages shall not exclude

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the pursuit of any other damages or remedy available to Owner, including but not limited to direct and/or consequential damages. Due to the impracticability and extreme difficulty of fixing and ascertaining the true cost of the disruption and public inconvenience resulting from the Contractor's failure to complete the Work on time, this amount is fixed and agreed upon by and between the Contractor and the Owner to be a reasonable estimate of the inconvenience damages incurred by students, teachers, taxpayers, and the public for inconvenience and disruption caused by the Contractor's continued presence on-site or in the case of abandonment the continued presence on-site of a replacement contractor, which are a portion of the damages which the Owner and the community may sustain. Liquidated inconvenience and disruption damages shall be deducted from any monies due or that may become due to the Contractor, and if said monies are insufficient to cover said damages, then the Contractor shall pay the Owner the amount of the difference. Liquidated inconvenience and disruption damages are in addition to any and all other damages incurred by the Owner as a result of the Contractor's failure to complete the Work within the time specified for Substantial Completion of the Contract, including but not limited to the expense of rental of space, the expense of transportation, and the fees and reimbursements to the Owner's Agents including, but not limited to, the Architect, the Construction Manager, and legal counsel for their services; and are cumulative and recoverable singularly or cumulatively by the Owner in addition to any liquidated inconvenience and disruption damages that may be recovered. Pursuit of liquidated inconvenience and disruption damages shall not exclude the pursuit of any other damages or remedy available to Owner, including but not limited to direct and/or consequential damages. By executing the Agreement, the Contractor confirms that the Contract Time is a reasonable period for performing the Work and that the Owner would not have entered into this Contract without the inclusion of liquidated inconvenience and disruption damages as set forth in this subsection. If the provision imposing liquidated inconvenience and disruption damages is determined to be unenforceable under federal or New York State law, the following provision shall apply: TIME IS OF THE ESSENCE IN THE COMMENCEMENT, PROSECUTION AND CONSTRUCTION OF THE WORK. Contractor shall be responsible for all direct and consequential damages to Owner, Architect, and Construction Manager arising from any delay of Contractor, its Subcontractors, or suppliers, in performing or completing the Work in accordance with the time requirements imposed by the Contract Documents. The indemnity provisions of this Agreement are applicable to such damages and to claims arising in respect thereto. By executing the Agreement, the Contractor confirms that the Contract Time is a reasonable period for performing the Work.

§ 8.2.1.1 Contractor shall cooperate with Owner, Construction Manager, Architect and other Contractors on the Project, making every reasonable effort to reduce the contract time.

§ 8.2.2 The Contractor shall not knowingly, except by agreement or instruction of the Owner in writing, ~~commence the Work~~ prematurely commence operations on the site or elsewhere prior to the effective date of insurance required by Article 11 to be furnished by the Contractor and Owner. The date of commencement of the Work shall not be changed by the effective date of such insurance.

~~**§ 8.2.3** The Contractor shall proceed expeditiously with adequate forces and shall achieve Substantial Completion within the Contract Time.~~

§ 8.2.2.1 Contractor shall not commence Work on the site until evidence of insurance and original performance and payment bonds as required in Article 11, have been accepted by the Owner.

§ 8.2.3 Contractor shall do all things necessary to ensure the prosecution of the Work in accordance with any one or more of the following as determined by the Architect and the Owner, in their discretion:

.1 Project schedules and revisions thereof, given from time to time to Contractor;

.2 The time requirements for various portions of Work;

.3 The requirements of the Project including, but not limited to, coordination requirements as may from time to time be known to Contractor; and

.4 Schedules of the Work provided by Contractor to Architect upon the Owner's request.

§ 8.2.4 Should the progress of the Work and/or other Work be delayed by any fault, neglect, act or failure to act of Contractor or any of its Subcontractors or suppliers so as to cause any additional cost, expense, liability or damage to Owner, Architect, or Construction Manager, or for which Owner, Architect, or Construction Manager may become

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liable, Contractor shall hold them harmless from and indemnify them against all such additional cost, expense, liability or damage.

§ 8.2.5 If the Contractor does not achieve Substantial Completion within the Contract Time established in the Agreement between the Owner and the Contractor, or in a subsequent Change Order, the Contractor shall be liable to the Owner for any liquidated, direct and/or consequential damages; for the costs of fees and reimbursements to the Owner's Agents including, but not limited to, the Architect and the Construction Manager for their services attributable to the Contractor's delay or abandonment. Except as may be prohibited by applicable law, all of Owner's rights and remedies in connection with the Contractor's failure to achieve Substantial Completion within the Contract Time established in the Agreement between the Owner and the Contractor, shall be cumulative and may be exercised singularly or concurrently. Election by Owner to pursue any remedy shall not exclude pursuit of any other remedy.

§ 8.2.6 The Work shall be performed during designated working hours, except that in the event of emergency or when necessary to perform the Work in accordance with the requirements of Section 8.2, Work shall be performed at Contractor's cost and expense on other shifts, overtime, Saturdays, Sundays, Holidays and at other times, if permission to do so has been obtained in writing from Owner. Without limiting the requirements of the preceding sentence, if the progress of the Work or of the Project has been delayed by any fault, neglect, act or failure to act of Contractor or any of its Subcontractors or suppliers, Contractor shall work such overtime, at Contractor's cost and expense as aforesaid, as Architect shall deem necessary or desirable to make up for all time lost and to avoid delay in the completion of the Work and of the Project. The failure by Architect to direct Contractor to engage in such overtime shall not relieve Contractor of the consequences of its delay.

§ 8.2.7 Unless otherwise noted, the date of commencement of the Work is the date established in a notice to proceed. The notice to proceed will be issued immediately upon return of signed documents by the Contractor and the presentation of acceptable insurance certificates. Contractor shall organize construction schedules as specified in Section 3.10, Contractor's Construction Schedules. The commencement date shall not be postponed by the failure to act of the Contractor or of persons or entities for which the Contractor is responsible.

§ 8.2.8 The Architect may direct acceleration of the Work so that it may be performed in advance of the schedules, time requirements and Project requirements described in Section 8.2. If so directed, Contractor shall increase its staff and/or work overtime. Contractor will not be entitled to additional compensation for work performed outside of designated working hours, except as approved by Owner in writing in advance. Provided that Contractor is not in default under the Contract, is meeting the Project Schedule, and Owner has issued the aforesaid authorization, there shall be added to the Contract Sum as actual out-of-pocket amount equal to:

.1 Additional premiums on wages actually paid, at rates that have been accepted by Architect;

.2 Taxes imposed by law on such additional wages; and

.3 Premiums for worker's compensation and liability insurance if required to be paid on such additional wages.

Written authorization for overtime work that exceeds $500.00 for which Contractor intends to charge the Owner in any one week shall be invalid unless confirmed in writing by the Owner, it being understood that Owner's Site Representative shall not have authority to authorize such overtime which exceeds $500.00 in any one week.

§ 8.2.9 In no case shall the Contractor delay the progress of the Work or any part thereof on account of changes in the Work or disputes caused by proposed or ordered changes in the Work or any disputes or disagreements as to the equitable value of such changes.

§ 8.2.10 Contractor and Contractor's Surety shall be strictly accountable for completion of the Work in accordance with the Project Schedule as a condition to satisfactory contractual performance.

§ 8.2.11 The Contractor shall proceed expeditiously with adequate forces and shall achieve Substantial Completion within the time set in the Project Schedule.

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~~**§ 8.3.1** If the Contractor is delayed at any time in the commencement or progress of the Work by (1) an act or neglect of the Owner, Architect, Construction Manager, or an employee of any of them, or of the Owner's own forces, Separate Contractors, or other Contractors; (2) by changes ordered in the Work; (3) by labor disputes, fire, unusual delay in deliveries, unavoidable casualties, adverse weather conditions documented in accordance with Section 15.1.6.2, or other causes beyond the Contractor's control; (4) by delay authorized by the Owner pending mediation and binding dispute resolution; or (5) by other causes that the Contractor asserts and the Architect, based on the recommendation of the Construction Manager, determines justify delay, then the Contract Time shall be extended for such reasonable time as the Architect may determine.~~

~~**§ 8.3.2** Claims relating to time shall be made in accordance with applicable provisions of Article 15.~~

~~**§ 8.3.3** This Section 8.3 does not preclude recovery of damages for delay by either party under other provisions of the Contract Documents.~~

§ 8.3.1 Should Contractor be obstructed or delayed in the commencement, prosecution or completion of the Work, without fault on its part, by reason of failure to act, direction, order, neglect, delay or default of the Owner or the Architect; by changes in the Work; fire, lightning, earthquake, enemy action, act of God or similar catastrophe; by Government restrictions with respect to materials or labor, or by an industry-wide strike beyond Contractor's reasonable control, then Contractor shall be entitled to an extension of time lost by reason of any and all causes aforesaid, but no claim for extension of time on account of delay shall be allowed unless a claim in writing therefore is presented to Architect with reasonable diligence but in any event not later than fifteen (15) days after the commencement of such claimed delay. Except for the causes specifically listed above in this Section, no other cause or causes of delays shall give rise to an extension of time to perform the Work. The granting of an extension of time is conditioned upon Contractor's timely submission of the aforesaid written notice. Except to the extent, if any, expressly prohibited by law, Contractor expressly agrees not to make, and hereby waives, any claim for damages, including those resulting from increased labor or material cost, on account of any delay, obstruction or hindrance for any cause whatsoever, whether or not foreseeable and whether or not anticipated including but not limited to the causes set forth in this Section, and agrees that the sole right and remedy therefore shall be an extension of time not to exceed the duration of the time lost, provided the Contractor has met the pre-condition of a notice of claim to the Architect as set forth in this Section.

§ 8.3.2 If Contractor claims an increase in the Contract Sum or an extension in the completion time required by reason of a change in the Work, Contractor shall give Architect written notice within fifteen (15) days after Contractor's knowledge of the occurrence of the matter giving rise to such claim. This notice shall be given by Contractor before proceeding to execute the changed Work, except in an emergency endangering life or property in which case Contractor shall proceed in accordance with Article 10. No such claim will be valid unless notice is given as required in this Section. Contractor shall proceed to execute the Work, even though the increase or time extension has not been agreed upon.

§ 8.3.2.1 Extension of time, if requested by the Contractor, shall only be considered after the Contractor has made reasonable effort to recover the lost time.

§ 8.3.2.2 An extension, or extensions, of time may be granted subject to the provisions of this article, but only after written application therefore by the Contractor.

§ 8.3.2.3 An extension of time shall be only for the number of days of delay that the Architect may determine to be due solely to the causes set forth in the application for extension of time. The Contractor shall not be entitled to receive a separate extension of time for each one of several causes of delay operating concurrently; but, if at all, only the actual period of delay as determined by the Architect.

§ 8.3.3 Contractor shall not be allowed an extension of time unless Contractor has established to the satisfaction of the Owner and Architect that the delay claimed by Contractor is to a portion of the Work on the critical path of the Work schedule.

§ 8.3.4 No monetary recovery may be obtained by Contractor for delay. Time extensions for delay are limited to the specific causes set forth in Section 8.3.1 and then, only upon compliance with the notice and proof requirements of Section 8.3.1 and 8.3.2.

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§ 8.3.5 Contractor waives any claim against Owner, Architect, or Construction Manager for the consequences of any delay resulting from directions given or not given by Architect or Construction Manager including scheduling and coordination of the Work or resulting from Architect's preparation of Drawings and Specifications or review of Shop Drawings.

§ 8.3.6 When the Contract Time has been extended, as provided under this Section 8.3, such extension of time shall not be considered as justification for extra compensation to the Contractor for administrative costs or other similar reasons.

§ 8.3.7 The intent of the Contracts is for the Work to follow a logical sequence; however, the Contractor may be required by Architect to temporarily omit or leave out any section of Work, or perform Work out of sequence. All such out-of-sequence Work and come back time to these areas shall be performed at no additional cost to the Owner.

§ 9.1 ~~Contract Sum~~Contract Sum
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§ 9.1.2 If unit prices are stated in the Contract Documents or subsequently agreed upon, and if quantities originally contemplated are ~~materially~~ changed so that application of such unit prices to the actual quantities causes substantial inequity to the ~~Owner or Contractor,~~ Owner, the applicable unit prices shall be equitably ~~adjusted.~~adjusted as set forth in Section 7.1.4.3.

...

Where the Contract is based on a stipulated sum or Guaranteed Maximum Price, the Contractor shall submit a schedule of values to the Construction Manager, at least sixty (60) days before the first Application for Payment, allocating the entire Contract Sum to the various portions of the Work. The schedule of values shall be prepared in the form, and supported by the data to substantiate its accuracy, required by the Construction Manager and the Architect. This schedule, unless objected to by the Construction Manager or Architect, shall be used as a basis for reviewing the Contractor's Applications for Payment. The Construction Manager shall forward to the Architect the Contractor's schedule of values. Any changes to the schedule of values shall be submitted to the Construction Manager and supported by such data to substantiate its accuracy as the Construction Manager and the Architect may require, and ~~unless objected to~~ upon written approval by the Construction Manager or the Architect, shall be used as a basis for reviewing the Contractor's subsequent Applications for Payment.

...

§ 9.3.1 At least fifteen days before the date established for each progress payment, the Contractor shall submit to the Construction Manager an itemized Application for Payment prepared in accordance with the schedule of values, if required under Section 9.2, for completed portions of the Work. The application shall be notarized, if required, and supported by all data substantiating the Contractor's right to payment that the Owner, Construction Manager or Architect require, such as copies of requisitions, ~~and~~ releases of waivers of lien from Subcontractors and suppliers, certified payroll information in accordance with NYS law, and shall reflect retainage if provided for in the Contract Documents.
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§ 9.3.1.3 Until Substantial Completion, the Owner shall pay ninety-five percent (95%) of the amount due to the Contractor on account of progress payments and withhold an amount necessary to satisfy any claims, liens, or judgements against the Contractor which have not been resolved, settled, or discharged.

§ 9.3.1.4 The Contractor shall supply with each of its applications for payment any information reasonably requested by the Architect, Owner, or Construction Manager, including but not limited to such as lien waivers for work performed to date by subcontractors and suppliers, and certified payroll information.

§ 9.3.1.5 When the work or major portions thereof as contemplated by the terms of the Contract are substantially complete, the Contractor shall submit to the Construction Manager and Architect a requisition for payment of the remaining amount of the Contract balance for that major portion of the Work. Upon receipt of such requisition, the

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Owner shall approve and promptly pay the remaining amount of the Contract less two times the value of any remaining items to be completed, including close-out documentation/items and work, and an amount necessary to satisfy any claims, liens or judgments against the Contractor, which have not been suitably discharged, as determined by the Architect in conjunction with the Construction Manager. Any claims, liens or judgments referred to in this clause shall pertain to the Project and shall be filed in accordance with the terms of the Contract, and applicable laws.

§ 9.3.3 The Contractor warrants that title to all Work covered by an Application for Payment will pass to the Owner free and clear of all liens, claims, security interests or encumbrances in favor of the Contractor, Subcontractors, material suppliers, or other persons or entities making a claim by reason of having provided labor, materials and equipment relating to the Work, no later than the time of payment. The Contractor further warrants that upon submittal of an Application for ~~Payment~~ Payment, all Work for which Certificates for Payment have been previously issued and payments received from the Owner ~~shall, to the best of the Contractor's knowledge, information, and belief, be free and clear of~~ shall be free and clear of all liens, claims, security interests, or encumbrances, in favor of the Contractor, Subcontractors, suppliers, or other persons or entities ~~that~~ making a claim by reason of having provided labor, materials and equipment relating to the Work.

§ 9.3.4 The Contractor further expressly undertakes to defend the Owner, at the Contractor's sole expense, against any actions, lawsuits or proceedings brought against Owner as a result of liens filed against the Work, the site of any of the Work, the project site and any improvements thereon, payments due the Contractor or any portion of the property of the Owner, including but not limited to the public fund in connection with the Work (referred to collectively as liens in Section 9.3.3). The Contractor hereby agrees to indemnify and hold Owner harmless against any such liens or claims of lien and agrees to pay any judgment or lien resulting from any such actions, lawsuits or proceedings and reimburse Owner for all legal fees and costs incurred by Owner in connection with any such actual or threatened action, lawsuit or proceeding.

§ 9.3.5 The Owner shall release any payments withheld due to a lien or a claim of lien if the Contractor obtains security acceptable to the Owner or a lien bond which is: (1) issued by a surety acceptable to the Owner, (2) in form and substance satisfactory to the Owner, and (3) in an amount not less than One Hundred Ten percent (110%) of such lien claim. By posting a lien bond or other acceptable security, however, the Contractor shall not be relieved of any responsibilities or obligations under this Section 9.3, including, without limitation, the duty to defend and indemnify the Owner. The cost of any premiums incurred in connection with such bonds and security shall be the responsibility of the Contractor and shall not be part of, or cause any adjustment to, the Contract Sum.

§ 9.3.6 The Contractor agrees to waive any right which it may have to assert a mechanic's or other lien against the Project site and any improvements thereon or the public fund created in connection with the Project, including, without limit, the Work itself. Furthermore, the Contractor will cause a similar provision, waiving any right to a mechanic's or other lien against the property, to be included in all of its subcontracts, any subcontracts and all contracts with material suppliers. Upon execution of the Agreement, the Contractor shall also execute the waiver of lien attached to the Agreement and made a part thereof as an Exhibit.

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.6 reasonable evidence that the Work will not be completed within the Contract Time, and that the unpaid balance would not be adequate to cover actual or liquidated damages for the anticipated delay; ~~or~~

.7 repeated failure to carry out the Work in accordance with the Contract ~~Documents.~~Documents; or

.8 failure to comply with applicable federal, state or local law or regulations, including but not limited to laws requiring the delivery of certified payrolls to the Owner.

...

§ 9.5.4 If the Architect or Construction Manager withholds certification for payment under Section 9.5.1, the Owner may, at its sole option, issue joint checks to the Contractor and to any Subcontractor or supplier to whom the Contractor failed to make ~~payment for Work properly performed or material or equipment suitably delivered.~~ payment. If the Owner makes payments by joint check, the Owner shall notify the Architect and the Construction Manager, and both will reflect such payment on the next Certificate for Payment. Payments made by the Owner to any Subcontractor of the Contractor under this Article 9 shall be deemed to be payments made to the Contractor for the purposes of this Contract.

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§ 9.5.5 Notwithstanding anything above to the contrary, the Owner has the right to withhold payment to protect itself against damages incurred or which may be incurred as the result of the Contractor's breach of Contract or negligence, including, but not limited to, the items set forth in Section 9.5.1.

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§ 9.6.4 The Owner has the right to request written evidence from the Contractor that the Contractor has properly paid Subcontractors and suppliers amounts paid by the Owner to the Contractor for subcontracted Work. If the Contractor fails to furnish such evidence within seven days, the Owner shall have the right to contact Subcontractors and suppliers to ascertain whether they have been properly ~~paid.~~ paid and charge any costs or expenses, including but not limited to attorneys' fees and disbursements, incurred by the Owner as a result of the Contractor's failure to furnish such evidence. Neither the Owner, Construction Manager nor Architect shall have an obligation to pay, or to see to the payment of money to, a Subcontractor or supplier, except as ~~may otherwise be~~ required by law.

...

§ 9.6.7 Unless the Contractor provides the Owner with a payment bond in the full penal sum of the Contract Sum, payments received by the Contractor for Work properly performed by Subcontractors or provided by suppliers shall be held by the Contractor for those Subcontractors or suppliers who performed Work or ~~furnished~~ Furnished materials, or both, under contract with the Contractor for which payment was made by the Owner. Nothing contained ~~herein~~ Herein shall require money to be placed in a separate account and not commingled with money of the Contractor, create any fiduciary liability or tort liability on the part of the Contractor for breach of trust, or entitle any person or entity to an award of punitive damages against the Contractor for breach of the requirements of this provision.

...

If the Construction Manager and Architect do not issue a Certificate for Payment or a Project Certificate for Payment, through no fault of the Contractor, within fourteen days after the Construction Manager's receipt of the Contractor's Application for Payment, or if the Owner does not pay the Contractor within seven days after the date established in the Contract Documents, the amount certified by the Construction Manager and Architect or awarded by binding dispute resolution, then the Contractor may, upon seven additional days' written notice to the Owner, Construction Manager and Architect, stop the Work until payment of the amount owing has been received. The Contract Time shall be extended ~~appropriately~~ appropriately, and the Contract Sum shall be increased by the amount of the Contractor's reasonable costs of shutdown, delay and start-up, plus interest as provided for in the Contract Documents. This Section 9.7 shall not apply to the extent that the Contractor owes the Owner any amount pursuant to the indemnification or other provisions of the Contract Documents, or the Owner is required to incur any cost or expense to purchase additional insurance or pay premiums for the Contractor's insurance as a result of a failure of the Contractor to obtain or maintain insurance meeting the requirements set forth in the Contract Documents.

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§ 9.8.1 ~~Substantial Completion is the stage in the progress of the Work when the Work or designated portion thereof is~~ The Date of Substantial Completion of the Project or a designated portion thereof is the date when construction is sufficiently complete in accordance with the ~~Contract Documents~~ Drawings and Specifications so the Owner can occupy or utilize ~~the Work for its intended use.~~ the entire Project (or such portion thereof as Owner earlier elects to occupy or utilize) for the uses for which it is intended. Substantial Completion shall not be deemed to exist until the Owner receives a Certificate of Occupancy for the Project (or such portion as elected by Owner) if such Certificate of Occupancy is required, and any other permits, approvals, licenses and any other documents from governmental authorities having jurisdiction therefore necessary for the beneficial occupancy of the project and the Contractor, Architect and Owner have agreed upon a schedule to provide the Owner with all as built drawings, operating manuals and warranties. Warranties called for by the Agreement or by the Drawings and Specifications shall commence on the date of Substantial Completion of the Project or designated portion thereof, or any later date that the parties agree. This date shall be established by a Certificate of Substantial Completion signed by the Owner, Architect and Contractor and shall state their respective responsibilities for security, maintenance, heat utilities, damage to the Work and insurance. This Certificate shall also list the items to be completed or corrected together with a price for each item and a time for their completion and correction.

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§ 9.8.2 When the Contractor considers that the Work, or a portion thereof which the Owner agrees to accept separately, is substantially complete, the Contractor shall notify the Construction Manager, and the Contractor and Construction Manager shall jointly prepare and submit to the Architect a comprehensive written list of items to be completed or corrected which shall identify all non-conforming, defective and incomplete Work and establish the date of commencement of warranties in connection with any such Work prior to final payment. Failure to include an item on such list does not alter the responsibility of the Contractor to complete all Work in accordance with the Contract Documents.

...

- **§ 9.8.3.1** Per Owner/architect contract, the Architect will perform one substantial completion inspection and one final inspection. All other required inspections are additional services and if the fault of the contractor, they will be responsible for additional amounts owed to the architect.

§ 9.8.5 The Certificate of Substantial Completion shall be submitted to the Owner and Contractor for their written acceptance of responsibilities assigned to them in ~~the Certificate. Upon such acceptance, and consent of surety if any, the Owner shall make payment of retainage applying to the Work or designated portion thereof. Such payment shall be adjusted for Work that is incomplete or not in accordance with the requirements of the Contract Documents.~~such Certificate. Upon such acceptance, and upon the Owner's receipt of the consent of surety with respect to any bond furnished by the Contractor pursuant to the Agreement, the Owner shall promptly pay that portion of the Contract Sum not yet paid less an amount equal to two (2) times the value of any items of Work remaining to be completed and the amount necessary to satisfy any claims, liens, or judgments against the Contractor that have not been discharged.
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§ 9.9.3 Unless otherwise agreed upon, partial occupancy or use of a portion or portions of the Work shall not constitute acceptance of Work not complying with the requirements of the Contract ~~Documents.~~Documents and shall not constitute substantial completion.

...

§ 9.10.2 Neither final payment nor any remaining retained percentage shall become due until the Contractor submits to the Architect through the Construction Manager (1) an affidavit that payrolls, bills for materials and equipment, and other indebtedness connected with the Work for which the Owner or the Owner's property might be responsible or encumbered (less amounts withheld by Owner) have been paid or otherwise satisfied, (2) a certificate evidencing that insurance required by the Contract Documents to remain in force after final payment is currently in effect, (3) a written statement that the Contractor knows of no reason that the insurance will not be renewable to cover the period required by the Contract Documents, (4) consent of surety, if any, to final payment (5) documentation of any special warranties, such as manufacturers' warranties or specific Subcontractor warranties, and (6), ~~if required by the Owner,~~ other data establishing payment or satisfaction of obligations, such as receipts and releases and waivers of liens, claims, security interests, or encumbrances arising out of the Contract, ~~to the extent and in such form as may be designated by the~~ including but not limited to: AIA G706-1994, Contractor's Affidavit of Payment of Debts and Claims; AIA G706A-1994, Contractor's Affidavit of Release of Liens; AIA G707-1994, Consent of Surety to Final Payment; AIA Document G904-2022, Unconditional Waiver and Release on Final Payment; AIA Document G907-2022, Sworn Construction Statement; and additional lien waivers and releases from the Contractor and all subcontractors and materials suppliers as requested by Owner. If a Subcontractor refuses to furnish a release or waiver required by the Owner, the Contractor may furnish a bond satisfactory to the Owner to indemnify the Owner against such lien, claim, security interest, or encumbrance. If a lien, claim, security interest, or encumbrance remains unsatisfied after payments are made, the Contractor shall refund to the Owner all money that the Owner may be compelled to pay in discharging the lien, claim, security interest, or encumbrance, including all costs and reasonable attorneys' fees.

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§ 9.10.3 If, after Substantial Completion of the Work, final completion thereof is materially delayed through no fault of the Contractor or the Contractor's Subcontractors or Sub-subcontractors, or any other person for whom the Contractor shall be responsible, or by issuance of Change Orders affecting final completion, and the Construction Manager and Architect so confirm, the Owner shall, upon application by the Contractor and certification by the Construction Manager and Architect, and without terminating the Contract, make payment of the balance due for that portion of the Work fully completed, corrected, and accepted. If the remaining balance for Work not fully completed or corrected is less than retainage stipulated in the Contract Documents, and if bonds have been furnished, the written consent of the surety to payment of the balance due for that portion of the Work fully completed and accepted shall be submitted by the Contractor to the Architect through the Construction Manager prior to certification of such payment. Such payment shall be made under terms and conditions governing final payment, except that it shall not constitute a waiver of Claims.

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.4 audits performed by the ~~Owner, if permitted by the Contract Documents,~~ Owner after final payment.

...

§ 9.10.6 In the event the Contractor does not achieve final completion within thirty (30) days after the date of substantial completion, allowing for any approved extensions of the contract time, Contractor shall not be entitled to any further payment and Contractor hereby agrees that such failure to complete the work within the time set forth above shall constitute a waiver of all claims by the Contractor to any money that may be due. This provision shall not operate as a waiver by the Owner of any claims or remedies of any nature against the Contractor arising out of the Contract.

§ 9.11 Retainage

§ 9.11.1 Applications for Payment shall include a retainage amount of not less than five percent (5%) of the value of the completed work. Reduction of retainage shall only be approved upon completion of the Work, consent of the Contractor's surety to release of retainage, and when authorized by the Owner in writing.

...

.2 the Work and materials and equipment to be incorporated therein, whether in storage on or off the site, under care, custody, or control of the Contractor, ~~a Subcontractor, or a Sub-subcontractor;~~the Contractor's Subcontractors or Sub-subcontractors, when appropriate using coverings and other protective measures sufficient to insure the integrity and security of the Work and such materials and equipment;

...

§ 10.2.2 The Contractor shall comply with, and give notices required by applicable laws, statutes, ordinances, codes, rules and regulations, and lawful orders of public authorities, bearing on safety of persons or property or their protection from damage, injury, or ~~loss.~~loss, including but not limited to all infectious disease exposure precautions. The Contractor represents and warrants to the Owner that its services and compensation contemplate compliance with all of the Owner's applicable policies and procedures and all current and reasonably foreseeable federal, state, and local orders, regulations, and guidance related to limiting the spread of the COVID-19 virus, including but not limited to regulations and guidance from the NYS Education Department and the NYS Department of Health. Accordingly, the Contractor hereby waives any claim for an increase in compensation or a change to the Substantial Completion date due to said compliance.

§ 10.2.2.1 The Contractor acknowledges that certain applicable laws, including, but not limited to, Sections 240 and 241 of New York State Labor Law, may impose liability on the Owner for injuries to persons employed by the Contractor or by its Subcontractors or Sub-subcontractors. As between the Owner and the Contractor (or any of the Contractor's Subcontractors or Sub-subcontractors or any persons for which any of them shall be responsible), the Contractor shall be solely responsible for compliance with all such laws to the extent they pertain to the safety or protection of persons on the Project site or performing the Work. Any claim, charge, penalty or cause of action arising out of or on account of any such law shall be subject to Section 3.18.

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§ 10.2.5 The Contractor shall promptly remedy damage and loss (other than damage or loss insured under property insurance required by the Contract Documents) to property referred to in Sections 10.2.1.2, 10.2.1.3 and 10.2.1.4 caused in whole or in part by the Contractor, a Subcontractor, a Sub-subcontractor, or anyone directly or indirectly employed by any of them, or by anyone for whose acts they may be liable and for which the Contractor is responsible under Sections 10.2.1.2, 10.2.1.3 and 10.2.1.4. The Contractor may make a Claim for the cost to remedy the damage or loss to the extent such damage or loss is attributable to acts or omissions of the Owner, Construction Manager or Architect or anyone directly or indirectly employed by any of them, or by anyone for whose acts any of them may be liable, and not attributable to the fault or negligence of the Contractor. The foregoing obligations of the Contractor are in addition to the Contractor's obligations under Section 3.18. The Contractor shall also be responsible, at the Contractor's sole cost and expense, for all measures necessary to protect any property adjacent to the Project and improvements therein. Any damage to such property or improvements shall be promptly replaced by the Contractor.

...

If ~~either party~~ the Contractor suffers injury or damage to person or property because of an act or omission of the ~~other party, or of others for whose acts such party is legally responsible,~~ Owner, written notice of the injury or damage, whether or not insured, shall be given to the ~~other party~~ Owner within a reasonable time not exceeding ~~21~~ seven (7) calendar days after discovery. The notice shall provide sufficient detail to enable the ~~other party to investigate the matter.~~Owner to investigate the matter.

§ 10.2.9 The Contractor shall promptly report in writing to the Owner, Architect, and Construction Manager, all accidents arising out of or in connection with the Work which cause death, personal injury, or property damage, giving full details and statements of any witnesses. In addition, if death, serious personal injuries, or serious property damages are caused, the accident shall be reported immediately by telephone or messenger to the Owner and the Architect.

§ 10.2.10 The Contractor shall be solely responsible for the conditions which develop during construction and in the event any structure is dislocated, over strained, or damaged so as to affect is usefulness, the Contractor shall be solely responsible. The Contractor shall take whatever steps necessary to strengthen, relocate or rebuild the structure to meet requirements.

§ 10.2.11 The Contractor is responsible for restoration and/or repair of utilities, private property, buildings, pavement, walkways, roads, etc. damaged by its activities, or by its Subcontractors or Sub-subcontractors under this Agreement.
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§ 10.3.1 The Contractor is responsible for compliance with any requirements included in the Contract Documents regarding hazardous materials or substances. If the Contractor encounters a hazardous material or substance not addressed in the Contract Documents and if reasonable precautions will be inadequate to prevent foreseeable bodily injury or death to persons resulting from a material or substance, including but not limited to asbestos or polychlorinated biphenyl (PCB), encountered on the site by the Contractor, the Contractor shall, upon recognizing the condition, immediately stop Work in the affected area and ~~notify~~ report the condition to the Owner, Construction Manager and Architect ~~of the condition.~~in writing. The Contractor shall take all reasonable precautions and measures to prevent any further contamination of the Project site or the Work by hazardous materials or substances it encounters and to prevent the further spread or disturbance of such materials or substances.

§ 10.3.2 Upon receipt of the Contractor's written notice, the Owner shall obtain the services of a licensed laboratory to verify the presence or absence of the material or substance reported by the Contractor and, in the event such material or substance is found to be present, to cause it to be rendered harmless. Unless otherwise required by the Contract Documents, the Owner shall furnish in writing to the Contractor, Construction Manager and Architect the names and qualifications of persons or entities who are to perform tests verifying the presence or absence of the material or substance or who are to perform the task of removal or safe containment of the material or substance. The Contractor, the Construction Manager and the Architect will promptly reply to the Owner in writing stating whether or not any of them has reasonable objection to the persons or entities proposed by the Owner. If the Contractor, Construction Manager or Architect has an objection to a person or entity proposed by the Owner, the Owner shall propose another to whom the Contractor, the Construction Manager and the Architect have no reasonable objection. When the material or substance has been rendered harmless, Work in the affected area shall resume upon written agreement of the Owner and Contractor.

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By Change Order, the Contract Time shall be extended ~~appropriately~~ appropriately, and the Contract Sum shall be increased by the amount of the Contractor's reasonable additional costs of shutdown, delay, and start-up.

§ 10.3.3 To the fullest extent permitted by law, the Owner shall indemnify and hold harmless the Contractor, Subcontractors, Construction Manager, Architect, their consultants, and agents and employees of any of them from and against claims, damages, losses, and expenses, including but not limited to attorneys' fees, arising out of or resulting from performance of the Work in the affected area if in fact the material or substance presents the risk of bodily injury or death as described in Section 10.3.1 and has not been rendered harmless, provided that such claim, damage, loss, or expense is attributable to bodily injury, sickness, disease or death, or to injury to or destruction of tangible property (other than the Work itself), except to the extent that such damage, loss, or expense is due to the fault or negligence of the party seeking indemnity. Exception is made for the Contractor expressly retained for the removal of lead, asbestos or polychlorinated (PCB) from the site. In this condition, all Contract Specifications and Drawings shall govern the handling of this material.

...

~~**§ 10.3.6** If, without negligence on the part of the Contractor, the Contractor is held liable by a government agency for the cost of remediation of a hazardous material or substance solely by reason of performing Work as required by the Contract Documents, the Owner shall reimburse the Contractor for all cost and expense thereby incurred.~~

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§ 11.1 ~~Contractor's Insurance and Bonds~~**Contractor's Liability Insurance**

§ 11.1.1 The Contractor shall purchase ~~and maintain insurance of the types and limits of liability, containing the endorsements, and subject to the terms and conditions, as described in the Agreement or elsewhere in the Contract Documents. The Contractor shall purchase and maintain the required insurance from an insurance company or insurance companies lawfully authorized to issue insurance in the jurisdiction where the Project is located. The Owner, Construction Manager and Construction Manager's consultants, and the Architect and Architect's consultants, shall be named as additional insureds under the Contractor's commercial general liability policy or as otherwise described in the Contract Documents.~~from and maintain in a company or companies lawfully authorized to do business in the jurisdiction in which the Project is located and one to which the Owner has no reasonable objection, such insurance as will protect the Contractor from claims set forth below which may arise out of or result from the Contractor's operations and completed operations under the Contract and for which the Contractor may be legally liable, whether such operations be by the Contractor or by a Subcontractor or by anyone directly or indirectly employed by any of them, or by anyone for whose acts any of them may be liable:

.1 Claims under workers' compensation, disability benefit and other similar employee benefit acts which are applicable to the Work to be performed;

.2 Claims for damages because of bodily injury, occupational sickness or disease, or death of the Contractor's employees;

.3 Claims for damages because of bodily injury, sickness or disease, or death of any person other than the Contractor's employees;

.4 Claims for damages insured by usual personal injury liability coverage;

.5 Claims for damages, other than to the Work itself, because of injury to or destruction of tangible property, including loss of use resulting therefrom;

.6 Claims for damages because of bodily injury, death of a person or property damage arising out of ownership, maintenance or use of a motor vehicle;

.7 Claims for bodily injury or property damage arising out of completed operations;

.8 Claims involving contractual liability insurance applicable to the Contractor's obligations under Section 3.18;

.9 Where the Contract or Subcontract involves asbestos, the insurance required by Section 11.1 shall specifically include the words asbestos abatement work and shall specify any limitations on completed operation time period and if there is a limitation, it will be at the Owner's discretion to accept or reject the limitation; and

.10 Insurance must remain in effect at least until final payment and at all times thereafter when Contractor may be correcting, removing, or replacing defective Work.

.11 Contractor agrees to indemnify the Owner for all applicable deductibles and self-insurance retentions.

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§ 11.1.2 The ~~Contractor shall provide surety bonds of the types, for such penal sums, and subject to such terms and conditions as required by the Contract Documents. The Contractor shall purchase and maintain the required bonds from a company or companies lawfully authorized to issue surety bonds in the jurisdiction where the Project is located.~~insurance required by Section 11.1.1 shall be written for not less than limits of liability specified in the Contract Documents or required by law, whichever coverage is greater. All liability insurance shall be written on an occurrence basis with the Contractor's insurance as primary and the Owner's policies as excess and noncontributory. Coverages shall be maintained without interruption from the date of commencement of the Work until the date of final payment and termination of any coverage required to be maintained after final payment and, with respect to the Contractor's completed operations coverage, until the expiration of the period for correction of Work or for such other period for maintenance of completed operations coverage as specified in the Contract Documents.

§ 11.1.2.1 If there is a lapse in the Contractor's required insurance through cancellation, expiration, failure to renew, or any other cause, the Contractor shall stop performing Work until it is once again in compliance with this Article. The Contractor shall have no claim against the Owner and shall not be entitled to any adjustment in the Contract Time or the Contract Sum as a result of any resulting delays. At its sole option, the Owner shall be permitted to pay the amount of any premium due for a policy of insurance required to be maintained by the Contractor under the Contract Documents or take such other action as may be necessary to prevent a lapse of coverage under any such policy and deduct the amount paid by the Owner from any amounts to be paid or to become payable to Contractor under the Contract Documents.

§ 11.1.2.2 The Contractor shall include coverage for its Subcontractors in its liability insurance policies or submit evidence that each of its Subcontractors has obtained and is maintaining insurance coverage in the amount and of the types required of the Contractor by this Article before such Subcontractor commences any portion of the Work or enters onto the Project site. The Contractor shall not permit any Subcontractor to enter upon or continue the performance of the Work unless such Subcontractor maintains insurance coverage of the types and in the amounts described intis Article.

§ 11.1.3 ~~Upon the request of any person or entity appearing to be a potential beneficiary of bonds covering payment of obligations arising under the Contract, the Contractor shall promptly furnish a copy of the bonds or shall authorize a copy to be furnished.~~Each certificate of insurance must describe the services to be provided by Contractor, be acceptable to the Owner, and shall be submitted to the Construction Manager for transmittal to the Owner with a copy to the Architect prior to commencement of the Work; and thereafter upon renewal or replacement of each required policy of insurance. The certificates and the insurance policies required by this Section 11.1 shall contain a provision that coverages afforded under the policies will not be canceled or allowed to expire until at least 30 days' prior written notice has been given to the Owner. An additional certificate evidencing continuation of liability coverage, including coverage for completed operations, shall be submitted with the final Application for Payment as required by Section 9.10.2 and thereafter upon renewal or replacement of such coverage until the expiration of the time required by Section 11.1.2. Information concerning reduction of coverage shall be furnished by the Contractor with reasonable promptness. The Contractor shall provide written notification to the Owner of the cancellation or expiration of any insurance required by Section 11.1. The Contractor shall provide such written notice within five (5) business days of the date the Contractor is first aware of the cancellation or expiration or is first aware that the cancellation or expiration is threatened or otherwise may occur, whichever comes first.

§ 11.1.3.1 Along with the submission of certificates of insurance, the Contractor shall include written disclosure of any prior and/or pending claims against the submitted policies. In addition, the Contractor shall immediately disclose to Owner in writing, any subsequent claims against the policies.

§ 11.1.3.2 A fully competed New York Construction Certificate of Liability Insurance Addendum (ACORD 855 NY 2014/05) must be included with the certificates of insurance. For any "Yes" answers on Items G through L on this Form – additional details must be provided in writing.

§ 11.1.4 ~~**Notice of Cancellation or Expiration of Contractor's Required Insurance.** Within three (3) business days of the date the Contractor becomes aware of an impending or actual cancellation or expiration of any insurance required by the Contract Documents, the Contractor shall provide notice directly to the Owner, and separately to the Construction Manager, of such impending or actual cancellation or expiration. Upon receipt of notice from the Contractor, the Owner shall, unless the lapse in coverage arises from an act or omission of the Owner, have the right to~~

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~~stop the Work until the lapse in coverage has been cured by the procurement of replacement coverage by the Contractor. The furnishing of notice by the Contractor shall not relieve the Contractor of any contractual obligation to provide any required coverage.~~Each Contractor shall maintain the following insurance for the duration of this Agreement and shall maintain Products and Completed Operations insurance coverage in effect for a period of two (2) years after Final Completion of the Work to be performed under the Contract Documents.

§ 11.1.4.1 Comprehensive General Liability Insurance naming the Owner, Architect and Construction Manager as an Additional Insured, containing an Additional Insured Endorsement, and a Waiver of Subrogation Endorsement. The additional insured coverage shall be primary and a non-contributory on a follow form basis to any of the Owner's, Architect's and Construction Manager's insurance policies and shall apply to both ongoing and completed operations on a per project and per location basis:

General Aggregate	$2,000,000
Products Completed Operations Aggregate	$2,000,000
Personal and Advertising Injury	$1,000,000
Each Occurrence	$1,000,000
Fire Damage	$300,000
Medical Expense	$10,000

Including Bodily Injury and Property Damage, Damage for Premises/Operations, Products and Completed Operations and coverage provided by the General Liability coverage form CG00010 1/96 in connection with work to be completed by the Contractor and all subcontractors and consultants, with the Owner, Architect and Construction Manager named as an Additional Insured. Coverage must be provided on a per project, per location basis.

All property damage insurance shall include coverage for explosion, collapse, and underground operations.

§ 11.1.4.2 Commercial Automobile Liability Insurance covering owned and rented vehicles operated by the Contractor with policy limits of not less than one million ($1,000,000) combined single limit and aggregate for bodily injury and property damage. Including Bodily Injury and Property Damage for the operation of Any Auto (Symbol 1) used in connection with Work to be completed by the Contractor and all subcontractors and consultants, with the Owner, Architect, and Construction Manager named as Additional Insureds and a Waiver of Subrogation Endorsement.

§ 11.1.4.3 The Umbrella Liability Insurance coverage shall provide additional limits of liability coverage over and above the General Liability and Automobile Liability coverages required by this Agreement on a follow-form basis with the Owner, Architect, and Construction Manager named as Additional Insureds and a Waiver of Subrogation Endorsement. Umbrella Liability Insurance:

Each Occurrence Limit	$5,000,000
Aggregate	$5,000,000

§ 11.1.4.4 Worker's Compensation Insurance covering the obligations of the Contractor in accordance with applicable law at statutory limits and Employer's Liability Insurance with a policy limit of not less than required by applicable law, covering all operations under this Agreement, whether performed by the Contractor, its subcontractors or consultants, containing a Blanket Waiver of Subrogation Endorsement.

§ 11.1.4.5 Owner's and Contractor's Protective Liability Insurance **with the Owner listed as the Named Insured**:

Each Occurrence	$1,000,000
Aggregate	$2,000,000

§ 11.1.4.6 Builder's Risk Insurance, the General Contractor shall provide property damage insurance on a builder's risk "all risk" or equivalent policy form in the amount of the initial contract sum plus the value of subsequent contract modifications and the cost of materials supplied or installed by others, comprising the total value for the entire project at the site on a replacement cost basis without optional deductibles. The form of the policy shall be Completed Value. The policy deductible must be no greater than $5,000 per occurrence.

§ 11.1.4.7 If required by the Contract Documents, Contractor shall provide Contractor's Pollution Liability Coverage

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and Asbestos Abatement Liability Coverage naming the Owner as an Additional Insured, in the amount of $2,000,000 for Each Occurrence, for a period of three (3) years following the acceptance by Owner of a Certificate of Substantial Completion. The Asbestos Abatement Liability Insurance shall specify any limitations on the completed operations time period, subject to the Owner's approval which may be withheld at the Owner's option. The Asbestos Abatement Liability Insurance shall indemnify the Owner and provide the Owner with a defense should there be an occurrence creating potential liability for the Owner. If the Asbestos Abatement Liability Coverage required herein is not available from an insurance carrier licensed to do business in the state of New York, Contractor must notify Owner in writing as soon as practical.

§ 11.1.4.8 The Contractor shall provide to the Owner for each of the insurance coverages required herein one original or one certified copy of the original policy of insurance, including all endorsements, plus one certificate of insurance on ACCORD Form 25S accompanied by AIA Form G715, with a brief description of the project or service. The policies and certificates shall show the Owner, the Architect, and the Construction Manager as an additional insured on the Comprehensive General Liability, Automobile Liability, umbrella or excess policies, and the Owner as the Named Insured on the Owner's Protective Liability Insurance policy. All such insurance shall be written without expense to the Owner by an insurance company authorized to provide insurance in the State of New York with an AM Best rating of A- or better, shall be drawn on standard forms approved by the New York State Insurance Department and shall protect the Contractor, its subcontractors and consultants, and the Owner, the Architect and the Construction Manager from liability for claims for personal injury, death and property damage which may arise from performance under the Contract Documents.

§ 11.1.4.8.1 At the request of the Owner, the issuing insurance company, agents and/or authorized representatives shall set forth in writing that there are no pending claims against the insured and/or that there is ample coverage remaining to cover the insured in the event of a claim.

§ 11.1.4.8.2 At the request of the Owner, the issuing insurance company, agents and/or authorized representatives shall set forth in writing that the insurance: (1) applies to all operations of the Contractor in connection with the Work to be performed under this Agreement; (2) applies on the effective dates stated, whether or not the Agreement between the Contractor and the Owner has been executed; and (3) is written in accordance with the company's regular policies and endorsements.

§ 11.1.4.8.3 Each policy must provide the Owner thirty (30) days advance written notice prior to cancellation, a reduction in coverage, and/or non-renewal of the policy.

§ 11.1.4.8.4 Within three (3) business days of the date the Contractor becomes aware of an impending or actual cancellation or expiration of any insurance required by the Contract Documents, the Contractor shall provide notice directly to the Owner and its bonding company, and separately to the Construction Manager, of such impending or actual cancellation or expiration. Upon receipt of notice from the Contractor, the Owner shall, unless the lapse in coverage arises from an act or omission of the Owner, have the right to stop the Work until the lapse in coverage has been cured by the procurement of replacement coverage by the Contractor. The furnishing of notice by the Contractor shall not relieve the Contractor of any contractual obligation to provide any required coverage.

§ 11.2 ~~Owner's Insurance~~Waiver of Subrogation

§ 11.2.1 The ~~Owner shall purchase and maintain insurance of the types and limits of liability, containing the endorsements, and subject to the terms and conditions, as described in the Agreement or elsewhere in the Contract Documents. The Owner shall purchase and maintain the required insurance from an insurance company or insurance companies lawfully authorized to issue insurance in the jurisdiction where the Project is located.~~Contractor waives all rights against (1) Owner and any of its agents, and employees; (2) the Construction Manager and Construction Manager's consultants; (3) the Architect and Architect's consultants for damages caused by fire, or other causes of loss, to the extent those losses are covered by property insurance required by the Agreement or other property insurance applicable to the Project, except such rights as they have to proceeds of such insurance. The policies of insurance purchased and maintained by each person or entity agreeing to waive claims pursuant to this Section 11.2.1 shall not prohibit this waiver of subrogation. This waiver of subrogation shall be effective as to a person or entity (1) even though that person or entity would otherwise have a duty of indemnification, contractual or otherwise, (2) even though that person or entity did not pay the insurance premium directly or indirectly, or (3) whether or not the person or entity had an insurable interest in the damaged property.

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~~**§ 11.2.2 Failure to Purchase Required Property Insurance.** If the Owner fails to purchase and maintain the required property insurance, with all of the coverages and in the amounts described in the Agreement or elsewhere in the Contract Documents, the Owner shall inform both the Contractor and the Construction Manager, separately and in writing, prior to commencement of the Work. Upon receipt of notice from the Owner, the Contractor may delay commencement of the Work and may obtain insurance that will protect the interests of the Contractor, Subcontractors, and Sub-Subcontractors in the Work. When the failure to provide coverage has been cured or resolved, the Contract Sum and Contract Time shall be equitably adjusted. In the event the Owner fails to procure coverage, the Owner waives all rights against the Contractor, Subcontractors, and Sub-subcontractors to the extent the loss to the Owner would have been covered by the insurance to have been procured by the Owner. The cost of the insurance shall be charged to the Owner by a Change Order. If the Owner does not provide written notice, and the Contractor is damaged by the failure or neglect of the Owner to purchase or maintain the required insurance, the Owner shall reimburse the Contractor for all reasonable costs and damages attributable thereto.~~

~~**§ 11.2.3 Notice of Cancellation or Expiration of Owner's Required Property Insurance.** Within three (3) business days of the date the Owner becomes aware of an impending or actual cancellation or expiration of any property insurance required by the Contract Documents, the Owner shall provide notice directly to the Contractor, and separately to the Construction Manager, of such impending or actual cancellation or expiration. Unless the lapse in coverage arises from an act or omission of the Contractor: (1) the Contractor, upon receipt of notice from the Owner, shall have the right to stop the Work until the lapse in coverage has been cured by the procurement of replacement coverage by either the Owner or the Contractor; (2) the Contract Time and Contract Sum shall be equitably adjusted; and (3) the Owner waives all rights against the Contractor, Subcontractors, and Sub-subcontractors to the extent any loss to the Owner would have been covered by the insurance had it not expired or been cancelled. If the Contractor purchases replacement coverage, the cost of the insurance shall be charged to the Owner by an appropriate Change Order. The furnishing of notice by the Owner shall not relieve the Owner of any contractual obligation to provide required insurance.~~

§ 11.3 ~~Waivers of Subrogation~~Owner's Insurance

§ 11.3.1 The Owner ~~and Contractor waive all rights against (1) each other and any of their subcontractors, sub-subcontractors, agents, and employees, each of the other; (2) the Construction Manager and Construction Manager's consultants; (3) the Architect and Architect's consultants; (4) other Contractors and any of their subcontractors, sub-subcontractors, agents, and employees; and (5) Separate Contractors, if any, and any of their subcontractors, sub-subcontractors, agents, and employees, for damages caused by fire, or other causes of loss, to the extent those losses are covered by property insurance required by the Agreement or other property insurance applicable to the Project, except such rights as they have to proceeds of such insurance. The Owner or Contractor, as appropriate, shall require similar written waivers in favor of the individuals and entities identified above from the Construction Manager, Construction Manager's consultants, Architect, Architect's consultants, other Contractors, Separate Contractors, subcontractors, and sub-subcontractors. The policies of insurance purchased and maintained by each person or entity agreeing to waive claims pursuant to this Section 11.3.1 shall not prohibit this waiver of subrogation. This waiver of subrogation shall be effective as to a person or entity (1) even though that person or entity would otherwise have a duty of indemnification, contractual or otherwise, (2) even though that person or entity did not pay the insurance premium directly or indirectly, or (3) whether or not the person or entity had an insurable interest in the damaged property.~~may purchase and maintain insurance in its discretion.

~~**§ 11.3.2** If during the Project construction period the Owner insures properties, real or personal or both, at or adjacent to the site by property insurance under policies separate from those insuring the Project, or if after final payment property insurance is to be provided on the completed Project through a policy or policies other than those insuring the Project during the construction period, to the extent permissible by such policies, the Owner waives all rights in accordance with the terms of Section 11.3.1 for damages caused by fire or other causes of loss covered by this separate property insurance.~~

§ 11.4 ~~Loss of Use, Business Interruption, and Delay in Completion Insurance~~

~~The Owner, at the Owner's option, may purchase and maintain insurance that will protect the Owner against loss of use of the Owner's property, or the inability to conduct normal operations, due to fire or other causes of loss. The Owner waives all rights of action against the Contractor, Architect, and Construction Manager for loss of use of the Owner's property, due to fire or other hazards however caused.~~

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Performance Bond and Payment Bond

~~§ 11.5 Adjustment and Settlement of Insured Loss~~

~~**§ 11.5.1** A loss insured under the property insurance required by the Agreement shall be adjusted by the Owner as fiduciary and made payable to the Owner as fiduciary for the insureds, as their interests may appear, subject to requirements of any applicable mortgagee clause and of Section 11.5.2. The Owner shall pay the Construction Manager, Architect and Contractor their just shares of insurance proceeds received by the Owner, and by appropriate agreements the Construction Manager, Architect and Contractor shall make payments to their consultants and Subcontractors in similar manner.~~

~~**§ 11.5.2** Prior to settlement of an insured loss, the Owner shall notify the Contractor of the terms of the proposed settlement as well as the proposed allocation of the insurance proceeds. The Contractor shall have 14 days from receipt of notice to object to the proposed settlement or allocation of the proceeds. If the Contractor does not object, the Owner shall settle the loss and the Contractor shall be bound by the settlement and allocation. Upon receipt, the Owner shall deposit the insurance proceeds in a separate account and make the appropriate distributions. Thereafter, if no other agreement is made or the Owner does not terminate the Contract for convenience, the Owner and Contractor shall execute a Change Order for reconstruction of the damaged or destroyed Work in the amount allocated for that purpose. If the Contractor timely objects to either the terms of the proposed settlement or the allocation of the proceeds, the Owner may proceed to settle the insured loss, and any dispute between the Owner and Contractor arising out of the settlement or allocation of the proceeds shall be resolved pursuant to Article 15. Pending resolution of any dispute, the Owner may issue a Construction Change Directive for the reconstruction of the damaged or destroyed Work.~~

§ 11.4.1 The Contractor must furnish two (2) executed Surety bonds, each in the amount equal to one hundred (100%) percent of the Contract Sum.

§ 11.4.1.1 The Performance Bond shall be furnished as security for the faithful performance by the Contractor of all terms and conditions of the Contract Documents.

§ 11.4.1.2 The Payment Bond shall be furnished as security for the claims of laborers and materials suppliers.

§ 11.4.1.3 Both bonds shall be made out to the Owner, prepared on a modified AIA Form A312-2010 and submitted by the Contractor to the Owner within ten (10) days of notification of contract award with all signatures properly acknowledged by a notary and in strict compliance with applicable New York State law.

§ 11.4.1.3.1 The Performance Bond shall contain the following modification in §16:

Surety hereby waives notice of and consents to any addition, alteration, omission, change, extension of time, or other modification of the Construction Contract. Such addition, alteration, omission, change, extension of time, or other modification of the Construction Contract, or forbearance on the part of either the Owner or the Contractor to the other, shall not release the Surety from its obligations hereunder. Surety further agrees that it is obligated under this bond to any successor, grantee, or assignee of the Owner.

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Surety agrees that in the event of a default by the Owner in the performance of the Owner's obligations to the Contractor under the Construction Contract, the Contractor or Surety shall provide written notice of default to the Owner and the Owner shall have thirty (30) days from receipt of such notice within which to cure such default, or such additional reasonable period of time as may be required if the nature of the default is such that it can't be cured within thirty (30) days.

Notwithstanding anything to the contrary contained in the Construction Contract between the Contractor and the Owner or herein, no meeting among Owner, Contractor, and Surety, or any combination thereof, is required as a pre-condition to Owner declaring Contractor in default or prior to Owner terminating the Construction Contract with Contractor. Any such requirements contained herein are waived by the Contractor and the Surety and are unenforceable against the Owner.

This Bond includes performance by the Contractor of any correction and/or warranty obligations contained in the Construction Contract, including such performance after the date of Substantial or Final Completion.

This Bond is given as a statutory bond or as required by the Construction Contract and section 13 applies without exception.

§ 11.4.1.3.2 The Payment Bond shall contain the following modification in §18:

Surety hereby waives notice of and consents to any addition, alteration, omission, change, extension of time, or other modification of the Construction Contract. Such addition, alteration, omission, change, extension of time, or other modification of the Construction Contract, or forbearance on the part of either the Owner or the Contractor to the other, shall not release the Surety from its obligations hereunder. Surety further agrees that it is obligated under this bond to any successor, grantee, or assignee of the Owner.

Surety agrees that in the event of a default by the Owner in the performance of the Owner's obligations to the Contractor under the Construction Contract, the Contractor or Surety shall provide written notice of default to the Owner and the Owner shall have thirty (30) days from receipt of such notice within which to cure such default, or such additional reasonable period of time as may be required if the nature of the default is such that it can't be cured within thirty (30) days.

This Bond is given as a statutory bond or as required by the Construction Contract and section 14 applies without exception.

§ 11.4.1.4 The Surety thereon must be such Surety company or companies as are authorized and licensed to transact business in the State of New York and included on the Department of the Treasury's Listing of Approved Sureties with an underwriting limit of at least $2,000,000 or the amount of the bond, whichever is higher. Each bond must be properly signed with acknowledgment of the signatures. Attorneys-in-fact who sign bonds must file with each bond a certified copy of their power of attorney to sign said bonds. Every bond must display the Surety's Bond Number.

§ 11.4.1.5 All Bonds shall be maintained in full force for a period of twenty-four (24) months after the date of the Contractor's acceptance of final payment as guarantee that the Contractor will make good any faults or defects in the Work arising from improper or defective workmanship or materials which may appear during the period.

§ 11.4.1.6 The Contractor shall keep the surety informed of the progress of the Work, and, where necessary, obtain the surety's consent to, or waiver of: (1) notice of changes in the Work; (2) request for reduction or release of retention; (3) request for final payment; and (4) any other material required by the surety. The Owner shall be notified by the Contractor, in writing, of all communications with the surety. The Owner may, in the owner's sole discretion, inform surety of the progress of the Work and obtain consents as necessary to protect the Owner's rights, interest, privileges and benefits under any bond issued in connection with the Work.

§ 11.4.2 Upon the request of any person or entity appearing to be a potential beneficiary of bonds covering payment of obligations arising under the Contract or performance under the Contract Documents, the Contractor shall promptly furnish a copy of the bonds and hereby authorizes the Owner to furnish a copy of the bonds.

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The Contractor shall promptly correct Work rejected by the Construction Manager or Architect or failing to conform to the requirements of the Contract Documents, discovered before Substantial Completion, and whether or not fabricated, installed or completed. Costs of correcting such rejected Work, including additional testing and inspections, the cost of uncovering and replacement, and compensation for the Construction Manager's and Architect's services and expenses made necessary thereby, shall be at the Contractor's ~~expense.~~expense and may be deducted pursuant to a change directive.

...

§ 12.2.2.1 ~~In addition to the Contractor's obligations under Section 3.5, if, within one year after the date of Substantial Completion of the Work or designated portion thereof, or after the date for commencement of warranties established under Section 9.9.1, or by terms of any applicable special warranty required by the Contract Documents, any of the Work is found to be not in accordance with the requirements of the Contract Documents, the Contractor shall correct it promptly after receipt of notice from the Owner to do so, unless the Owner has previously given the Contractor a written acceptance of such condition. The Owner shall give such notice promptly after discovery of the condition. During the one-year period for correction of Work, if the Owner fails to notify the Contractor and give the Contractor an opportunity to make the correction, the Owner waives the rights to require correction by the Contractor and to make a claim for breach of warranty. If the Contractor fails to correct nonconforming Work within a reasonable time during that period after receipt of notice from the Owner, Construction Manager or Architect, the Owner may correct it in accordance with Section 2.5.~~The Contractor unconditionally warrants the Work and its performance to the Owner. The Contractor shall perform all warranty obligations and responsibilities with respect to the Work. The Contractor, at is sole expense, shall remedy defects due to improper and/or defective workmanship or materials appearing within one (1) year of Final Completion or for such longer period as may be set forth elsewhere in the Contract Documents (the "Correction Period"). Upon Substantial Completion of the Work, the Contractor shall submit to the Owner all written warranties and guaranties from Subcontractors, suppliers, and manufacturers. If a warrant or guaranty delivered to the Owner by a supplier, vendor, or manufacturer shall be available, the Owner will first diligently pursue remedies under such warranty or guaranty before pursuing any remedy against the Contractor pursuant to any such warranty or guaranty, and the Contractor shall fully cooperate with such efforts. The Contractor acknowledges that its obligations to the Owner under this Section are joint and several during the Correction Period with Subcontractors, suppliers, vendors, and manufacturers for all warranties and guaranties supplied with respect to the Work or any portion thereof. Any notice given to the Contractor by the Owner pertaining to any deficiency in the Work covered by a warranty or guaranty described in this Section shall toll the Correction Period until the deficiency has been corrected, and the Correction Period for all corrected Work shall recommence on the date of correction. The obligations of the Contractor pursuant to this Section shall continue notwithstanding the termination of the Contract or of the Contractor for any reason. The rights and remedies of the Owner pursuant to this Section are in addition to and not in lieu of any rights and remedies that may be available to the Owner under the Contract Documents, including but not limited to Section 2.4 of this Agreement, or applicable law. Costs of correcting such rejected Work, including additional testing and inspections, the cost of uncovering and replacement, and compensation for the Construction Manager's and Architect's services and expenses made necessary thereby, shall be at the Contractor's expense and may be deducted pursuant to a change directive.

§ 12.2.2.1.1 Any replacement made under any guarantee required by or included in the Contract Documents, or within one (1) year after the date of substantial completion of the Contract, shall likewise be guaranteed as stipulated above from the date such replacement is accepted by the Owner.

...

~~**§ 12.2.2.3** The one-year period for correction of Work shall not be extended by corrective Work performed by the Contractor pursuant to this Section 12.2.~~

§ 12.2.3.1 Upon request by the Owner and prior to expiration of one year from the date of Substantial Completion, the Construction Manager and the Architect will conduct, and the Contractor shall attend a meeting with the Owner to review the facility operations and performance.

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§ 12.2.4 The Contractor shall bear the cost of correcting destroyed or damaged construction ~~of the Owner, Separate Contractors, or other Contractors,~~ whether completed or partially completed, of the Owner or separate contractors or other Multiple Contractors caused by the Contractor's correction or removal of Work that is not in accordance with the requirements of the Contract Documents. The obligations shall cover any repair and replacement to any part of the Work or other property caused by the defective Work.

§ 12.2.5 Nothing contained in this Section 12.2 shall be construed to establish a period of limitation with respect to other obligations the Contractor has under the Contract Documents. Establishment of the ~~one-year period for correction of Work~~ Correction Period as described in Section ~~12.2.2~~ 12.2.2.1 relates only to the specific obligation of the Contractor to correct the Work, and has no relationship to the time within which the obligation to comply with the Contract Documents may be sought to be enforced, nor to the time within which proceedings may be commenced to establish the Contractor's liability with respect to the Contractor's obligations other than specifically to correct the Work.

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The Contract shall be governed by the law of the place where the Project is located excluding that jurisdiction's choice of law rules. ~~If the parties have selected arbitration as the method of binding dispute resolution, the Federal Arbitration Act shall govern Section 15.4.~~

§ 13.1.2 The Contractor shall at all times observe and comply with all Federal and State Laws, and all Laws, Ordinances and Regulations of the Owner, in any manner affecting the work, and all such orders decreed as exist at present and those which may be enacted later, by bodies or tribunals having jurisdiction or authority over the Work, and the Contractor shall indemnify and save harmless the Owner and all its officers, agents or servants against any claim or liability arising from, or based on, a violation of any such law, ordinances, regulation or order, whether by its employee or agents.

§ 13.1.3 During the performance of this Contract, the Contractor agrees as follows:

1. The Contractor will not discriminate against any employee or applicant for employment because of age, race, creed, color, national origin, sexual orientation, military status, sex, disability, predisposing genetic characteristics, marital status, or domestic violence victim status.
2. If directed to do so by the Owner or the State Commissioner of Human Rights, the Contractor will send to each labor union or representative of workers which with the Contractor has or is bound by a collective bargaining or other agreement or understanding, a notice, to be provided by the State Commissioner of Human Rights, advising such labor union or representative of the Contractor's agreement under clauses (1) through (6) (hereinafter called "non-discrimination clauses"). If the Contractor was directed to do so by the Owner as part of the bid or negation of this Contract, the Contractor shall request such labor union or representative to furnish a written statement that such labor union or representative will not discriminate because of age, race, creed, color, national origin, sexual orientation, military status, sex, disability, predisposing genetic characteristics, or marital status, and that such labor union or representative will cooperate, within the limits of its legal contractual authority, in the implementation of the policy and provisions of these non-discrimination clauses and that it consents and agrees that the recruitment, employment and the terms and conditions of employment under this Contract shall be in accordance with the purposes and provision of these non-discrimination clauses. If such labor union or representative fails or refuses to comply with such a request that it furnish such a statement, the Contractor shall promptly notify the Owner and the State Commissioner of Human Rights of such failure or refusal.
3. If directed to do so by the Owner or the Commissioner of Human Rights, the Contractor will post and keep posted in conspicuous places, available to employees and applicants for employment, notices to be provided by the State Commissioner of Human Rights setting forth the substance of provisions of clauses (1) and (2) and such provision of the State's law against discrimination as the State Commissioner of Human Rights shall determine.
4. The Contractor will state in all solicitations or advertisements for employees placed by or on behalf of the Contractor, that all qualified applicants will be afforded equal employment opportunities without discrimination because of age, race, creed, color, national origin, sexual orientation, military status, sex, disability, predisposing genetic characteristics, marital status, or domestic violence victim status.
5. The Contractor will comply with the provisions of Sections 290-299 of the Executive Law, and with

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the Civil Rights Law, will furnish all information and reports deemed necessary by the State Commissioner of Human Rights under these non-discrimination clauses and such section of the Executive Law, and will permit access to the Contractor's books, records, and accounts by the Owner, the State Commissioner of Human Rights, the Attorney General and the Industrial Commissioner for the purposes of investigation to ascertain compliance with the non-discrimination clauses and such sections of the Executive Law Civil Rights Law.

6. This Contract may be forthwith cancelled, terminated, or suspended, in whole or in part, by the Owner upon the basis of a finding made by the State Commissioner of Human Rights that the Contractor has not complied with the non-discrimination clauses, and that the Contractor may be declared ineligible for future contracts made by or on behalf of the Owner, the State or a public authority or agency of the State, until the Contractor satisfies the State Commissioner of Human Rights that the Contractor has established and is carrying out a program in conformity with the provisions of these non-discrimination clauses. Such findings may be made by the State Commissioner of the Human Rights after conciliation efforts by the Commissioner have failed to achieve compliance with these non-discrimination clauses and after a verified complaint has been filed with the Commissioner, notice thereof has been given to the Contractor to be heard publicly in accordance with the Executive Law. Such sanctions may be imposed and remedies invoked independently of or in addition to sanctions and remedies otherwise provided by law, and

7. The Contractor will include the provisions of clauses .1 through .6 in every subcontract or purchase order in such a manner that such provisions will be binding upon each subcontractor or vendor as to operations to be performed within the State of New York. The Contractor will take action in enforcing such provisions of such subcontract or purchase order as the State Commissioner of Human Rights or the Owner may direct, including sanctions or remedies for non-compliance. If the Contractor becomes involved or is threatened with litigation with a subcontractor or vendor as a result of such directions by the State Commissioner of Human Rights or the Owner, the Contractor shall promptly so notify the Owner and the Attorney General requesting the Attorney General to intervene and protect the interests of the State of New York.

§ 13.1.4 The parties expressly agree that any claim, dispute, or other controversy of any nature arising out of the Contract or performance of the Work shall be commenced and maintained in the New York State Supreme Court in the County where the Project is located.

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§ 13.2.1 The Owner and Contractor respectively bind themselves, their partners, successors, assigns, and legal representatives to covenants, agreements, and obligations contained in the Contract Documents. ~~Except as provided in Section 13.2.2, neither party to the Contract shall~~ The Contractor shall not assign the Contract as a whole without written consent of the ~~other. If either party attempts to make an assignment without such consent, that party shall nevertheless remain legally responsible for all obligations under the Contract.~~Owner. Any assignment or attempted assignment by the Contractor in violation of the provisions of this Section 13.2.1 shall be void and unenforceable and shall be deemed a material breach of this Agreement.

~~**§ 13.2.2** The Owner may, without consent of the Contractor, assign the Contract to a lender providing construction financing for the Project, if the lender assumes the Owner's rights and obligations under the Contract Documents. The Contractor shall execute all consents reasonably required to facilitate the assignment.~~

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§ 13.4.1 Tests, inspections, and approvals of portions of the Work shall be made as required by the Contract Documents and by applicable laws, statutes, ordinances, codes, rules, and regulations or lawful orders of public authorities. Unless otherwise provided, the Contractor shall make arrangements for such tests, inspections, and approvals with an independent testing laboratory or entity acceptable to the Owner, ~~or with the appropriate public authority,~~ and shall bear all related costs of tests, inspections, and approvals. The Contractor shall give the Construction Manager and Architect timely notice of when and where tests and inspections are to be made so that the Construction Manager and Architect may be present for such procedures. The Owner shall bear costs of tests, inspections, or approvals that do not become requirements until after bids are received or negotiations concluded. The Owner shall directly arrange and pay for ~~tests, inspections, or approvals~~ tests or inspections where building codes or applicable laws or regulations so require.

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...

Payments due and unpaid under the Contract Documents shall bear interest from the date payment is due ~~at the rate the parties agree upon in writing or, in the absence thereof, at the legal rate prevailing from time to time at the place where the Project is located.~~in accordance with New York State Law.

§ 13.6 Any material to be furnished shall be subject to inspections and tests in the shop and field by the Architect. Shop inspection shall not relieve the Contractor of the responsibility to furnish satisfactory materials and the right is reserved to reject any material at any time before final acceptance of the work, when in the opinion of the Architect the materials and workmanship do not conform to the Specification requirements.

§ 13.7 General Provisions

§ 13.7.1 Any specific requirement in this Contract that the responsibilities or obligations of the Contractor also apply to a Subcontractor is added for emphasis and are also hereby deemed to include a Subcontractor of any tier. The omission of a reference to a Subcontractor in connection with any of the Contractor's responsibilities or obligations shall not be construed to diminish, abrogate, or limit any responsibilities or obligations of a Subcontractor of any tier under the Contract Documents or the applicable subcontract.

...

§ 14.1.1 The Contractor may terminate the Contract if the Work is stopped for a period of ~~30~~ 60 consecutive days through no act or fault of the Contractor, a Subcontractor, a Sub-subcontractor, their agents or employees, or any other persons or entities performing portions of the Work, for any of the following reasons:

.1 Issuance of an order of a court or other public authority having jurisdiction that requires all Work to be stopped; or

.2 An act of government, such as a declaration of national emergency, that requires all Work to be stopped;

~~**.3** Because the Construction Manager has not certified or the Architect has not issued a Certificate for Payment and has not notified the Contractor of the reason for withholding certification as provided in Section 9.4, or because the Owner has not made payment on a Certificate for Payment within the time stated in the Contract Documents; or~~

~~**.4** The Owner has failed to furnish to the Contractor reasonable evidence as required by Section 2.2.~~

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§ 14.1.3 If one of the reasons described in Section 14.1.1 or 14.1.2 exists, the Contractor may, upon seven days' written notice to the Owner, Construction Manager and Architect, and upon the failure of the Owner to cure the alleged grounds for termination within that seven day period, terminate the Contract and recover from the Owner payment for Work ~~executed, as well as reasonable overhead and profit on Work not executed, and costs incurred by reason of such~~ properly and acceptably executed prior to termination.

§ 14.1.4 If the Work is stopped for a period of 60 consecutive days through no act or fault of the Contractor, a Subcontractor, a Sub-subcontractor, or their agents or employees, or any other persons performing portions of the Work because the Owner has repeatedly failed to fulfill the Owner's obligations under the Contract Documents with respect to matters important to the progress of the Work, the Contractor may, upon seven additional days' written notice to the Owner, Construction Manager and Architect, terminate the Contract and recover from the Owner as provided in Section 14.1.3.

...

§ 14.2.1 ~~The Owner may terminate the Contract if the Contractor~~

~~**.1** repeatedly refuses or fails to supply enough properly skilled workers or proper materials;~~

~~**.2** fails to make payment to Subcontractors or suppliers in accordance with the respective agreements between the Contractor and the Subcontractors or suppliers;~~

~~**.3** repeatedly disregards applicable laws, statutes, ordinances, codes, rules and regulations, or lawful orders of a public authority; or~~

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.4 otherwise is guilty of substantial breach of a provision of the Contract Documents.If, in the opinion of the Owner, the Contractor at any time refuses or fails to provide sufficient skilled workers or materials, timely prosecute the Work, is substantially behind schedule, fails to furnish the Owner with satisfactory assurance evidencing the Contractor's ability to complete the Work in compliance with the requirements of the Contract Documents, make payment to Subcontractors as required by the Contract, by the Contractor's contracts with such third parties, or by applicable law, or comply with any provisions of the Contract Documents, or makes any general assignment for the benefit of creditors, becomes insolvent, makes any filing in any proceeding in bankruptcy, has any involuntary proceeding in bankruptcy commenced for it, or disregards applicable laws, rules, and regulations or Project-specific instructions of the Owner, the Owner may, without prejudice to any other rights or remedies it may have: (a) take reasonable steps to remedy the condition, in which case the Contractor shall be liable to the Owner for the direct and indirect costs. The costs incurred by the Owner in connection with retaining a replacement contractor (on a contingency basis or otherwise) are in addition to any other costs incurred by Owner to remedy the condition (including, without limitation, reasonable legal fees and disbursements) incurred by the Owner in taking such steps; or (b) terminate the Contract. In either event, the Owner may enter the Project site, take possession of all Work and all materials and equipment of the Contractor, require the Contractor to assign to the Owner any or all of its subcontracts and contracts or purchase orders pertaining to the Project or the Work, and complete the Work by itself, through others, or by whatever method or methods the Owner may deem appropriate. In the case of termination for default, the Contractor shall not be entitled to receive any further payment until the Work is fully completed and accepted by the Owner. Any payment then made shall be limited to Work fully performed by the Contractor in accordance with the Contract Documents up to the date of termination, less any charges or other amounts owed by the Contractor to the Owner. If the amount paid by the Owner for completing the Work exceeds the unpaid balance of the Contract Sum, then the Contractor shall pay the Owner the difference within five (5) business days following demand therefor by the Owner. The Contractor shall, in addition, pay all of the Owner's costs of collection, including, without limitation, reasonable legal fees and disbursements. The Contractor's obligations hereunder shall survive the termination of the Contract for any reason.

§ 14.2.2 When any of the reasons described in Section 14.2.1 exist, after consultation with the Construction Manager, and upon certification by the Architect that sufficient cause exists to justify such action, the Owner may, without prejudice to any other rights or remedies of the Owner and after giving the Contractor and the Contractor's surety, if any, seven days' notice, terminate employment of the Contractor and may, subject to any prior rights of the surety:

.1 Exclude the Contractor from the site and take possession of all materials, equipment, tools, and construction equipment and machinery thereon owned by the Contractor;

.2 Accept assignment of subcontracts pursuant to Section 5.4; and

.3 Finish the Work by whatever reasonable method the Owner may deem expedient. Upon written request of the Contractor, the Owner shall furnish to the Contractor a detailed accounting of the costs incurred by the Owner in finishing the Work.If the Owner is subsequently determined in any binding dispute resolution proceeding to have improperly or wrongfully exercised its rights under Section 14.2, the Agreement shall be deemed to have been terminated at the Owner's convenience and the Contractor shall be compensated accordingly.

§ 14.2.3 When the Owner terminates the Contract for one of the reasons stated in Section 14.2.1, the Contractor shall not be entitled to receive further payment until the Work is finished.The Contractor hereby constitutes and appoints the Owner its true and lawful attorney in fact to execute and deliver all instruments and documents and take all such other actions on behalf of the Contractor as the Owner may deem necessary or convenient to the effectuation of the purposes and transactions described in this Article 14 from and after the Owner's termination of the Contract as permitted by this Article 14. Nothing in this Section 14.2.3 and no exercise or assertion by the Owner of any of the authority granted hereunder shall be deemed to relieve the Contractor of any liability or obligation to the Owner under the Contract Documents or otherwise.

§ 14.2.4 If the unpaid balance of the Contract Sum exceeds costs of finishing the Work, including compensation for the Construction Manager's and Architect's services and expenses made necessary thereby, and other damages incurred by the Owner and not expressly waived, such excess shall be paid to the Contractor. If such costs and damages exceed the unpaid balance, the Contractor shall pay the difference to the Owner. The amount to be paid to the Contractor or Owner, as the case may be, shall, upon application, be certified by the Initial Decision Maker after consultation with the Construction Manager, and this obligation for payment shall survive termination of the Contract.

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§ 14.3.2 The Contract Sum and the Contract Time shall be adjusted for increases in the cost and time caused by suspension, delay, or interruption under Section 14.3.1. ~~Adjustment of the Contract Sum shall include profit.~~ No adjustment shall be made to the extent:

...

§ 14.4.1 ~~The Owner may, at any time, terminate the Contract for the Owner's convenience and without cause.~~Notwithstanding any other provision to the contrary in this Agreement, the Owner reserves the right at any time and in its absolute discretion to terminate the services of the Contractor and/or the Work for the Owner's convenience and without cause by giving written notice to the Contractor. This termination for the convenience of the Owner provision allows and authorizes the Owner to terminate this Agreement at any time and for any reason or no reason. This right may be exercised by the Owner in its complete discretion.

§ 14.4.2 Upon receipt of written notice from the Owner of such termination for the Owner's convenience, the Contractor shall

...

.3 except for Work directed to be performed prior to the effective date of termination stated in the notice, terminate all existing ~~subcontracts~~ subcontracts, and purchase orders and enter into no further subcontracts and purchase orders.

§ 14.4.3 In case of such termination for the Owner's convenience, the ~~Owner shall pay the Contractor for Work properly executed; costs incurred by reason of the termination, including costs attributable to termination of Subcontracts; and the termination fee, if any, set forth in the Agreement.~~Contractor shall be entitled to, and the Owner shall reimburse the Contractor for, an equitable pro rata portion of the Contractor's fee based on the portion of the Work properly completed before the effective date of termination. Contractor's payment for all such Work shall be contingent on its performance of such Work in accordance with the Contract Documents as certified by the Architect and Construction Manager and the delivery all required submittals related to the completed Work. Contractor shall be entitled to no other payment and waives any claim for damages.

...

§ 15.1.1 Definition. A Claim is a demand or assertion by one of the parties seeking, as a matter of right, payment of money, ~~a change in the Contract Time,~~ or other relief with respect to the terms of the Contract. The term "Claim" also includes other disputes and matters in question between the Owner and Contractor arising out of or relating to the Contract. The responsibility to substantiate Claims shall rest with the party making the Claim. ~~This Section 15.1.1 does not require the Owner to file a Claim in order to impose liquidated damages in accordance with the Contract Documents.~~The Owner may, but is not required to, refer a claim to the Construction Manager and or the Architect for their review and assistance.

§ 15.1.2 ~~**Time Limits on Claims**~~
~~The Owner and Contractor shall commence all Claims and causes of action against the other and arising out of or related to the Contract, whether in contract, tort, breach of warranty or otherwise, in accordance with the requirements of the binding dispute resolution method selected in the Agreement and within the period specified by applicable law, but in any case not more than 10 years after the date of Substantial Completion of the Work. The Owner and Contractor waive all Claims and causes of action not commenced in accordance with this Section 15.1.2.~~**Notice of Claims.** Claims by the Contractor must be initiated by written notice to the Owner and to the Initial Decision Maker with a copy sent to the Construction Manager and Architect. Claims by the Contractor must be initiated within 21 days after occurrence of the event giving rise to such Claim or within 21 days after the Contractor should have been aware of the condition giving rise to the Claim, whichever is later. The notice requirements set forth in this Agreement dealing with Claims and Disputes are in addition to and not a substitution or replacement of any and all notice requirements contained in applicable law.

§ 15.1.2.1 Claims by the Contractor must be made by written notice in accordance with the following procedures.

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.1 The Contractor may submit a Claim concerning a matter properly noticed in accordance with the time requirements of this Contract set forth in Section 15.1.2 and elsewhere;

.2 Failure by the Contractor to furnish the required Claim documentation within the time set forth above shall constitute waiver of the Contractor's right to compensation for such Claim.

.3 Contractor shall furnish three (3) certified copies of the required Claim documentation, with a copy submitted to the Owner, Architect, and Construction Manager. The Claim documentation shall be complete when furnished. The evaluation of the Contractor's Claim will be based, among other things, upon the Owner's Project Records and the Contractor's furnished Claim documentation.

.4 Claim documentation shall conform to Generally Accepted Accounting Principles and shall be in the following format:

a. general introduction;
b. general background discussion
c. issues
   i. index of issues (listed numerically);
   ii. for each issue:
      (1) background
      (2) chronology
      (3) Contractor's position (reason for Owner's potential liability)
      (4) supporting documentation of merit or entitlement
      (5) supporting documentation of damages
      (6) begin each issue on a new page
d. all critical path method schedules (as-planned, monthly updates, schedule revisions and as-built), along with computer disks of all schedules related to the Claim;
e. productivity exhibits (if appropriate); and
f. summary of issues and damages.

.5 Supporting documentation of merit for each issue shall be cited by reference, photocopies or explanation. Supporting documentation may include, but shall not be limited to General Conditions, General Requirements, technical specifications, drawings, correspondence, conference notes, Shop Drawings and submittals, shop drawing logs, survey books, inspection reports, delivery schedules, test reports, daily reports, subcontracts, fragmentary CPM schedules or time impact analyses, photographs, technical reports, requests for information, field instructions and all other related records necessary to support the Contractor's claim.

.6 Supporting documentation of damages for each issue shall be cited, photocopied or explained. Supporting documentation may include, but shall not be limited to, any or all documents related to the preparation and submission of the bid; certified, detailed labor records including labor distribution reports; material and equipment procurement records; construction equipment ownership, cost records or rental records; subcontractor or vendor files and cost records; service cost records; purchase orders; invoices; Project as-planned and as-built cost records; general ledger records; variance reports; accounting adjustment records, and any other accounting material necessary to support the Contractor's Claims.

.7 Each copy of the Claim documentation shall be certified by a responsible officer of the Contractor in accordance with the requirements of these Contract Documents.

§ 15.1.3 ~~Notice of Claims~~**Continuing Contract Performance.** Pending final resolution of a Claim, except as otherwise agreed in writing or as provided in Section 9.7 and Article 14, the Contractor shall proceed diligently with performance of the Contract and the Owner shall continue to make payments in accordance with the Contract Documents. The Construction Manager will prepare Change Orders and the Architect will issue a Certificate for Payment or Project Certificate for Payment in accordance with the decisions of the Initial Decision Maker.

~~**§ 15.1.3.1** Claims by either the Owner or Contractor, where the condition giving rise to the Claim is first discovered prior to expiration of the period for correction of the Work set forth in Section 12.2.2, shall be initiated by notice to the other party and to the Initial Decision Maker with a copy sent to the Construction Manager and Architect, if the Architect is not serving as the Initial Decision Maker. Claims by either party under this Section 15.1.3.1 shall be initiated within 21 days after occurrence of the event giving rise to such Claim or within 21 days after the claimant first recognizes the condition giving rise to the Claim, whichever is later.~~

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~~**§ 15.1.3.2** Claims by either the Owner or Contractor, where the condition giving rise to the Claim is first discovered after expiration of the period for correction of the Work set forth in Section 12.2.2, shall be initiated by notice to the other party. In such event, no decision by the Initial Decision Maker is required.~~

§ 15.1.4 ~~Continuing Contract Performance~~**Claims for Additional Cost.** If the Contractor wishes to make a Claim for an increase in the Contract Sum, written notice as provided Herein shall be given before proceeding to execute the Work. Prior notice is not required for Claims relating to an emergency endangering life or property arising under Section 10.3. Claims for additional compensation relating to Contractor's non-compliance with its representations and warranties in this Contract will not be allowed.

~~**§ 15.1.4.1** Pending final resolution of a Claim, except as otherwise agreed in writing or as provided in Section 9.7 and Article 14, the Contractor shall proceed diligently with performance of the Contract and the Owner shall continue to make payments in accordance with the Contract Documents.~~

~~**§ 15.1.4.2** The Contract Sum and Contract Time shall be adjusted in accordance with the Initial Decision Maker's decision, subject to the right of either party to proceed in accordance with this Article 15. The Architect will issue Certificates for Payment in accordance with the decision of the Initial Decision Maker.~~

§ 15.1.5 ~~**Claims for Additional Cost.** If the Contractor wishes to make a Claim for an increase in the Contract Sum, notice as provided in Section 15.1.3 shall be given before proceeding to execute the portion of the Work that is the subject of the Claim. Prior notice is not required for Claims relating to an emergency endangering life or property arising under Section 10.4.~~

Claims for Additional Time

§ 15.1.5.1 If the Contractor wishes to make a Claim for an increase in the Contract Time, written notice as provided Herein shall be given. The Contractor's Claim shall include an estimate of probable effect of delay on progress of the Work. In the case of a continuing delay only one Claim is necessary. Claims for an extension of time relating to Contractor's non-compliance with its representations and warranties in this Contract will not be allowed.

§ 15.1.5.2 If adverse weather conditions are the basis for a Claim for additional time, such Claim shall be documented by data substantiating that weather conditions were abnormal for the period of time, could not have been reasonably anticipated and had an adverse effect on the scheduled construction.

§ 15.1.6 ~~Claims for Additional Time~~**Claims for Consequential Damages.** The Contractor waives all Claims for consequential damages arising out of or relating to this Contract. This waiver includes, but is not limited to:

- **.1** damages incurred by the Contractor for principal office expenses including the compensation of personnel stationed there, for losses of financing, business and reputation, and for loss of profit; and
- **.2** all consequential damages incurred by the Contractor as a result of Owner's termination in accordance with Article 14.

~~**§ 15.1.6.1** If the Contractor wishes to make a Claim for an increase in the Contract Time, notice as provided in Section 15.1.3 shall be given. The Contractor's Claim shall include an estimate of cost and of probable effect of delay on progress of the Work. In the case of a continuing delay only one Claim is necessary.~~

~~**§ 15.1.6.2** If adverse weather conditions are the basis for a Claim for additional time, such Claim shall be documented by data substantiating that weather conditions were abnormal for the period of time, could not have been reasonably anticipated and had an adverse effect on the scheduled construction.~~

~~**§ 15.1.7 Waiver of Claims for Consequential Damages.** The Contractor and Owner waive Claims against each other for consequential damages arising out of or relating to this Contract. This mutual waiver includes~~

- ~~**.1** damages incurred by the Owner for rental expenses, for losses of use, income, profit, financing, business and reputation, and for loss of management or employee productivity or of the services of such persons; and~~
- ~~**.2** damages incurred by the Contractor for principal office expenses including the compensation of personnel stationed there, for losses of financing, business and reputation, and for loss of profit except anticipated profit arising directly from the Work.~~

~~This mutual waiver is applicable, without limitation, to all consequential damages due to either party's termination in accordance with Article 14. Nothing contained in this Section 15.1.7 shall be deemed to preclude assessment of liquidated damages, when applicable, in accordance with the requirements of the Contract Documents.~~

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§ 15.2.1 ~~Claims, excluding those where the condition giving rise to the Claim is first discovered after expiration of the period for correction of the Work set forth in Section 12.2.2 or arising under Sections 10.3, 10.4, and 11.5,~~ Claims shall be referred to the Initial Decision Maker for initial decision. The Architect will serve as the Initial Decision Maker, unless otherwise indicated in the Agreement. Except for those Claims excluded by this Section 15.2.1, an initial decision shall be required as a condition precedent to mediation of any ~~Claim. If an initial decision has not been rendered within 30 days~~ Claim arising prior to the date final payment is due, unless 30 days have passed after the Claim has been referred to the Initial Decision ~~Maker, the party asserting the Claim may demand mediation and binding dispute resolution without a~~ Maker with no decision having been rendered. Unless the Initial Decision Maker and all affected parties agree, the Initial Decision Maker will not decide disputes between the Contractor and persons or entities other than the Owner.

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§ 15.2.4 If the Initial Decision Maker requests a party to provide a response to a Claim or to furnish additional supporting data, such party shall respond, within ten days after receipt of ~~the~~ such request, and shall either (1) provide a response ~~on the requested supporting data, (2) advise the Initial Decision Maker when the response or supporting data will be furnished, or (3)~~ to the requested supporting data, or (2) advise the Initial Decision Maker that no supporting data will be furnished. Upon receipt of the response or supporting data, if any, the Initial Decision Maker will either reject or approve the Claim in whole or in part.

§ 15.2.5 The Initial Decision Maker will render an initial decision approving or rejecting the Claim, or indicating that the Initial Decision Maker is unable to resolve the Claim. This initial decision shall (1) be in writing; (2) state the reasons therefor; and (3) notify the ~~parties, the Construction Manager, and the Architect, if the Architect~~ parties and the Architect and Construction Manager, if the Architect or Construction Manager is not serving as the Initial Decision Maker, of any change in the Contract Sum or Contract Time or both. The initial decision shall be final and binding on the parties but subject to mediation and, if the parties fail to resolve their dispute through mediation, to binding dispute resolution.

§ 15.2.6 Either party may file for mediation of an initial ~~decision at any time,~~ decision, subject to the terms of Section 15.2.6.1.

§ 15.2.6.1 Either party may, within 30 days from the date of ~~receipt of~~ an initial decision, demand in writing that the other party file for ~~mediation.~~ mediation within 60 days of the initial decision. If such a demand is made and the party receiving the demand fails to file for mediation within ~~30 days of receipt thereof,~~ the time required, then both parties waive their rights to mediate ~~or pursue binding dispute resolution proceedings~~ with respect to the initial decision.

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§ 15.3.1 Claims, disputes, or other matters in controversy arising out of or related to the ~~Contract,~~ Contract except those waived as provided for in Sections 9.10.4, 9.10.5, and ~~15.1.7, shall be subject to mediation as a condition precedent to binding dispute resolution.~~15.1.6 are subject to mediation upon mutual agreement of the parties.

§ 15.3.2 The parties shall endeavor to resolve their Claims by mediation which, unless the parties mutually agree otherwise, shall be administered ~~by the American Arbitration Association~~ in accordance with ~~its~~ the Construction Industry Mediation Procedures of the American Arbitration Association in effect on the date of ~~the Agreement.~~ this Agreement. However, the American Arbitration Association will not be involved in the mediation unless the parties mutually agree. A request for mediation shall be made in writing, delivered to the other party to the ~~Contract, and filed with the person or entity administering the mediation.~~ Contract. The parties shall select a mutually acceptable mediator. The request may be made concurrently with the filing of binding dispute resolution proceedings but, in such event, mediation shall proceed in advance of binding dispute resolution proceedings, which shall be stayed pending mediation for a period of 60 days from the date of filing, unless stayed for a longer period by agreement of the parties or court order. ~~If an arbitration is stayed pursuant to this Section 15.3.2, the parties may nonetheless proceed to the selection of the arbitrator(s) and agree upon a schedule for later proceedings.~~

...

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§ 15.3.3 ~~Either party may, within 30 days from the date that mediation has been concluded without resolution of the dispute or 60 days after mediation has been demanded without resolution of the dispute, demand in writing that the other party file for binding dispute resolution. If such a demand is made and the party receiving the demand fails to file for binding dispute resolution within 60 days after receipt thereof, then both parties waive their rights to binding dispute resolution proceedings with respect to the initial decision.~~The parties shall share the mediator's fee and any filing fees equally. The mediation shall be held in the place where the Project is located, unless another location is mutually agreed upon. Agreements reached in mediation shall be enforceable as settlement agreements in any court having jurisdiction thereof.

~~**§ 15.3.4** The parties shall share the mediator's fee and any filing fees equally. The mediation shall be held in the place where the Project is located, unless another location is mutually agreed upon. Agreements reached in mediation shall be enforceable as settlement agreements in any court having jurisdiction thereof.~~

§ 15.4 ~~Arbitration~~**Litigation**

If for any reason the Claim or dispute is not resolved by the mediation or the parties fail to agree on mediation as a dispute resolution process, then the Claim or dispute shall be resolved in New York State Supreme Court in the County where the Project is located. The Owner shall be entitled to recover its reasonable attorney's fees and costs if it prevails in the litigation. The Owner and the Contractor consent to exclusive jurisdiction of the New York State Supreme Court with jurisdiction over the County in which the Project is located and waive any and all objections to the jurisdiction of such court.

~~**§ 15.4.1** If the parties have selected arbitration as the method for binding dispute resolution in the Agreement, any Claim subject to, but not resolved by, mediation shall be subject to arbitration which, unless the parties mutually agree otherwise, shall be administered by the American Arbitration Association in accordance with its Construction Industry Arbitration Rules in effect on the date of the Agreement. The Arbitration shall be conducted in the place where the Project is located, unless another location is mutually agreed upon. A demand for arbitration shall be made in writing, delivered to the other party to the Contract, and filed with the person or entity administering the arbitration. The party filing a notice of demand for arbitration must assert in the demand all Claims then known to that party on which arbitration is permitted to be demanded.~~

~~**§ 15.4.1.1** A demand for arbitration shall be made no earlier than concurrently with the filing of a request for mediation, but in no event shall it be made after the date when the institution of legal or equitable proceedings based on the Claim would be barred by the applicable statute of limitations. For statute of limitations purposes, receipt of a written demand for arbitration by the person or entity administering the arbitration shall constitute the institution of legal or equitable proceedings based on the Claim.~~

~~**§ 15.4.2** The award rendered by the arbitrator or arbitrators shall be final, and judgment may be entered upon it in accordance with applicable law in any court having jurisdiction thereof.~~

~~**§ 15.4.3** The foregoing agreement to arbitrate and other agreements to arbitrate with an additional person or entity duly consented to by parties to the Agreement, shall be specifically enforceable under applicable law in any court having jurisdiction thereof.~~

~~**§ 15.4.4 Consolidation or Joinder**~~

~~**§ 15.4.4.1** Subject to the rules of the American Arbitration Association or other applicable arbitration rules, either party may consolidate an arbitration conducted under this Agreement with any other arbitration to which it is a party provided that (1) the arbitration agreement governing the other arbitration permits consolidation, (2) the arbitrations to be consolidated substantially involve common questions of law or fact, and (3) the arbitrations employ materially similar procedural rules and methods for selecting arbitrator(s).~~

~~**§ 15.4.4.2** Subject to the rules of the American Arbitration Association or other applicable arbitration rules, either party may include by joinder persons or entities substantially involved in a common question of law or fact whose presence is required if complete relief is to be accorded in arbitration, provided that the party sought to be joined consents in writing to such joinder. Consent to arbitration involving an additional person or entity shall not constitute consent to arbitration of any claim, dispute or other matter in question not described in the written consent.~~

§ 15.5 SAVING CLAUSE

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If, during the term of this Contract, it is found that a specific clause of the Contract is illegal under Federal or State law, the remainder of the Contract not affected by such a ruling shall remain in full force and effect.

ARTICLE 16 PROVISIONS REQUIRED BY LAW

§ 16.1 PROVISIONS DEEMED INSERTED

Each and every provision or obligation required by law and/or required to be inserted in the Contract shall be deemed to be inserted Herein and the Contract shall be read and enforced as though it were included Herein and in the event any such provision is not inserted or is not correctly inserted then, upon the application of either party, this Contract shall forthwith be physically amended to make such insertion or correction.

§ 16.2 MINIMUM RATE OF WAGE AND SUPPLEMENT

§16.2.1 The minimum hourly wage rates (including supplements) to be paid shall not be less than that designated by the New York State Department of Labor, Bureau of Public Works and any redetermination of the prevailing rate of wages after the Contract is approved shall be deemed to be incorporated Herein by reference as of the effective date of redetermination and shall form a part of these Contract Documents.

§16.2.2 The minimum hourly supplement to be paid shall be in accordance with the prevailing practices in the locality where the work is located and shall be not less than that designated by the Industrial Commissioner. Supplements as defined in Section 220 of the Labor Law, as amended, means all remuneration for employees paid in any medium other than cash or reimbursements for expenses or any payments which are not wages within the meaning of the law, including, but not limited to, health, welfare, non-occupational disability, retirement, vacation benefits, holiday pay and life insurance.

§16.2.3 The Contract shall be forfeited by a Contractor and he shall not be entitled to receive any sum of money for any work performed hereunder on his or her second conviction for willfully paying less than the stipulated wage scale (including supplements) as provided in the Labor Law, Section 220, as amended, or the stipulated minimum hourly wage scale (including supplements) as provided in the Labor Law, Section 220-d, as amended.

§ 16.3 APPRENTICES

Where required by law apprentices must be registered, individually, under a bona fide program registered with the New York State Department of Labor. The allowable ratio of apprentices to journeymen in any craft classification shall not be greater than the ratio permitted to the contractor as to his or her work force on any job under the registered program. Any employee, who is not registered as above, shall be paid the prevailing wage rate for the classification of work he actually performed. The contractor or subcontractor will be required to furnish written evidence of the registration of his or her program and apprentices as well as of the appropriate ratios and wage rates for the area of construction, prior to using any apprentices on the contract work. (See Section 220.3-e).

§ 16.4 ASSIGNMENT OF PUBLIC CONTRACTS

As provided in Section 109 of the General Municipal Law, the Contractor is prohibited from assigning, transferring, conveying, subletting or otherwise disposing of this Contract, or of his or her right title, or interest therein, or his or her power to execute such contract or any other person or corporation without the previous consent in writing of the officer, board or agency awarding the Contract. If any Contractor, to whom any contract is let, granted and awarded, as required by law, by any officer, board or agency in a political subdivision, or of any district therein, shall without the previous written consent specified in subdivision one of this section, assign, transfer, convey, sublet or otherwise dispose of such contract, or his or her right, title or interest therein, or his or her power to execute such contract, to any other person or corporation, the officer, board or agency which let, made, granted, or awarded such contract shall revoke and annul such contract, and the political subdivision or district therein, as the case may be, and such officer, board or agency shall be relieved and discharged form any and all liability and obligations growing out of such contract to such contractor, and to the person or corporation to which such contract shall have been assigned, transferred, conveyed, sublet or otherwise disposed of, and such contractor, and his or her assignees, transferees or

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sublessees shall forfeit and lose all moneys, theretofore earned under such contract, except so much as may be required to pay his or her employees. The provisions of this section shall not hinder, prevent, or affect an assignment by any such contractor for the benefit of his or her creditors made pursuant to the laws of this state."

§ 16.5 FINGERPRINTING

Pursuant to the Safe Schools Against Violence in Education Act ("SAVE" legislation) and Part 87 of the Regulations of the Commissioner of Education, any individual who, as a result of their work on this capital project, will move (or migrate) in and out of student occupied areas for more than five (5) days a year, must be fingerprinted. All contractors shall be responsible for full compliance with the applicable fingerprinting provisions of New York's SAVE Legislation and Part 87 of the Regulations of the Commissioner of Education at their sole cost and expense.~~**§ 15.4.4.3** The Owner and Contractor grant to any person or entity made a party to an arbitration conducted under this Section 15.4, whether by joinder or consolidation, the same rights of joinder and consolidation as those of the Owner and Contractor under this Agreement.~~

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Certification of Document's Authenticity

AIA® Document D401™ – 2003

I, Kim Ruebel, 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 12:14:35 ET on 05/17/2023 under Order No. 3104237909 from AIA Contract Documents software and that in preparing the attached final document I made no changes to the original text of AIA® Document A232™ – 2019, General Conditions of the Contract for Construction, Construction Manager as Adviser Edition, other than those additions and deletions shown in the associated Additions and Deletions Report.

_____

(Signed)

_____

(Title)

_____

(Dated)

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AIA® Document A132® – 2019

Standard Form of Agreement Between Owner and Contractor, *Construction Manager as Adviser Edition*

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)

Waverly Central School District
15 Fredrick Street
Waverly, New York 14892

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

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

Waverly Central School District
Additions and Alterations to Junior-Senior High School
15 Fredrick Street
Waverly, New York 14892
Tetra Tech Project Number: 339070-22003

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

LeChase Construction Services, LLC
11849 East Corning Road Suite 102
Corning, New York 14830

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

Tetra Tech Engineers, Architects & Landscape Architects, P.C.
d/b/a Tetra Tech Architects & Engineers
10 Brown Road
Ithaca, New York 14850

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. 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.

This document is intended to be used in conjunction with AIA Documents A232™–2019, General Conditions of the Contract for Construction, Construction Manager as Adviser Edition; B132™–2019, Standard Form of Agreement Between Owner and Architect, Construction Manager as Adviser Edition; and C132™–2019, Standard Form of Agreement Between Owner and Construction Manager as Adviser. AIA Document A232™–2019 is adopted in this document by reference. Do not use with other general conditions unless this document is modified.

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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 Modifications, 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 DATES OF 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.)

Refer to Section 01 12 00 – Multiple Contract Summary

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

§ 3.3 Substantial Completion of the Project or Portions Thereof

§ 3.3.1 Subject to adjustments of the Contract Time as provided in the Contract Documents, the date of Substantial Completion of the Work of all of the Contractors for the Project will be:
(Insert the date of Substantial Completion of the Work of all Contractors for the Project.)

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§ 3.3.2 Subject to adjustments of the Contract Time as provided in the Contract Documents, if portions of the Work of all of the Contractors for the Project are to be completed prior to Substantial Completion of the entire Work of all of the Contractors for the Project, the Contractors shall achieve Substantial Completion of such portions by the following dates:

Portion of Work	Substantial Completion Date

§ 3.4 When the Work of this Contract, or any Portion Thereof, is Substantially Complete

§ 3.4.1 Subject to adjustments of the Contract Time as provided in the Contract Documents, the Contractor shall substantially complete the entire Work of this Contract:
(Check one of the following boxes and complete the necessary information.)

[ ] Not later than ( ) calendar days from the date of commencement of the Work.

[ ] By the following date:

§ 3.4.2 Subject to adjustments of the Contract Time as provided in the Contract Documents, if portions of the Work of this Contract are to be substantially complete prior to when the entire Work of this Contract shall be substantially complete, the Contractor shall substantially complete such portions by the following dates:

Portion of Work	Date to be substantially complete

§ 3.4.3 If the Contractor fails to substantially complete the Work of this Contract, or portions thereof, as provided in this Section 3.4, 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 one of the following:
(Check the appropriate box.)

[X] Stipulated Sum, in accordance with Section 4.2 below

[ ] Cost of the Work plus the Contractor's Fee, in accordance with Section 4.3 below

[ ] Cost of the Work plus the Contractor's Fee with a Guaranteed Maximum Price, in accordance with Section 4.4 below

(Based on the selection above, complete Section 4.2, 4.3 or 4.4 below.)

§ 4.2 Stipulated Sum

§ 4.2.1 The Contract Sum shall be ($), subject to additions and deductions as provided in the Contract Documents.

§ 4.2.2 Alternates

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

Item	Price

§ 4.2.2.2 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

§ 4.2.3 Allowances, if any, included in the Contract Sum:

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(Identify each allowance.)

Item	Price

§ 4.2.4 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)

(Paragraphs deleted)
(Table deleted)
(Paragraphs deleted)
(Table deleted)
(Paragraphs deleted)
(Table deleted)
(Paragraphs deleted)
(Table deleted)
(Paragraphs deleted)
(Table deleted)
(Paragraphs deleted)

ARTICLE 5 PAYMENTS

§ 5.1 Progress Payments

§ 5.1.1 Based upon Applications for Payment submitted to the Construction Manager by the Contractor, and Certificates for Payment issued by the Construction Manager and 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 Construction Manager not later than the fifth (5th) day of a month, the Owner shall make payment of the amount certified to the Contractor not later than the thirtieth (30th) day of the same month. If an Application for Payment is received by the Construction Manager after the application date fixed above, payment of the amount certified shall be made by the Owner not later than forty-five (45) days after the Construction Manager receives the Application for Payment.
(Federal, state or local laws may require payment within a certain period of time.)

§ 5.1.4 Progress Payments Where the Contract Sum is Based on a Stipulated Sum

§ 5.1.4.1 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 Construction Manager and Architect may require. This schedule of values, unless objected to by the Construction Manager or Architect, shall be used as a basis for reviewing the Contractor's Applications for Payment.

§ 5.1.4.2 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.

§ 5.1.4.3 In accordance with AIA Document A232™–2019, General Conditions of the Contract for Construction, Construction Manager as Adviser Edition, and subject to the other provisions of the Contract Documents, the amount of each progress payment shall be computed as follows:

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

.1 That portion of the Contract Sum properly allocable to completed Work;

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.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.

§ 5.1.4.3.2 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 as provided in Article 9 of AIA Document A232–2019;

.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, as provided in Article 9 of AIA Document A232–2019; and

.5 Retainage withheld pursuant to Section 5.1.7.

(Paragraphs deleted)

§ 5.1.7 Retainage

§ 5.1.7.1 For each progress payment made prior to when the Work of this Contract is substantially complete, 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.)

Five percent (5%)

(Paragraphs deleted)

§ 5.1.7.2 Reduction or limitation of retainage, if any, shall be as follows:
(If the retainage established in Section 5.1.7.1 is to be modified prior to when the entire Work of this Contract is substantially complete, including modifications for completion of portions of the Work as provided in Section 3.4.2, insert provisions for such modifications.)

§ 5.1.7.3 Except as set forth in this Section 5.1.7.3, when the Work of this Contract is substantially complete, 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 when the Work of this Contract is substantially complete shall not include retainage as follows:
(Insert any other conditions for release of retainage when the Work of this Contract is substantially complete, or upon Substantial Completion of the Work of all Contractors on the Project or portions thereof.)

§ 5.2 Final Payment

§ 5.2.1 Final Payment Where the Contract Sum is Based on a Stipulated Sum

§ 5.2.1.1 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 12 of AIA Document A232–2019, and to satisfy other requirements, if any, which extend beyond final payment; and

.2 a final Certificate for Payment or Project Certificate for Payment has been issued by the Architect.

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

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(Paragraphs deleted)

ARTICLE 6 DISPUTE RESOLUTION

§ 6.1 Initial Decision Maker

The Architect will serve as Initial Decision Maker pursuant to Article 15 of AIA Document A232–2019, unless the parties appoint below another individual, not a party to this Agreement, to serve as 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.)

§ 6.2 Binding Dispute Resolution

For any Claim subject to, but not resolved by, mediation pursuant to Article 15 of AIA Document A232–2019, the method of binding dispute resolution shall be as follows:
(Check the appropriate box.)

[ ] Arbitration pursuant to Article 15 of AIA Document A232–2019.

[X] 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 Where the Contract Sum is a Stipulated Sum

§ 7.1.1 The Contract may be terminated by the Owner or the Contractor as provided in Article 14 of AIA Document A232–2019.

(Paragraphs deleted)

§ 7.1.2 The Work may be suspended by the Owner as provided in Article 14 of AIA Document A232–2019.

(Paragraphs deleted)

§ 7.3 Suspension

The Work may be suspended by the Owner as provided in Article 14 of AIA Document A232–2019; in such case, the Contract Sum and Contract Time shall be increased as provided in Article 14 of AIA Document A232–2019, except that the term "profit" shall be understood to mean the Contractor's Fee as described in Section 4.3.2 or 4.4.2, as applicable, of this Agreement.

ARTICLE 8 MISCELLANEOUS PROVISIONS

§ 8.1 Where reference is made in this Agreement to a provision of AIA Document A232–2019 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)

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§ 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 AIA Document A132™–2019, Standard Form of Agreement Between Owner and Contractor, Construction Manager as Adviser Edition, Exhibit A, Insurance and Bonds, and elsewhere in the Contract Documents.

§ 8.5.2 The Contractor shall provide bonds as set forth in AIA Document A132™–2019, Exhibit A, and elsewhere in the Contract Documents.

§ 8.6 Notice in electronic format, pursuant to Article 1 of AIA Document A232–2019, may be given in accordance with AIA Document E203™–2013, Building Information Modeling and Digital Data Exhibit, if completed, or as otherwise set forth below:
(If other than in accordance with AIA Document E203–2013, insert requirements for delivering notice in electronic format such as name, title, and email address of the recipient and whether and how the system will be required to generate a read receipt for the transmission.)

§ 8.7 Other provisions:

1. Any unused Allowance Costs to be returned to Owner.

(Paragraphs deleted)
ARTICLE 9 ENUMERATION OF CONTRACT DOCUMENTS
§ 9.1 This Agreement is comprised of the following documents:

.1 AIA Document A132™–2019, Standard Form of Agreement Between Owner and Contractor, Construction Manager as Adviser Edition
.2 AIA Document A132™–2019, Exhibit A, Insurance and Bonds Exhibit
.3 AIA Document A232™–2019, General Conditions of the Contract for Construction, Construction Manager as Adviser Edition
.4

(Paragraphs deleted)

Drawings

Number	Title	Date
00 01 15	List of Drawing Sheets	

.5 Specifications

Section	Title	Date	Pages
00 01 10	Table of Contents		

.6 Addenda, if any:

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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.

(Paragraphs deleted)

.7 Other documents, if any, listed below:

(Paragraph deleted)

The Contract Documents include the Notice To Bidders (Advertisement), Instructions to Bidders, Supplementary Instructions to Bidders, Bid Form (including Unit Prices) (executed by Bidder), the Non-Collusive Bidding Certification (executed by Bidder), General Conditions, Specifications, Drawings, Addenda issued prior to execution of the Contract, Agreement between Owner and Contractor ("Agreement"), other Documents listed in the Agreement, and Modifications issued or negotiated after receipt of bids or execution of the Agreement.

Where the term "Agreement", "Contract" or "Prime Contract" is used in the General Conditions and other Contract Documents, it shall mean the separate Owner-Contractor Agreement between the Owner and each Prime Contractor identified in Conditions of the Contract (General and other conditions).

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

OWNER *(Signature)*	**CONTRACTOR** *(Signature)*
(Printed name and title)	*(Printed name and title)*

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AIA® Document A132® – 2019

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PAGE 1

Waverly Central School District
15 Fredrick Street
Waverly, New York 14892

...

Waverly Central School District
Additions and Alterations to Junior-Senior High School
15 Fredrick Street
Waverly, New York 14892
Tetra Tech Project Number: 339070-22003

...

LeChase Construction Services, LLC
11849 East Corning Road Suite 102
Corning, New York 14830

...

Tetra Tech Engineers, Architects & Landscape Architects, P.C.
d/b/a Tetra Tech Architects & Engineers
10 Brown Road
Ithaca, New York 14850

PAGE 2

[**X**] Established as follows:

...

~~If a date of commencement of the Work is not selected, then the date of commencement shall be the date of this Agreement.~~Refer to Section 01 12 00 – Multiple Contract Summary

PAGE 3

[**X**] Stipulated Sum, in accordance with Section 4.2 below

PAGE 4

~~**§ 4.3 Cost of the Work Plus Contractor's Fee without a Guaranteed Maximum Price**~~
~~**§ 4.3.1** The Cost of the Work is as defined in Exhibit B, Determination of the Cost of the Work.~~

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~~**§ 4.3.2** The Contractor's Fee:~~
~~*(State a lump sum, percentage of Cost of the Work or other provision for determining the Contractor's Fee.)*~~

~~**§ 4.3.3** The method of adjustment of the Contractor's Fee for changes in the Work:~~

~~**§ 4.3.4** Limitations, if any, on a Subcontractor's overhead and profit for increases in the cost of its portion of the Work:~~

~~**§ 4.3.5** Rental rates for Contractor-owned equipment shall not exceed percent (%) of the standard rental rate paid at the place of the Project.~~

~~**§ 4.3.6** 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)**~~

~~**§ 4.3.7** The Contractor shall prepare and submit to the Construction Manager, within 14 days of executing this Agreement, a written Control Estimate for the Owner's review and approval. The Control Estimate shall include the items in Section B.1 of Exhibit B, Determination of the Cost of the Work.~~

~~**§ 4.4 Cost of the Work Plus Contractor's Fee with a Guaranteed Maximum Price**~~
~~**§ 4.4.1** The Cost of the Work is as defined in Exhibit B, Determination of the Cost of the Work.~~

~~**§ 4.4.2** The Contractor's Fee:~~
~~*(State a lump sum, percentage of Cost of the Work or other provision for determining the Contractor's Fee.)*~~

~~**§ 4.4.3** The method of adjustment of the Contractor's Fee for changes in the Work:~~

~~**§ 4.4.4** Limitations, if any, on a Subcontractor's overhead and profit for increases in the cost of its portion of the Work:~~

~~**§ 4.4.5** Rental rates for Contractor-owned equipment shall not exceed percent (%) of the standard rental rate paid at the place of the Project.~~

~~**§ 4.4.6** 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)**~~

~~**§ 4.4.7 Guaranteed Maximum Price**~~
~~**§ 4.4.7.1** The Contract Sum is guaranteed by the Contractor not to exceed ($), subject to additions and deductions by Change Order as provided in the Contract Documents. This maximum sum is referred to in the Contract Documents as the Guaranteed Maximum Price. Costs which would cause the Guaranteed Maximum Price to be exceeded shall be paid by the Contractor without reimbursement by the Owner.~~

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~~§ 4.4.7.2 Alternates~~
~~§ 4.4.7.2.1 Alternates, if any, included in the Guaranteed Maximum Price:~~

~~Item~~	~~Price~~

~~§ 4.4.7.2.2 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~~

~~§ 4.4.7.3 Allowances, if any, included in the Guaranteed Maximum Price:~~
~~*(Identify each allowance.)*~~

~~Item~~	~~Price~~

~~§ 4.4.7.4 Assumptions, if any, upon which the Guaranteed Maximum Price is based:~~
~~*(Identify each assumption.)*~~

~~§ 4.4.8 To the extent that the Contract Documents are anticipated to require further development, the Guaranteed Maximum Price includes the costs attributable to such further development consistent with the Contract Documents and reasonably inferable therefrom. Such further development does not include changes in scope, systems, kinds and quality of materials, finishes, or equipment, all of which, if required, shall be incorporated by Change Order.~~

~~§ 4.4.9 The Owner shall authorize preparation of revisions to the Contract Documents that incorporate the agreed-upon assumptions contained in Section 4.4.7.4. The Owner shall promptly furnish such revised Contract Documents to the Contractor. The Contractor shall notify the Owner and Architect of any inconsistencies between the agreed-upon assumptions contained in Section 4.4.7.4 and the revised Contract Documents.~~

~~§ 4.5 Liquidated damages, if any:~~
~~*(Insert terms and conditions for liquidated damages, if any, to be assessed in accordance with Section 3.4.)*~~

~~§ 4.6 Other:~~
~~*(Insert provisions for bonus, cost savings or other incentives, if any, that might result in a change to the Contract Sum.)*~~

...

§ 5.1.3 Provided that an Application for Payment is received by the Construction Manager not later than the fifth (5th) day of a month, the Owner shall make payment of the amount certified to the Contractor not later than the thirtieth (30th) day of the same month. If an Application for Payment is received by the Construction Manager after the application date fixed above, payment of the amount certified shall be made by the Owner not later than forty-five (45) days after the Construction Manager receives the Application for Payment.

...

§ 5.1.4.1 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

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data to substantiate its accuracy, as the Construction Manager and Architect may require. This schedule of ~~values~~ values, unless objected to by the Construction Manager or Architect, shall be used as a basis for reviewing the Contractor's Applications for Payment.

...

§ 5.1.4.3 In accordance with AIA Document A232™–2019, General Conditions of the Contract for Construction, Construction Manager as Adviser Edition, and subject to the other provisions of the Contract Documents, the amount of each progress payment shall be computed as follows:

PAGE 5

~~**§ 5.1.5 Progress Payments Where the Contract Sum is Based on the Cost of the Work without a Guaranteed Maximum Price**~~

~~**§ 5.1.5.1** With each Application for Payment, the Contractor shall submit the cost control information required in Exhibit B, Determination of the Cost of the Work, along with payrolls, petty cash accounts, receipted invoices, or invoices with check vouchers attached, and any other evidence required by the Owner, Construction Manager or Architect to demonstrate that payments already made by the Contractor on account of the Cost of the Work equal or exceed progress payments already received by the Contractor, plus payrolls for the period covered by the present Application for Payment, less that portion of the payments attributable to the Contractor's Fee.~~

~~**§ 5.1.5.2** Applications for Payment shall show the Cost of the Work actually incurred by the Contractor through the end of the period covered by the Application for Payment and for which the Contractor has made or intends to make actual payment prior to the next Application for Payment.~~

~~**§ 5.1.5.3** In accordance with AIA Document A232-2019 and subject to other provisions of the Contract Documents, the amount of each progress payment shall be computed as follows:~~

~~**§ 5.1.5.3.1** The amount of each progress payment shall first include:~~

- ~~**.1** The Cost of the Work as described in Exhibit B, Determination of the Cost of the Work;~~
- ~~**.2** That portion of Construction Change Directives that the Architect determines, in the Architect's professional judgment, to be reasonably justified; and~~
- ~~**.3** The Contractor's Fee computed upon the Cost of the Work described in the preceding Section 5.1.5.3.1.1 at the rate stated in Section 4.3.2; or if the Contractor's Fee is stated as a fixed sum in Section 4.3.2 an amount which bears the same ratio to that fixed-sum Fee as the Cost of the Work included in Section 5.1.5.3.1.1 bears to a reasonable estimate of the probable Cost of the Work upon its completion.~~

~~**§ 5.1.5.3.2** 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 as provided in Article 9 of AIA Document A232–2019;~~
- ~~**.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, as provided in Article 9 of AIA Document A232–2019;~~
- ~~**.5** The shortfall, if any, indicated by the Contractor in the documentation required by Section 5.1.5.1 to substantiate prior Applications for Payment, or resulting from errors subsequently discovered by the Owner's auditors in such documentation; and~~
- ~~**.6** Retainage withheld pursuant to Section 5.1.7.~~

~~**§ 5.1.5.4** The Owner, Construction Manager and Contractor shall agree upon a mutually acceptable procedure for review and approval of payments to Subcontractors and the percentage of retainage held on Subcontracts, and the Contractor shall execute subcontracts in accordance with those agreements.~~

~~**§ 5.1.5.5** In taking action on the Contractor's Applications for Payment, the Construction Manager and Architect shall be entitled to rely on the accuracy and completeness of the information furnished by the Contractor, and such action~~

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~~shall not be deemed to be a representation that (1) the Construction Manager and Architect have made a detailed examination, audit or arithmetic verification of the documentation submitted in accordance with Article 5 or other supporting data; (2) that the Construction Manager and Architect have made exhaustive or continuous on-site inspections; or (3) that the Construction Manager and Architect have made examinations to ascertain how or for what purposes the Contractor has used amounts previously paid on account of the Contract. Such examinations, audits and verifications, if required by the Owner, will be performed by the Owner's auditors acting in the sole interest of the Owner.~~

~~§ 5.1.5.6~~ ~~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.~~

~~§ 5.1.5.7~~ ~~If final completion of the Work is materially delayed through no fault of the Contractor, then the Owner shall pay the Contractor any additional amounts in accordance with Article 9 of AIA Document A232-2019.~~

~~§ 5.1.6 Progress Payments Where the Contract Sum is Based on the Cost of the Work with a Guaranteed Maximum Price~~

~~§ 5.1.6.1~~ ~~With each Application for Payment, the Contractor shall submit payrolls, petty cash accounts, receipted invoices or invoices with check vouchers attached, and any other evidence required by the Owner, Construction Manager or Architect to demonstrate that payments already made by the Contractor on account of the Cost of the Work equal or exceed progress payments already received by the Contractor plus payrolls for the period covered by the present Application for Payment, less that portion of the progress payments attributable to the Contractor's Fee.~~

~~§ 5.1.6.2~~ ~~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 Guaranteed Maximum Price among: (1) the various portions of the Work; (2) any contingency for costs that are included in the Guaranteed Maximum Price but not otherwise allocated to another line item or included in a Change Order; and (3) the Contractor's Fee.~~

~~§ 5.1.6.2.1~~ ~~The schedule of values shall be prepared in such form, and supported by such data to substantiate its accuracy, as the Construction Manager and Architect may require. This schedule of values shall be used as a basis for reviewing the Contractor's Applications for Payment.~~

~~§ 5.1.6.2.2~~ ~~The allocation of the Guaranteed Maximum Price under this Section 5.1.6.2 shall not constitute a separate guaranteed maximum price for the Cost of the Work of each individual line item in the schedule of values.~~

~~§ 5.1.6.2.3~~ ~~When the Contractor allocates costs from a contingency to another line item in the schedule of values, the Contractor shall submit supporting documentation to the Architect and Construction Manager.~~

~~§ 5.1.6.3~~ ~~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. The percentage of completion shall be the lesser of (1) the percentage of that portion of the Work which has actually been completed; or (2) the percentage obtained by dividing (a) the expense that has actually been incurred by the Contractor on account of that portion of the Work and for which the Contractor has made payment or intends to make payment prior to the next Application for Payment by (b) the share of the Guaranteed Maximum Price allocated to that portion of the Work in the schedule of values.~~

~~§ 5.1.6.4~~ ~~In accordance with AIA Document A232-2019, and subject to other provisions of the Contract Documents, the amount of each progress payment shall be computed as follows:~~

~~§ 5.1.6.4.1~~ ~~The amount of each progress payment shall first include:~~

- **~~.1~~** ~~That portion of the Guaranteed Maximum Price properly allocable to completed Work as determined by multiplying the percentage of completion of each portion of the Work by the share of the Guaranteed Maximum Price allocated to that portion of the Work in the most recent schedule of values;~~
- **~~.2~~** ~~That portion of the Guaranteed Maximum Price properly allocable to materials and equipment delivered and suitably stored at the site for subsequent incorporation in the completed construction or, if approved in writing in advance by the Owner, suitably stored off the site at a location agreed upon in writing;~~

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~~.3 That portion of Construction Change Directives that the Architect determines, in the Architect's professional judgment, to be reasonably justified; and~~

~~.4 The Contractor's Fee, computed upon the Cost of the Work described in the preceding Sections 5.1.6.4.1.1 and 5.1.6.4.1.2 at the rate stated in Section 4.4.2 or, if the Contractor's Fee is stated as a fixed sum in that Section, an amount that bears the same ratio to that fixed-sum fee as the Cost of the Work included in Sections 5.1.6.4.1.1 and 5.1.6.4.1.2 bears to a reasonable estimate of the probable Cost of the Work upon its completion.~~

~~**§ 5.1.6.4.2** 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 as provided in Article 9 of AIA Document A232–2019;~~

~~.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, as provided in Article 9 of AIA Document A232–2019;~~

~~.5 The shortfall, if any, indicated by the Contractor in the documentation required by Section 5.1.6.1 to substantiate prior Applications for Payment, or resulting from errors subsequently discovered by the Owner's auditors in such documentation; and~~

~~.6 Retainage withheld pursuant to Section 5.1.7.~~

~~**§ 5.1.6.5** The Owner and the Contractor shall agree upon a mutually acceptable procedure for review and approval of payments to Subcontractors and the percentage of retainage held on Subcontracts, and the Contractor shall execute subcontracts in accordance with those agreements.~~

~~**§ 5.1.6.6** In taking action on the Contractor's Applications for Payment, the Construction Manager and Architect shall be entitled to rely on the accuracy and completeness of the information furnished by the Contractor and such action shall not be deemed to be a representation that (1) the Construction Manager or Architect have made a detailed examination, audit, or arithmetic verification of the documentation submitted in accordance with Section 5.1.6.1 or other supporting data; (2) that the Construction Manager or Architect have made exhaustive or continuous on-site inspections; or (3) that the Construction Manager or Architect have made examinations to ascertain how or for what purposes the Contractor has used amounts previously paid on account of the Contract. Such examinations, audits, and verifications, if required by the Owner, will be performed by the Owner's auditors acting in the sole interest of the Owner.~~

~~**§ 5.1.6.7** 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.~~

~~**§ 5.1.6.8** If final completion of the Work is materially delayed through no fault of the Contractor, then the Owner shall pay the Contractor any additional amounts in accordance with Article 9 of AIA Document A232-2019.~~

...

Five percent (5%)

~~**§ 5.1.7.1.1** The following items are not subject to retainage:~~
~~*(Insert any items not subject to the withholding of retainage, such as general conditions, insurance, etc.)*~~

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§ 5.2.2 Final Payment Where the Contract Sum is Based on the Cost of the Work with or without a Guaranteed Maximum Price

§ 5.2.2.1 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 12 of AIA Document A232–2019, and to satisfy other requirements, if any, which extend beyond final payment;

.2 the Contractor has submitted a final accounting for the Cost of the Work, pursuant to Exhibit B, Determination of the Cost of the Work and a final Application for Payment; and

.3 a final Certificate for Payment or Project Certificate for Payment has been issued by the Architect in accordance with Exhibit B, Determination of the Cost of the Work.

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

§ 5.3 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.)*

—%

...

[**X**] Litigation in a court of competent jurisdiction.

...

§ 7.1.1.1 If the Contract is terminated for the Owner's convenience in accordance with Article 14 of AIA Document A232–2019, then the Owner shall pay the Contractor a termination fee as follows:
(Insert the amount of, or method for determining, the fee, if any, payable to the Contractor following a termination for the Owner's convenience.)

§ 7.2 Where the Contract Sum is Based on the Cost of the Work with or without a Guaranteed Maximum Price

§ 7.2.1 Termination

§ 7.2.1.1 The Contract may be terminated by the Owner or the Contractor as provided in Article 14 of AIA Document A232–2019.

§ 7.2.1.2 Termination by the Owner for Cause

§ 7.2.1.2.1 If the Owner terminates the Contract for cause as provided in Article 14 of AIA Document A232–2019, the Owner shall then only pay the Contractor an amount as follows:

.1 Take the Cost of the Work incurred by the Contractor to the date of termination;

.2 Add the Contractor's Fee, computed upon the Cost of the Work to the date of termination at the rate stated in Section 4.3.2 or 4.4.2, as applicable, or, if the Contractor's Fee is stated as a fixed sum in that Section, an amount that bears the same ratio to that fixed-sum Fee as the Cost of the Work at the time of termination bears to a reasonable estimate of the probable Cost of the Work upon its completion;

.3 Subtract the aggregate of previous payments made by the Owner; and

.4 Subtract the costs and damages incurred, or to be incurred, by the Owner under Article 14 of AIA Document A232–2019.

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User Notes: (1311917904)

~~**§ 7.2.1.2.2** When the Contract Sum is based on the Cost of the Work with a Guaranteed Maximum Price, if the Owner terminates the Contract for cause as provided in Article 14 of AIA Document A232-2019, the amount, if any, to be paid to the Contractor under Article 14 of AIA Document A232-2019 shall not cause the Guaranteed Maximum Price to be exceeded, nor shall it exceed the amount calculated in Section 7.2.1.2.1.~~

~~**§ 7.2.1.2.3** The Owner shall also pay the Contractor fair compensation, either by purchase or rental at the election of the Owner, for any equipment owned by the Contractor that the Owner elects to retain and that is not otherwise included in the Cost of the Work under Section 7.2.1.2.1.1. To the extent that the Owner elects to take legal assignment of subcontracts and purchase orders (including rental agreements), the Contractor shall, as a condition of receiving the payments referred to in this Article 7, execute and deliver all such papers and take all such steps, including the legal assignment of such subcontracts and other contractual rights of the Contractor, as the Owner may require for the purpose of fully vesting in the Owner the rights and benefits of the Contractor under such subcontracts or purchase orders. All Subcontracts, purchase orders and rental agreements entered into by the Contractor will contain provisions allowing for assignment to the Owner as described above.~~

~~**§ 7.2.1.3 Termination by the Owner for Convenience**~~
~~If the Owner terminates the Contract for convenience in accordance with Article 14 of AIA Document A232–2019, then the Owner shall pay the Contractor a termination fee as follows:~~
~~*(Insert the amount of or method for determining the fee, if any, payable to the Contractor following a termination for the Owner's convenience.)*~~

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§ 8.7 ~~**Relationship of the Parties**~~**Other provisions:**
~~Where the Contract is based on the Cost of the Work plus the Contractor's Fee, with or without a Guaranteed Maximum Price, the Contractor accepts the relationship of trust and confidence established by this Agreement and covenants with the Owner to cooperate with the Architect and exercise the Contractor's skill and judgment in furthering the interests of the Owner; to furnish efficient business administration and supervision; to furnish at all times an adequate supply of workers and materials; and to perform the Work in an expeditious and economical manner consistent with the Owner's interests. The Owner agrees to furnish and approve, in a timely manner, information required by the Contractor and to make payments to the Contractor in accordance with the requirements of the Contract Documents.~~1. Any unused Allowance Costs to be returned to Owner.

~~**§ 8.8** Other provisions:~~

...

.4 ~~AIA Document E203™–2013, Building Information Modeling and Digital Data Exhibit, dated as indicated below:~~
~~*(Insert the date of the E203–2013 incorporated into this Agreement.)*~~

~~**.5**~~ Drawings

...

00 01 15 List of Drawing Sheets

~~**.6**~~ **.5** Specifications

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...

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~~.7~~ .6 Addenda, if any:

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

~~[ ] AIA Document A132™–2019, Exhibit B, Determination of the Cost of the Work~~

~~[ ] AIA Document E235™–2019, Sustainable Projects Exhibit, Construction Manager as Adviser Edition, dated as indicated below:~~
~~*(Insert the date of the E235-2019 incorporated into this Agreement.)*~~

~~[ ] The Sustainability Plan:~~

~~**Title**~~	~~**Date**~~	~~**Pages**~~

~~[ ] Supplementary and other Conditions of the Contract:~~

~~**Document**~~	~~**Title**~~	~~**Date**~~	~~**Pages**~~

~~.9~~ .7 Other documents, if any, listed below:
~~*(List here any additional documents that are intended to form part of the Contract Documents. AIA Document A232–2019 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.)*~~

The Contract Documents include the Notice To Bidders (Advertisement), Instructions to Bidders, Supplementary Instructions to Bidders, Bid Form (including Unit Prices) (executed by Bidder), the Non-Collusive Bidding Certification (executed by Bidder), General Conditions, Specifications, Drawings, Addenda issued prior to execution of the Contract, Agreement between Owner and Contractor ("Agreement"), other Documents listed in the Agreement, and Modifications issued or negotiated after receipt of bids or execution of the Agreement.

Where the term "Agreement", "Contract" or "Prime Contract" is used in the General Conditions and other Contract Documents, it shall mean the separate Owner-Contractor Agreement between the Owner and each Prime Contractor identified in Conditions of the Contract (General and other conditions).

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Certification of Document's Authenticity

AIA® Document D401™ – 2003

I, Kim Ruebel, 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 12:06:10 ET on 05/17/2023 under Order No. 3104237909 from AIA Contract Documents software and that in preparing the attached final document I made no changes to the original text of AIA® Document A132™ – 2019, Standard Form of Agreement Between Owner and Contractor, Construction Manager as Adviser Edition, other than those additions and deletions shown in the associated Additions and Deletions Report.

_____

(Signed)

_____

(Title)

_____

(Dated)

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User Notes: (1311917904)

Kathy Hochul, Governor

Roberta Reardon, Commissioner

Waverly Central School Dist

Christopher Glaubitz, Sr. Project Manager
Tetra Tech Archs & Engs
10 Brown Road
Ithaca NY 14850

Schedule Year	2023 through 2024
Date Requested	05/17/2023
PRC#	2023005686

Location	1 Frederick Street
Project ID#	339070-22003
Project Type	Additions and Alterations to Waverly Jr/Sr High School

PREVAILING WAGE SCHEDULE FOR ARTICLE 8 PUBLIC WORK PROJECT

Attached is the current schedule(s) of the prevailing wage rates and prevailing hourly supplements for the project referenced above. A unique Prevailing Wage Case Number (PRC#) has been assigned to the schedule(s) for your project.

The schedule is effective from July 2023 through June 2024. All updates, corrections, posted on the 1st business day of each month, and future copies of the annual determination are available on the Department's website www.labor.ny.gov. Updated PDF copies of your schedule can be accessed by entering your assigned PRC# at the proper location on the website.

It is the responsibility of the contracting agency or its agent to annex and make part, the attached schedule, to the specifications for this project, when it is advertised for bids and /or to forward said schedules to the successful bidder(s), immediately upon receipt, in order to insure the proper payment of wages.

Please refer to the "General Provisions of Laws Covering Workers on Public Work Contracts" provided with this schedule, for the specific details relating to other responsibilities of the Department of Jurisdiction.

Upon completion or cancellation of this project, enter the required information and mail **OR** fax this form to the office shown at the bottom of this notice, **OR** fill out the electronic version via the NYSDOL website.

NOTICE OF COMPLETION / CANCELLATION OF PROJECT

Date Completed: _____ Date Cancelled: _____

Name & Title of Representative: _____

Phone: (518) 457-5589 Fax: (518) 485-1870
W. Averell Harriman State Office Campus, Bldg. 12, Room 130, Albany, NY 12226

General Provisions of Laws Covering Workers on Article 8 Public Work Contracts

Introduction

The Labor Law requires public work contractors and subcontractors to pay laborers, workers, or mechanics employed in the performance of a public work contract not less than the prevailing rate of wage and supplements (fringe benefits) in the locality where the work is performed.

Responsibilities of the Department of Jurisdiction

A Department of Jurisdiction (Contracting Agency) includes a state department, agency, board or commission: a county, city, town or village; a school district, board of education or board of cooperative educational services; a sewer, water, fire, improvement and other district corporation; a public benefit corporation; and a public authority awarding a public work contract.

The Department of Jurisdiction (Contracting Agency) awarding a public work contract MUST obtain a Prevailing Rate Schedule listing the hourly rates of wages and supplements due the workers to be employed on a public work project. This schedule may be obtained by completing and forwarding a "Request for wage and Supplement Information" form (PW 39) to the Bureau of Public Work. The Prevailing Rate Schedule MUST be included in the specifications for the contract to be awarded and is deemed part of the public work contract.

Upon the awarding of the contract, the law requires that the Department of Jurisdiction (Contracting Agency) furnish the following information to the Bureau: the name and address of the contractor, the date the contract was let and the approximate dollar value of the contract. To facilitate compliance with this provision of the Labor Law, a copy of the Department's "Notice of Contract Award" form (PW 16) is provided with the original Prevailing Rate Schedule.

The Department of Jurisdiction (Contracting Agency) is required to notify the Bureau of the completion or cancellation of any public work project. The Department's PW 200 form is provided for that purpose.

Both the PW 16 and PW 200 forms are available for completion online.

Hours

No laborer, worker, or mechanic in the employ of a contractor or subcontractor engaged in the performance of any public work project shall be permitted to work more than eight hours in any day or more than five days in any week, except in cases of extraordinary emergency. The contractor and the Department of Jurisdiction (Contracting Agency) may apply to the Bureau of Public Work for a dispensation permitting workers to work additional hours or days per week on a particular public work project.

Wages and Supplements

The wages and supplements to be paid and/or provided to laborers, workers, and mechanics employed on a public work project shall be not less than those listed in the current Prevailing Rate Schedule for the locality where the work is performed. If a prime contractor on a public work project has not been provided with a Prevailing Rate Schedule, the contractor must notify the Department of Jurisdiction (Contracting Agency) who in turn must request an original Prevailing Rate Schedule form the Bureau of Public Work. Requests may be submitted by: mail to NYSDOL, Bureau of Public Work, State Office Bldg. Campus, Bldg. 12, Rm. 130, Albany, NY 12226; Fax to Bureau of Public Work (518) 485-1870; or electronically at the NYSDOL website www.labor.ny.gov.

Upon receiving the original schedule, the Department of Jurisdiction (Contracting Agency) is REQUIRED to provide complete copies to all prime contractors who in turn MUST, by law, provide copies of all applicable county schedules to each subcontractor and obtain from each subcontractor, an affidavit certifying such schedules were received. If the original schedule expired, the contractor may obtain a copy of the new annual determination from the NYSDOL website www.labor.ny.gov.

The Commissioner of Labor makes an annual determination of the prevailing rates. This determination is in effect from July 1st through June 30th of the following year. The annual determination is available on the NYSDOL website www.labor.ny.gov.

Payrolls and Payroll Records

Every contractor and subcontractor MUST keep original payrolls or transcripts subscribed and affirmed as true under penalty of perjury. As per Article 6 of the Labor law, contractors and subcontractors are required to establish, maintain, and preserve for not less than six (6) years, contemperaneous, true, and accurate payroll records. At a minimum, payrolls must show the following information for each person employed on a public work project: Name, Address, Last 4 Digits of Social Security Number, Classification(s) in which the worker was employed, Hourly wage rate(s) paid, Supplements paid or provided, and Daily and weekly number of hours worked in each classification.

The filing of payrolls to the Department of Jurisdiction is a condition of payment.Every contractor and subcontractor shall submit to the Department of Jurisdiction (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 under penalty of perjury. The Department of Jurisdiction (Contracting Agency) shall collect, review for facial validity, and maintain such payrolls.

In addition, the Commissioner of Labor may require contractors to furnish, with ten (10) days of a request, payroll records sworn to as their validity and accuracy for public work and private work. Payroll records include, but are not limited to time cards, work description sheets, proof that supplements were provided, cancelled payroll checks and payrolls. Failure to provide the requested information within the allotted ten (10) days will result in the withholding of up to 25% of the contract, not to exceed $100,000.00. If the contractor or subcontractor does not maintain a place of business in New York State and the amount of the contract exceeds $25,000.00, payroll records and certifications must be kept on the project worksite.

The prime contractor is responsible for any underpayments of prevailing wages or supplements by any subcontractor.

All contractors or their subcontractors shall provide to their subcontractors a copy of the Prevailing Rate Schedule specified in the public work contract as well as any subsequently issued schedules. A failure to provide these schedules by a contractor or subcontractor is a violation of Article 8, Section 220-a of the Labor Law.

All subcontractors engaged by a public work project contractor or its subcontractor, upon receipt of the original schedule and any subsequently issued schedules, shall provide to such contractor a verified statement attesting that the subcontractor has received the Prevailing Rate Schedule and will pay or provide the applicable rates of wages and supplements specified therein. (See NYS Labor Laws, Article 8 . Section 220-a).

Determination of Prevailing Wage and Supplement Rate Updates Applicable to All Counties

The wages and supplements contained in the annual determination become effective July 1st whether or not the new determination has been received by a given contractor. Care should be taken to review the rates for obvious errors. Any corrections should be brought to the Department's attention immediately. It is the responsibility of the public work contractor to use the proper rates. If there is a question on the proper classification to be used, please call the district office located nearest the project. Any errors in the annual determination will be corrected and posted to the NYSDOL website on the first business day of each month. Contractors are responsible for paying these updated rates as well, retroactive to July 1st.

When you review the schedule for a particular occupation, your attention should be directed to the dates above the column of rates. These are the dates for which a given set of rates is effective. To the extent possible, the Department posts rates in its possession that cover periods of time beyond the July 1st to June 30th time frame covered by a particular annual determination. Rates that extend beyond that instant time period are informational ONLY and may be updated in future annual determinations that actually cover the then appropriate July 1st to June 30th time period.

Withholding of Payments

When a complaint is filed with the Commissioner of Labor alleging the failure of a contractor or subcontractor to pay or provide the prevailing wages or supplements, or when the Commissioner of Labor believes that unpaid wages or supplements may be due, payments on the public work contract shall be withheld from the prime contractor in a sufficient amount to satisfy the alleged unpaid wages and supplements, including interest and civil penalty, pending a final determination.

When the Bureau of Public Work finds that a contractor or subcontractor on a public work project failed to pay or provide the requisite prevailing wages or supplements, the Bureau is authorized by Sections 220-b and 235.2 of the Labor Law to so notify the financial officer of the Department of Jurisdiction (Contracting Agency) that awarded the public work contract. Such officer MUST then withhold or cause to be withheld from any payment due the prime contractor on account of such contract the amount indicated by the Bureau as sufficient to satisfy the unpaid wages and supplements, including interest and any civil penalty that may be assessed by the Commissioner of Labor. The withholding continues until there is a final determination of the underpayment by the Commissioner of Labor or by the court in the event a legal proceeding is instituted for review of the determination of the Commissioner of Labor.

The Department of Jurisdiction (Contracting Agency) shall comply with this order of the Commissioner of Labor or of the court with respect to the release of the funds so withheld.

Summary of Notice Posting Requirements

The current Prevailing Rate Schedule must be posted in a prominent and accessible place on the site of the public work project. The prevailing wage schedule must be encased in, or constructed of, materials capable of withstanding adverse weather conditions and be titled "PREVAILING RATE OF WAGES" in letters no smaller than two (2) inches by two (2) inches.

The "Public Work Project" notice must be posted at the beginning of the performance of every public work contract, on each job site.

Every employer providing workers. compensation insurance and disability benefits must post notices of such coverage in the format prescribed by the Workers. Compensation Board in a conspicuous place on the jobsite.

Every employer subject to the NYS Human Rights Law must conspicuously post at its offices, places of employment, or employment training centers, notices furnished by the State Division of Human Rights.

Employers liable for contributions under the Unemployment Insurance Law must conspicuously post on the jobsite notices furnished by the NYS Department of Labor.

Apprentices

Employees cannot be paid apprentice rates unless they are individually registered in a program registered with the NYS Commissioner of Labor. The allowable ratio of apprentices to journeyworkers in any craft classification can be no greater than the statewide building trade ratios promulgated by the Department of Labor and included with the Prevailing Rate Schedule. An employee listed on a payroll as an apprentice who is not registered as above or is performing work outside the classification of work for which the apprentice is indentured, must be paid the prevailing journeyworker's wage rate for the classification of work the employee is actually performing.

NYSDOL Labor Law, Article 8, Section 220-3, require that only apprentices individually registered with the NYS Department of Labor may be paid apprenticeship rates on a public work project. No other Federal or State Agency of office registers apprentices in New York State.

Persons wishing to verify the apprentice registration of any person must do so in writing by mail, to the NYSDOL Office of Employability Development / Apprenticeship Training, State Office Bldg. Campus, Bldg. 12, Albany, NY 12226 or by Fax to NYSDOL Apprenticeship Training (518) 457-7154. All requests for verification must include the name and social security number of the person for whom the information is requested.

The only conclusive proof of individual apprentice registration is written verification from the NYSDOL Apprenticeship Training Albany Central office. Neither Federal nor State Apprenticeship Training offices outside of Albany can provide conclusive registration information.

It should be noted that the existence of a registered apprenticeship program is not conclusive proof that any person is registered in that program. Furthermore, the existence or possession of wallet cards, identification cards, or copies of state forms is not conclusive proof of the registration of any person as an apprentice.

Interest and Penalties

In the event that an underpayment of wages and/or supplements is found:

- Interest shall be assessed at the rate then in effect as prescribed by the Superintendent of Banks pursuant to section 14-a of the Banking Law, per annum from the date of underpayment to the date restitution is made.
- A Civil Penalty may also be assessed, not to exceed 25% of the total of wages, supplements, and interest due.

Debarment

Any contractor or subcontractor and/or its successor shall be ineligible to submit a bid on or be awarded any public work contract or subcontract with any state, municipal corporation or public body for a period of five (5) years when:

- Two (2) willful determinations have been rendered against that contractor or subcontractor and/or its successor within any consecutive six (6) year period.
- There is any willful determination that involves the falsification of payroll records or the kickback of wages or supplements.

Criminal Sanctions

Willful violations of the Prevailing Wage Law (Article 8 of the Labor Law) may be a felony punishable by fine or imprisonment of up to 15 years, or both.

Discrimination

No employee or applicant for employment may be discriminated against on account of age, race, creed, color, national origin, sex, disability or marital status.

No contractor, subcontractor nor any person acting on its behalf, shall by reason of race, creed, color, disability, sex or national origin discriminate against any citizen of the State of New York who is qualified and available to perform the work to which the employment relates (NYS Labor Law, Article 8, Section 220-e(a)).

No contractor, subcontractor, nor any person acting on its behalf, shall in any manner, discriminate against or intimidate any employee on account of race, creed, color, disability, sex, or national origin (NYS Labor Law, Article 8, Section 220-e(b)).

The Human Rights Law also prohibits discrimination in employment because of age, marital status, or religion.

There may be deducted from the amount payable to the contractor under the contract a penalty of $50.00 for each calendar day during which such person was discriminated against or intimidated in violation of the provision of the contract (NYS Labor Law, Article 8, Section 220-e(c)).

The contract may be cancelled or terminated by the State or municipality. All monies due or to become due thereunder may be forfeited for a second or any subsequent violation of the terms or conditions of the anti-discrimination sections of the contract (NYS Labor Law, Article 8, Section 220-e(d)).

Every employer subject to the New York State Human Rights Law must conspicuously post at its offices, places of employment, or employment training centers notices furnished by the State Division of Human Rights.

Workers' Compensation

In accordance with Section 142 of the State Finance Law, the contractor shall maintain coverage during the life of the contract for the benefit of such employees as required by the provisions of the New York State Workers' Compensation Law.

A contractor who is awarded a public work contract must provide proof of workers' compensation coverage prior to being allowed to begin work.

The insurance policy must be issued by a company authorized to provide workers' compensation coverage in New York State. Proof of coverage must be on form C-105.2 (Certificate of Workers' Compensation Insurance) and must name this agency as a certificate holder.

If New York State coverage is added to an existing out-of-state policy, it can only be added to a policy from a company authorized to write workers' compensation coverage in this state. The coverage must be listed under item 3A of the information page.

The contractor must maintain proof that subcontractors doing work covered under this contract secured and maintained a workers' compensation policy for all employees working in New York State.

Every employer providing worker's compensation insurance and disability benefits must post notices of such coverage in the format prescribed by the Workers' Compensation Board in a conspicuous place on the jobsite.

Unemployment Insurance

Employers liable for contributions under the Unemployment Insurance Law must conspicuously post on the jobsite notices furnished by the New York State Department of Labor.

Kathy Hochul, Governor

Roberta Reardon, Commissioner

Waverly Central School Dist

Christopher Glaubitz, Sr. Project Manager
Tetra Tech Archs & Engs
10 Brown Road
Ithaca NY 14850

Schedule Year	2023 through 2024
Date Requested	05/17/2023
PRC#	2023005686

Location	1 Frederick Street
Project ID#	339070-22003
Project Type	Additions and Alterations to Waverly Jr/Sr High School

Notice of Contract Award

New York State Labor Law, Article 8, Section 220.3a requires that certain information regarding the awarding of public work contracts, be furnished to the Commissioner of Labor. One "Notice of Contract Award" (PW 16, which may be photocopied), **MUST** be completed for **EACH** prime contractor on the above referenced project.

Upon notifying the successful bidder(s) of this contract, enter the required information and mail **OR** fax this form to the office shown at the bottom of this notice, **OR** fill out the electronic version via the NYSDOL website.

Contractor Information

All information must be supplied

Federal Employer Identification Number: _____

Name: _____

Address: _____

_____

City: _____ State: _____ Zip: _____

Amount of Contract: $_____

Approximate Starting Date: ____/____/____

Approximate Completion Date: ____/____/____

Contract Type:

[ ] (01) General Construction
[ ] (02) Heating/Ventilation
[ ] (03) Electrical
[ ] (04) Plumbing
[ ] (05) Other : _____

Phone: (518) 457-5589 Fax: (518) 485-1870
W. Averell Harriman State Office Campus, Bldg. 12, Room 130, Albany, NY 12226

Social Security Numbers on Certified Payrolls:

The Department of Labor is cognizant of the concerns of the potential for misuse or inadvertent disclosure of social security numbers. Identity theft is a growing problem and we are sympathetic to contractors' concern regarding inclusion of this information on payrolls if another identifier will suffice.

For these reasons, the substitution of the use of the last four digits of the social security number on certified payrolls submitted to contracting agencies on public work projects is now acceptable to the Department of Labor. This change does not affect the Department's ability to request and receive the entire social security number from employers during its public work/ prevailing wage investigations.

Construction Industry Fair Play Act: Required Posting for Labor Law Article 25-B § 861-d

Construction industry employers must post the "Construction Industry Fair Play Act" notice in a prominent and accessible place on the job site. Failure to post the notice can result in penalties of up to $1,500 for a first offense and up to $5,000 for a second offense. The posting is included as part of this wage schedule. Additional copies may be obtained from the NYS DOL website, https://dol.ny.gov/public-work-and-prevailing-wage
If you have any questions concerning the Fair Play Act, please call the State Labor Department toll-free at 1-866-435-1499 or email us at: dol.misclassified@labor.ny.gov .

Worker Notification: (Labor Law §220, paragraph a of subdivision 3-a)

Effective June 23, 2020

This provision is an addition to the existing wage rate law, Labor Law §220, paragraph a of subdivision 3-a. It requires contractors and subcontractors to provide written notice to all laborers, workers or mechanics of the *prevailing wage and supplement rate* for their particular job classification *on each pay stub**. It also requires contractors and subcontractors to *post a notice* at the beginning of the performance of every public work contract *on each job site* that includes the telephone number and address for the Department of Labor and a statement informing laborers, workers or mechanics of their right to contact the Department of Labor if he/she is not receiving the proper prevailing rate of wages and/or supplements for his/her job classification. The required notification will be provided with each wage schedule, may be downloaded from our website *www.labor.ny.gov* or be made available upon request by contacting the Bureau of Public Work at 518-457-5589. *In the event the required information will not fit on the pay stub, an accompanying sheet or attachment of the information will suffice.

(12.20)

To all State Departments, Agency Heads and Public Benefit Corporations
IMPORTANT NOTICE REGARDING PUBLIC WORK ENFORCEMENT FUND

Budget Policy & Reporting Manual

B-610

Public Work Enforcement Fund

effective date December 7, 2005

---

1. Purpose and Scope:

This Item describes the Public Work Enforcement Fund (the Fund, PWEF) and its relevance to State agencies and public benefit corporations engaged in construction or reconstruction contracts, maintenance and repair, and announces the recently-enacted increase to the percentage of the dollar value of such contracts that must be deposited into the Fund. This item also describes the roles of the following entities with respect to the Fund:

- New York State Department of Labor (DOL),
- The Office of the State of Comptroller (OSC), and
- State agencies and public benefit corporations.

2. Background and Statutory References:

DOL uses the Fund to enforce the State's Labor Law as it relates to contracts for construction or reconstruction, maintenance and repair, as defined in subdivision two of Section 220 of the Labor Law. State agencies and public benefit corporations participating in such contracts are required to make payments to the Fund.

Chapter 511 of the Laws of 1995 (as amended by Chapter 513 of the Laws of 1997, Chapter 655 of the Laws of 1999, Chapter 376 of the Laws of 2003 and Chapter 407 of the Laws of 2005) established the Fund.

3. Procedures and Agency Responsibilities:

The Fund is supported by transfers and deposits based on the value of contracts for construction and reconstruction, maintenance and repair, as defined in subdivision two of Section 220 of the Labor Law, into which all State agencies and public benefit corporations enter.

Chapter 407 of the Laws of 2005 increased the amount required to be provided to this fund to .10 of one-percent of the total cost of each such contract, to be calculated at the time agencies or public benefit corporations enter into a new contract or if a contract is amended. The provisions of this bill became effective August 2, 2005.

To all State Departments, Agency Heads and Public Benefit Corporations
IMPORTANT NOTICE REGARDING PUBLIC WORK ENFORCEMENT FUND

OSC will report to DOL on all construction-related ("D") contracts approved during the month, including contract amendments, and then DOL will bill agencies the appropriate assessment monthly. An agency may then make a determination if any of the billed contracts are exempt and so note on the bill submitted back to DOL. For any instance where an agency is unsure if a contract is or is not exempt, they can call the Bureau of Public Work at the number noted below for a determination. Payment by check or journal voucher is due to DOL within thirty days from the date of the billing. DOL will verify the amounts and forward them to OSC for processing.

For those contracts which are not approved or administered by the Comptroller, monthly reports and payments for deposit into the Public Work Enforcement Fund must be provided to the Administrative Finance Bureau at the DOL within 30 days of the end of each month or on a payment schedule mutually agreed upon with DOL.

Reports should contain the following information:

- Name and billing address of State agency or public benefit corporation;
- State agency or public benefit corporation contact and phone number;
- Name and address of contractor receiving the award;
- Contract number and effective dates;
- Contract amount and PWEF assessment charge (if contract amount has been amended, reflect increase or decrease to original contract and the adjustment in the PWEF charge); and
- Brief description of the work to be performed under each contract.

Checks and Journal Vouchers, payable to the "New York State Department of Labor" should be sent to:

Department of Labor
Administrative Finance Bureau-PWEF Unit
Building 12, Room 464
State Office Campus
Albany, NY 12226

Any questions regarding billing should be directed to NYSDOL's Administrative Finance Bureau-PWEF Unit at (518) 457-3624 and any questions regarding Public Work Contracts should be directed to the Bureau of Public Work at (518) 457-5589.

Required Notice under Article 25-B of the Labor Law

Attention All Employees, Contractors and Subcontractors: You are Covered by the Construction Industry Fair Play Act

The law says that you are an employee unless:

- You are free from direction and control in performing your job, **and**
- You perform work that is not part of the usual work done by the business that hired you, **and**
- You have an independently established business.

Your employer cannot consider you to be an independent contractor unless all three of these facts apply to your work.

It is against the law for an employer to misclassify employees as independent contractors or pay employees off the books.

Employee Rights: If you are an employee, you are entitled to state and federal worker protections. These include:

- Unemployment Insurance benefits, if you are unemployed through no fault of your own, able to work, and otherwise qualified,
- Workers' compensation benefits for on-the-job injuries,
- Payment for wages earned, minimum wage, and overtime (under certain conditions),
- Prevailing wages on public work projects,
- The provisions of the National Labor Relations Act, and
- A safe work environment.

It is a violation of this law for employers to retaliate against anyone who asserts their rights under the law. Retaliation subjects an employer to civil penalties, a private lawsuit or both.

Independent Contractors: If you are an independent contractor**, you must pay all taxes and Unemployment Insurance contributions required by New York State and Federal Law.**

Penalties for paying workers off the books or improperly treating employees as independent contractors:

- **Civil Penalty** — First offense: Up to $2,500 per employee

  Subsequent offense(s): Up to $5,000 per employee

- **Criminal Penalty** — First offense: Misdemeanor - up to 30 days in jail, up to a $25,000 fine and debarment from performing public work for up to one year.

  Subsequent offense(s): Misdemeanor - up to 60 days in jail or up to a $50,000 fine and debarment from performing public work for up to 5 years.

If you have questions about your employment status or believe that your employer may have violated your rights and you want to file a complaint, call the Department of Labor at (866) 435-1499 or send an email to dol.misclassified@labor.ny.gov. All complaints of fraud and violations are taken seriously. You can remain anonymous.

Employer Name:

WE ARE YOUR DOL

New York State Department of Labor
Bureau of Public Work

Attention Employees

THIS IS A:

PUBLIC WORK PROJECT

If you are employed on this project as a **worker, laborer, or mechanic** you are entitled to receive the **prevailing wage and supplements rate** for the classification at which you are working.

Your pay stub and wage notice received upon hire must clearly state your wage rate and supplement rate.

Chapter 629 of the Labor Laws of 2007:

These wages are set by law and must be posted at the work site. They can also be found at:
https://dol.ny.gov/bureau-public-work

If you feel that you have not received proper wages or benefits, please call our nearest office.*

Albany	(518) 457-2744	Patchogue	(631) 687-4882
Binghamton	(607) 721-8005	Rochester	(585) 258-4505
Buffalo	(716) 847-7159	Syracuse	(315) 428-4056
Garden City	(516) 228-3915	Utica	(315) 793-2314
New York City	(212) 932-2419	White Plains	(914) 997-9507
Newburgh	(845) 568-5287		

* For New York City government agency construction projects, please contact the Office of the NYC Comptroller at (212) 669-4443, or www.comptroller.nyc.gov – click on Bureau of Labor Law.

Contractor Name: _____

Project Location: _____

Requirements for OSHA 10 Compliance

Article 8 §220-h requires that when the advertised specifications, for every contract for public work, is $250,000.00 or more the contract must contain a provision requiring that every worker employed in the performance of a public work contract shall be certified as having completed an OSHA 10 safety training course. The clear intent of this provision is to require that all employees of public work contractors, required to be paid prevailing rates, receive such training "prior to the performing any work on the project."

The Bureau will enforce the statute as follows:

All contractors and sub contractors must attach a copy of proof of completion of the OSHA 10 course to the first certified payroll submitted to the contracting agency and on each succeeding payroll where any new or additional employee is first listed.

Proof of completion may include but is not limited to:

- Copies of bona fide course completion card (*Note: Completion cards do not have an expiration date.)*
- Training roster, attendance record of other documentation from the certified trainer pending the issuance of the card.
- Other valid proof

**A certification by the employer attesting that all employees have completed such a course is not sufficient proof that the course has been completed.

Any questions regarding this statute may be directed to the New York State Department of Labor, Bureau of Public Work at 518-457-5589.

WICKS

Public work projects are subject to the Wicks Law requiring separate specifications and bidding for the plumbing, heating and electrical work, when the total project's threshold is $3 million in Bronx, Kings, New York, Queens and, Richmond counties; $1.5 million in Nassau, Suffolk and Westchester counties; and $500,000 in all other counties.

For projects below the monetary threshold, bidders must submit a sealed list naming each subcontractor for the plumbing, HVAC and electrical and the amount to be paid to each. The list may not be changed unless the public owner finds a legitimate construction need, including a change in specifications or costs or the use of a Project Labor Agreement (PLA), and must be open to public inspection.

Allows the state and local agencies and authorities to waive the Wicks Law and use a PLA if it will provide the best work at the lowest possible price. If a PLA is used, all contractors shall participate in apprentice training programs in the trades of work it employs that have been approved by the Department of Labor (DOL) for not less than three years. They shall also have at least one graduate in the last three years and use affirmative efforts to retain minority apprentices. PLA's would be exempt from Wicks, but deemed to be public work subject to prevailing wage enforcement.

The Commissioner of Labor shall have the power to enforce separate specification requirement s on projects, and may issue stop-bid orders against public owners for non-compliance.

Other new monetary thresholds, and similar sealed bidding for non-Wicks projects, would apply to certain public authorities including municipal housing authorities, NYC Construction Fund, Yonkers Educational Construction Fund, NYC Municipal Water Finance Authority, Buffalo Municipal Water Finance Authority, Westchester County Health Care Association, Nassau County Health Care Corp., Clifton-Fine Health Care Corp., Erie County Medical Center Corp., NYC Solid Waste Management Facilities, and the Dormitory Authority.

Contractors must pay subcontractors within a 7 days period.

(07.19)

Introduction to the Prevailing Rate Schedule

Information About Prevailing Rate Schedule

This information is provided to assist you in the interpretation of particular requirements for each classification of worker contained in the attached Schedule of Prevailing Rates.

Classification

It is the duty of the Commissioner of Labor to make the proper classification of workers taking into account whether the work is heavy and highway, building, sewer and water, tunnel work, or residential, and to make a determination of wages and supplements to be paid or provided. It is the responsibility of the public work contractor to use the proper rate. If there is a question on the proper classification to be used, please call the district office located nearest the project. District office locations and phone numbers are listed below.

Prevailing Wage Schedules are issued separately for "General Construction Projects" and "Residential Construction Projects" on a county-by-county basis.

General Construction Rates apply to projects such as: Buildings, Heavy & Highway, and Tunnel and Water & Sewer rates.

Residential Construction Rates generally apply to construction, reconstruction, repair, alteration, or demolition of one family, two family, row housing, or rental type units intended for residential use.

Some rates listed in the Residential Construction Rate Schedule have a very limited applicability listed along with the rate. Rates for occupations or locations not shown on the residential schedule must be obtained from the General Construction Rate Schedule. Please contact the local Bureau of Public Work office before using Residential Rate Schedules, to ensure that the project meets the required criteria.

Payrolls and Payroll Records

Contractors and subcontractors are required to establish, maintain, and preserve for not less that six (6) years, contemporaneous, true, and accurate payroll records.

Every contractor and subcontractor shall submit to the Department of Jurisdiction (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 under penalty of perjury.

Paid Holidays

Paid Holidays are days for which an eligible employee receives a regular day's pay, but is not required to perform work. If an employee works on a day listed as a paid holiday, this remuneration is in addition to payment of the required prevailing rate for the work actually performed.

Overtime

At a minimum, all work performed on a public work project in excess of eight hours in any one day or more than five days in any workweek is overtime. However, the specific overtime requirements for each trade or occupation on a public work project may differ. Specific overtime requirements for each trade or occupation are contained in the prevailing rate schedules.

Overtime holiday pay is the premium pay that is required for work performed on specified holidays. It is only required where the employee actually performs work on such holidays.

The applicable holidays are listed under HOLIDAYS: OVERTIME. The required rate of pay for these covered holidays can be found in the OVERTIME PAY section listings for each classification.

Supplemental Benefits

Particular attention should be given to the supplemental benefit requirements. Although in most cases the payment or provision of supplements is straight time for all hours worked, some classifications require the payment or provision of supplements, or a portion of the supplements, to be paid or provided at a premium rate for premium hours worked. Supplements may also be required to be paid or provided on paid holidays, regardless of whether the day is worked. The Overtime Codes and Notes listed on the particular wage classification will indicate these conditions as required.

Effective Dates

When you review the schedule for a particular occupation, your attention should be directed to the dates above the column of rates. These are the dates for which a given set of rates is effective. The rate listed is valid until the next effective rate change or until the new annual determination which takes effect on July 1 of each year. All contractors and subcontractors are required to pay the current prevailing rates of wages and supplements. If you have any questions please contact the Bureau of Public Work or visit the New York State Department of Labor website (www.labor.ny.gov) for current wage rate information.

Apprentice Training Ratios

The following are the allowable ratios of registered Apprentices to Journey-workers.

For example, the ratio 1:1,1:3 indicates the allowable initial ratio is one Apprentice to one Journeyworker. The Journeyworker must be in place on the project before an Apprentice is allowed. Then three additional Journeyworkers are needed before a second Apprentice is allowed. The last ratio repeats indefinitely. Therefore, three more Journeyworkers must be present before a third Apprentice can be hired, and so on.

Please call Apprentice Training Central Office at (518) 457-6820 if you have any questions.

Title (Trade)	Ratio
Boilermaker (Construction)	1:1,1:4
Boilermaker (Shop)	1:1,1:3
Carpenter (Bldg.,H&H, Pile Driver/Dockbuilder)	1:1,1:4
Carpenter (Residential)	1:1,1:3
Electrical (Outside) Lineman	1:1,1:2
Electrician (Inside)	1:1,1:3
Elevator/Escalator Construction & Modernizer	1:1,1:2
Glazier	1:1,1:3
Insulation & Asbestos Worker	1:1,1:3
Iron Worker	1:1,1:4
Laborer	1:1,1:3
Mason	1:1,1:4
Millwright	1:1,1:4
Op Engineer	1:1,1:5
Painter	1:1,1:3
Plumber & Steamfitter	1:1,1:3
Roofer	1:1,1:2
Sheet Metal Worker	1:1,1:3
Sprinkler Fitter	1:1,1:2

If you have any questions concerning the attached schedule or would like additional information, please contact the nearest BUREAU of PUBLIC WORK District Office or write to:

New York State Department of Labor
Bureau of Public Work
State Office Campus, Bldg. 12
Albany, NY 12226

District Office Locations:	Telephone #	FAX #
Bureau of Public Work - Albany	518-457-2744	518-485-0240
Bureau of Public Work - Binghamton	607-721-8005	607-721-8004
Bureau of Public Work - Buffalo	716-847-7159	716-847-7650
Bureau of Public Work - Garden City	516-228-3915	516-794-3518
Bureau of Public Work - Newburgh	845-568-5287	845-568-5332
Bureau of Public Work - New York City	212-932-2419	212-775-3579
Bureau of Public Work - Patchogue	631-687-4882	631-687-4902
Bureau of Public Work - Rochester	585-258-4505	585-258-4708
Bureau of Public Work - Syracuse	315-428-4056	315-428-4671
Bureau of Public Work - Utica	315-793-2314	315-793-2514
Bureau of Public Work - White Plains	914-997-9507	914-997-9523
Bureau of Public Work - Central Office	518-457-5589	518-485-1870

Tioga County General Construction

Boilermaker 11/01/2023

JOB DESCRIPTION Boilermaker **DISTRICT** 1

ENTIRE COUNTIES
Albany, Broome, Chenango, Columbia, Delaware, Essex, Fulton, Greene, Hamilton, Herkimer, Montgomery, Otsego, Rensselaer, Saratoga, Schenectady, Schoharie, Tioga, Warren, Washington

WAGES
Per hour

	07/01/2023	01/01/2024 Additional
Boilermaker	$ 40.09	+ $1.31*

(*) To be allocated at later date.

SUPPLEMENTAL BENEFITS
Per hour

Journeyperson	$25.95 + 1.49**

(**) This portion of the benefit is NOT subject to the SAME PREMIUM as shown for overtime.

OVERTIME PAY
See (B, E, Q, V) on OVERTIME PAGE

HOLIDAY
Paid: See (1) on HOLIDAY PAGE
Overtime: See (5, 6, 15, 25) on HOLIDAY PAGE
Note: When a holiday falls on Sunday, the day observed by the State or Nation shall be observed, and when Christmas Day and New Year's fall on Saturday, Friday will be observed as the holiday.

REGISTERED APPRENTICES
Wages per hour
(1/2) year terms at the following percentage of Journeyman's wage.

1st	2nd	3rd	4th	5th	6th	7th	8th
65%	65%	70%	75%	80%	85%	90%	95%

Supplemental Benefits per hour

1st	2nd	3rd	4th	5th	6th	7th	8th
19.35	19.35	20.29	21.23	22.17	23.13	24.06	25.01
+1.49**	+1.49**	+1.49**	+1.49**	+1.49**	+1.49**	+1.49**	+1.49**

(**) This portion of the benefit is NOT subject to the SAME PREMIUM as shown for overtime.

1-197

Carpenter - Building 11/01/2023

JOB DESCRIPTION Carpenter - Building **DISTRICT** 2

ENTIRE COUNTIES
Broome, Tioga

WAGES

Per hour:	07/01/2023	07/01/2024 Additional	07/01/2025 Additional
Carpenter	$ 30.00	$ 1.30*	$ 1.30*
Floor Coverer	30.00	1.30*	1.30*
Carpet Layer	30.00	1.30*	1.30*
Dry-Wall	30.00	1.30*	1.30*
Diver-Wet Day	36.25	0.00	0.00
Diver -Dry Day	31.00	1.30*	1.30*
Diver Tender	31.00	1.30*	1.30*

*To be allocated at a later date

NOTE ADDITIONAL AMOUNTS PAID FOR THE FOLLOWING WORK LISTED BELOW (per hour worked):
- Pile Drivers/Dock Builders shall receive $0.25 per hour over the journeyman's rate of pay when performing piledriving/dock building work.

- Certified welders shall receive $1.00 per hour over the journeyman's rate of pay when the employee is required to be certified and performs DOT or ABS specified welding work
- When an employee performs work within a contaminated area on a State and/or Federally designated hazardous waste site, and where relevant State and/or Federal regulations require employees to be furnished and use or wear required forms of personal protection, then the employee shall receive his regular hourly rate plus $1.50 per hour.
- Depth pay for Divers based upon deepest depth on the day of the dive (per diem payment):
  0' to 80' no additional fee
  81'to 100' additional $.50 per foot
  101'to 150' additional $0.75 per foot
  151'and deeper additional $1.25 per foot
- Penetration pay for Divers based upon deepest penetration on the day of the dive (per diem payment):
  0' to 50' no additional fee
  51' to 100' additional $.75 per foot
  101' and deeper additional $1.00 per foot
- Diver rates applies to all hours worked on dive day.

SHIFT WORK
On Agency/Owner mandated shift work, the following rates will be applicable:
1st Shift - Regular Rate
2nd Shift - Premium of 7% of base wage per hour
3rd Shift - Premium of 14% of base wage per hour
Shift work shall be defined as implementing at least two (2) shifts in a twenty-four (24) consecutive hour period. Shift work must be for a minimum of three (3) consecutive days.

NOTE - The 'Employer Registration' (30.1) use of a '4 Day/10 Hour Work schedules' will no longer be accepted or processed. All registered projects prior to June 30,2023 will expire within the granted time frame.

For Pre-Registered Projects Four (4), Ten (10) hour days may be worked at straight time during a week, Monday thru Thursday. Friday may be used as a make-up day. Tuesday thru Friday may be worked with no make-up day. For further clarification contact your local Bureau Office.

SUPPLEMENTAL BENEFITS
Per hour:

Journeyman	$ 21.16

OVERTIME PAY
See (B, E, E2, Q) on OVERTIME PAGE

HOLIDAY
Paid: See (1) on HOLIDAY PAGE
Overtime: See (5, 6) on HOLIDAY PAGE
Note: Any holiday which occurs on Sunday shall be observed the following Monday. If Christmas falls on a Saturday, it shall be observed on the prior Friday.

REGISTERED APPRENTICES
CARPENTER APPRENTICES
Wages per hour (1300 hour terms at the following percentage of journeyman's base wage):

1st	2nd	3rd	4th
65%	70%	75%	80%

Supplemental Benefits per hour:

$ 12.50	$ 12.50	$ 15.10	$ 15.10

PILEDRIVER/DOCK BUILDER APPRENTICES
Wages per hour (1300 hour terms at the following percentage of journeyman's base wage):

1st	2nd	3rd	4th
65%*	70%*	75%*	80%*

*Pile Driver/Dock Builder apprentices shall receive an additional $0.25 per hour worked when performing piledriving/dock building work.
Supplemental Benefits per hour:

$ 12.50	$ 12.50	$ 15.10	$ 15.10

LINOLEUM, RESILIENT TILE, AND CARPET LAYER APPRENTICES
Wages per hour (1300 hour terms at the following percentage of journeyman's base wage):

1st	2nd	3rd	4th
65%	70%	75%	80%

Supplemental Benefits per hour:

$ 12.50	$ 12.50	$ 15.10	$ 15.10

ADDITIONAL AMOUNTS PAID PER HOUR WORKED TO APPRENTICES FOR SPECIFIC TYPES OF WORK PERFORMED:

- Certified welders shall receive $1.00 per hour over the apprentices rate of pay when the apprentice is required to be certified and performs DOT or ABS specified welding work
- When an apprentice performs work within a contaminated area on a State and/or Federally designated hazardous waste site, and where relevant State and/or Federal regulations require the apprentice to be furnished and use or wear required forms of personal protection, then the apprentice shall receive his regular hourly rate plus $1.50 per hour.

2-277B-Bro

Carpenter - Building / Heavy&Highway 11/01/2023

JOB DESCRIPTION Carpenter - Building / Heavy&Highway **DISTRICT** 2

ENTIRE COUNTIES
Albany, Allegany, Broome, Cattaraugus, Cayuga, Chautauqua, Chemung, Chenango, Clinton, Columbia, Cortland, Delaware, Erie, Essex, Franklin, Fulton, Genesee, Greene, Hamilton, Herkimer, Jefferson, Lewis, Livingston, Madison, Monroe, Montgomery, Niagara, Oneida, Onondaga, Ontario, Orleans, Oswego, Otsego, Rensselaer, Saratoga, Schenectady, Schoharie, Schuyler, Seneca, St. Lawrence, Steuben, Sullivan, Tioga, Tompkins, Ulster, Warren, Washington, Wayne, Wyoming, Yates

PARTIAL COUNTIES
Orange: The area lying on Northern side of Orange County demarcated by a line drawn from the Bear Mountain Bridge continuing west to the Bear Mountain Circle, continue North on 9W to the town of Cornwall where County Road 107 (also known as Quaker Rd) crosses under 9W, then east on County Road 107 to Route 32, then north on Route 32 to Orrs Mills Rd, then west on Orrs Mills Rd to Route 94, continue west and south on Route 94 to the Town of Chester, to the intersection of Kings Highway, continue south on Kings Highway to Bellvale Rd, west on Bellvale Rd to Bellvale Lakes Rd, then south on Bellvale Lakes Rd to Kain Rd, southeast on Kain Rd to Route 17A, then north and southeast along Route 17A to Route 210, then follow Route 210 to NJ Border.

WAGES

Wages per hour:	07/01/2023	07/01/2024 Additional
Carpenter - ONLY for Artificial Turf/Synthetic Sport Surface	$ 34.48	$ 2.25*

*To be allocated at a later date
Note - Does not include the operation of equipment. Please see Operating Engineers rates.

SUPPLEMENTAL BENEFITS
Per hour:

Journeyman	$ 26.30

OVERTIME PAY
See (B, E, Q, X) on OVERTIME PAGE

HOLIDAY
Paid: See (5) on HOLIDAY PAGE
Overtime: See (5, 6, 16) on HOLIDAY PAGE
Notes:
When a holiday falls upon a Saturday, it shall be observed on the preceding Friday. Whan a holiday falls upon a Sunday, it shall be observed on the following Monday.
An employee taking an unexcused day off the regularly scheduled day before or after a paid Holiday shall not receive Holiday pay.

REGISTERED APPRENTICES
Wages per hour (1300 hour terms at the following percentage of Journeyman's wage):

1st	2nd	3rd	4th
65%	70%	75%	80%

Supplemental Benefits per hour:

1st term	$ 17.56
2nd term	18.04
3rd term	20.06
4th term	20.54

2-42AtSS

Carpenter - Heavy&Highway 11/01/2023

JOB DESCRIPTION Carpenter - Heavy&Highway **DISTRICT** 2

ENTIRE COUNTIES
Broome, Cayuga, Chemung, Cortland, Delaware, Jefferson, Lewis, Onondaga, Oswego, Schuyler, Seneca, St. Lawrence, Steuben, Tioga, Tompkins, Yates

WAGES

Per hour	07/01/2023	05/01/2024 Additional
Carpenter	$ 35.78	$ 2.75*

Piledriver	35.78	2.75*
Diver-Wet Day	60.78	2.75*
Diver-Dry Day	36.78	2.75*
Diver-Tender	36.78	2.75*

*To be allocated at a later date.

NOTE ADDITIONAL AMOUNTS PAID FOR THE FOLLOWING WORK LISTED BELOW (per hour worked):
- When project owner mandates a single irregular work shift, the employee will receive an additional $3.00 per hour. A single irregular work shift can start any time from 5:00 p.m. to 1:00 a.m.
- State or Federal designated hazardous site, requiring protective gear shall be an additional $2.50 per hour.
- Certified welders when required to perform welding work will receive an additional $2.50 per hour.

ADDITIONAL NOTES PERTAINING TO DIVERS/TENDERS:
- Divers and Tenders shall receive one and one half (1 1/2) times their regular diver and tender rate of pay for Effluent and Slurry diving.
- Divers and tenders being paid at the specified rate for Effluent and Slurry diving shall have all overtime rates based on the specified rate plus the appropriate overtime rates (one and one half or two times the specified rate for Slurry and Effluent divers and tenders).
- The pilot of an ADS or submersible will receive one and one-half (1 1/2) times the Diver-Wet Day Rate for time submerged.
- All crew members aboard a submersible shall receive the Diver-Wet Day rate.
- Depth pay for Divers based upon deepest depth on the day of the dive (per diem payment):
  - 0' to 50' no additional fee
  - 51'to 100' additional $.50 per foot
  - 101'to 150' additional $0.75 per foot
  - 151'and deeper additional $1.25 per foot
- Penetration pay for Divers based upon deepest penetration on the day of the dive (per diem payment):
  - 0' to 50' no additional fee
  - 51' to 100' additional $.75 per foot
  - 101' and deeper additional $1.00 per foot
- Diver rates applies to all hours worked on dive day.

NOTE - The 'Employer Registration' (30.1) use of a '4 Day/10 Hour Work schedules' will no longer be accepted or processed. All registered projects prior to June 30,2023 will expire within the granted time frame.

For Pre-Registered Projects Four (4), Ten (10) hour days may be worked at straight time during a week, Monday thru Thursday. Friday may be used as a make-up day. Tuesday thru Friday may be worked with no make-up day. For further clarification contact your local Bureau Office.

SUPPLEMENTAL BENEFITS
Per hour:

Journeyman $ 26.30

OVERTIME PAY
See (B, E, Q) on OVERTIME PAGE

HOLIDAY
Paid: See (5, 6) on HOLIDAY PAGE
Overtime: See (5, 6) on HOLIDAY PAGE
- In the event a Holiday falls on a Saturday, the Friday before will be observed as a Holiday. If a Holiday falls on a Sunday, then Monday will be observed as a Holiday. Employee must work scheduled work day before and after the Holiday.
- The employee must work their scheduled workday before and their scheduled workday after the holiday to receive holiday pay.

REGISTERED APPRENTICES
CAPRENTER APPRENTICES
Wages per hour (1040 hour terms at the following percentage of journeyman's base wage):

1st	2nd	3rd	4th	5th
65%	70%	75%	80%	85%

Supplemental Benefits per hour:

$ 17.56	$ 18.04	$ 20.01	$ 20.49	$ 20.97

PILEDRIVER/DOCKBUILDER APPRENTICES
Wages per hour (1300 hour terms at the following percentage of journeyman's base wage):

1st	2nd	3rd	4th
65%	70%	80%	85%

Supplemental Benefits per hour:

$ 17.56	$ 18.04	$ 20.49	$ 20.97

NOTE ADDITIONAL AMOUNTS PAID PER HOUR WORKED TO APPRENTICES FOR SPECIFIC TYPES OF WORK PERFORMED:
- When project owner mandates a single irregular work shift, the employee will receive an additional $3.00 per hour. A single irregular work shift can start any time from 5:00 p.m. to 1:00 a.m.

- State or Federal designated hazardous site, requiring protective gear shall be an additional $2.50 per hour.
- Certified welders when required to perform welding work will receive an additional $2.50 per hour.

2-277HH-Bro

Electrician 11/01/2023

JOB DESCRIPTION Electrician **DISTRICT** 6

ENTIRE COUNTIES

PARTIAL COUNTIES
Cayuga: Only the Township of Genoa.
Schuyler: Only the Townships of Cayuta, Catharine, and Hector.
Seneca: Only the Townships of Lodi and Covert.
Tioga: Only the Townships of Spencer and Candor.
Tompkins: Entire county except the Township of Groton.

WAGES

Per hour:	07/01/2023	06/01/2024 Additional
Electrician	$ 40.00	$ 2.75*

* To be allocated at a later date

Additional $1.00 per hour for work from trusses, scaffolds, frames, spider baskets, ladders, etc. 40 feet or more from ground floor or in underground mines or tunnels. Work done from personal lift equipment that complies with OSHA requirements are excluded.

Additional $2.00 per hour when required to work under compressed air, on radio towers, on asbestos abatement projects which require the use of a respirator, work of a hazardous nature, work where gas masks are required or work requiring use of protective arc flash suits.

SHIFT WORK: THE FOLLOWING RATES WILL APPLY WHEN SHIFT WORK IS MANDATED EITHER IN THE JOB SPECIFICATION OR BY THE CONTRACTING AGENCY:

1ST SHIFT	8:00 AM to 4:30 PM	Regular wage rate
2ND SHIFT	4:30 PM to 1:00 AM	Regular wage rate plus 17.3%
3RD SHIFT	12:30 AM to 9:00 AM	Regular wage rate plus 31.4%

SUPPLEMENTAL BENEFITS

Per hour:	
Journeyman	$ 28.80 plus 3% of hourly wage paid*

* NOTE: The 3% is based on the hourly wage paid, straight time rate or premium rate.

OVERTIME PAY
See (B, *E, Q) on OVERTIME PAGE
* NOTE: On Saturday the first 8 hours worked shall be paid at a rate of one and one-half times the applicable rate. All additional hours are payable at double the straight time rate.
NOTE: WAGE CAP - Double the straight time hourly base wage shall be the maximum hourly wage compensation for any hour worked. Contractor is still responsible to pay the hourly benefit amount for each hour worked.

HOLIDAY
Paid: See (1) on HOLIDAY PAGE
Overtime: See (5, 6) on HOLIDAY PAGE
NOTE: When a holiday falls on a Saturday, the day preceding shall be celebrated as such, and when falling on a Sunday, Monday will be celebrated as the holiday.

REGISTERED APPRENTICES
WAGES per hour: One year terms at the following percentage of Journeyman's wage.

1st year (47.5%)	$ 19.00
2nd year (55%)	22.00
3rd year (65%)	26.00
4th year (75%)	30.00
5th year (85%)	34.00

SUPPLEMENTAL BENEFITS per hour:

1st year	$ 13.25*
2nd year	12.25*
3rd year	21.81*
4th year	23.28*
5th year	24.75*

* PLUS 3% OF HOURLY WAGE PAID, STRAIGHT TIME RATE OR PREMIUM RATE.

6-241

Electrician 11/01/2023

JOB DESCRIPTION Electrician **DISTRICT** 2

ENTIRE COUNTIES
Chemung, Steuben

PARTIAL COUNTIES
Allegany: Only the townships of Allen, Almond, Alfred, Andover, Birdsall, Burns, Granger, Grove, Hume, Independence, Ward, Wellsville, West Almond, Willing, and that portion of Amity, Angelica, Belfast, Caneadea, and Scio that lie east of the Genesee River.
Schuyler: Only the Townships of Dix, Montour, Orange, Reading and Tyrone.
Tioga: Only the Townships of Barton and Nichols.

WAGES

Per hour:	07/01/2023	06/02/2024 Additional	06/01/2025 Additional
Electrician (Base wage)	$ 41.00	$ 2.09*	$ 2.15*
Audio,Sound,Teledata	41.00	2.09*	2.15*

*To be allocated at a later date

SHIFT WORK:
When shift work is mandated in the job specifications or by the contracting agency, the following journeyman hourly rates apply. The starting hours of a shift may be adjusted up to two (2) hours in order to meet the needs of the contracting agency.

Between the hours of 8:00AM and 4:30PM	$ 41.00
Between the hours of 4:30PM and 1:00AM	46.13
Between the hours of 12:30AM and 9:00AM	51.25

ADDITIONAL AMOUNTS FOR SPECIFIC TYPES OF JOBSITE CONDITIONS (amount subject to any overtime premiums):
Additional $1.00 per hour for high work defined as work being done more than 35' above the floor where electricians are working on Tooth Picks, Structural Steel, Temporary Platforms, Swinging Scaffolds and Boatswain Chairs.
Additional $1.00 per hour for work in shafts 25' deep and in tunnels 50' long under construction.
Additional $2.00 per hour for work inside or on Towers, Smoke Stacks and Wind Turbine Generators over 100' high.
Additional $2.00 per hour for work in hazardous locations requiring supplied air (other than Class A) and any other type of respiratory equipment required for Class B or Class C as defined in OSHA Standards.
Additional $3.00 per hour for work in hazardous locations requiring Class A supplied air as defined in OSHA Standards.

SUPPLEMENTAL BENEFITS
Per hour:
Journeyman
07/01/2023 $ 21.03 plus $ 7.55* plus 3% of hourly wage
*Subject to SAME PREMIUM as overtime work

OVERTIME PAY
See (B, *E, Q) on OVERTIME PAGE
* Work performed on Saturday shall be paid at one and one-half of the hourly rate for the first ten hours, then two times the hourly rate therafter.

HOLIDAY
Paid: See (1) on HOLIDAY PAGE
Overtime: See (5, 6, 23) on HOLIDAY PAGE
When the holiday falls on Saturday, it shall be recognized and celebrated as such on the Friday before and when the holiday falls on Sunday, it shall be recognized and celebrated as such on the following Monday (December 24th excluded).

REGISTERED APPRENTICES
WAGES: One year terms at the following percent of Journeyman's wage.

1st	2nd	3rd	4th	5th
50%	55%	65%	75%	85%

ADDITIONAL AMOUNTS FOR SPECIFIC TYPES OF JOBSITE CONDITIONS (amount subject to any overtime premiums):
Additional $1.00 per hour for high work defined as work being done more than 35' above the floor where electricians are working on Tooth Picks, Structural Steel, Temporary Platforms, Swinging Scaffolds and Boatswain Chairs.
Additional $2.00 per hour for work inside or on Towers, Smoke Stacks and Wind Turbine Generators over 100' high.
Additional $1.00 per hour for work in shafts 25' deep and in tunnels 50' long under construction.
Additional $3.00 per hour for work in hazardous locations requiring Class A supplied air as defined in OSHA Standards.

Additional $2.00 per hour for work in hazardous locations requiring supplied air (other than Class A) and any other type of respiratory equipment required for Class B or Class C as defined in OSHA Standards.

SUPPLEMENTAL BENEFITS per hour:

07/01/2023	
1st term	$12.53 plus 3% of hourly wage
2nd term	$17.21 plus $4.15* plus 3% of hourly wage
3rd term	$18.06 plus $4.91* plus 3% of hourly wage
4th term	$18.91 plus $5.66* plus 3% of hourly wage
5th term	$19.76 plus $6.42* plus 3% of hourly wage

*Subject to SAME PREMIUM as overtime work

2-139

Electrician 11/01/2023

JOB DESCRIPTION Electrician **DISTRICT** 2

ENTIRE COUNTIES
Broome

PARTIAL COUNTIES
Chenango: Entire County except the Townships of Columbus, New Berlin and Sherburne.
Delaware: Only the Townships of Davenport, Delhi, Deposit, Franklin, Hamden, Masonville, Meredith, Sidney, Tompkins and Walton Townships,and that portion of Colchester and Hancock Townships north of the east branch of the Delaware River.
Otsego: Only the Townships of Butternuts, Hartwick, Laurens, Maryland, Milford, Morris, Oneonta, Otego, Unadilla and Westford.
Tioga: Only the Townships of Berkshire, Newark Valley, Owego, Richford and Tioga.

WAGES

Per hour:	07/01/2023	06/01/2024 Additional	06/01/2025 Additional
Electrician (base wage)	$ 39.43	$ 2.75*	$ 3.00*
Cable Splicer	46.18	2.75*	3.00*

*To be allocated at a later date

ADDITIONAL AMOUNTS FOR SPECIFIC TYPES OF JOBSITE CONDITIONS (amount subject to any overtime premiums):
Additional $ 0.50 per hour when required to work underground, such as in tunnels for roads, railroads, or water.
Additional $ 0.50 per hour when required to work at a height of 40 feet above the ground or roof level.

SHIFT WORK:
When shift work is mandated in the job specifications or by the contracting agency, the following journeyman hourly rates apply. The starting hours of a shift may be adjusted up to two (2) hours in order to meet the needs of the contracting agency.

Between the hours of 8:00AM and 4:30PM	$ 39.43
Between the hours of 4:30PM and 1:00AM	46.25
Between the hours of 12:30AM and 9:00AM	51.81

SUPPLEMENTAL BENEFITS
Per hour:

Journeyman	$ 29.28 plus 3% of wage

OVERTIME PAY
See (B, *E, Q) on OVERTIME PAGE
*Double time after 8 hours on Saturday.

HOLIDAY
Paid: See (1) on HOLIDAY PAGE
Overtime: See (5, 6, *8, 16) on HOLIDAY PAGE
When a dated holiday falls on a Saturday it shall be celebrated on Friday. When a dated holiday falls on a Sunday, it shall be celebrated on Monday.
*Good Friday may be celebrated the following Monday by mutual agreement of Employer and Employees.

REGISTERED APPRENTICES
WAGES: Terms at the following percentages of Journeyman's wage.

1st	2nd	3rd	4th	5th
0-2000 Hrs	2000-3500 Hrs	3500-5000 Hrs	5000-6500 Hrs	6500-8000 Hrs
45%	50%	58%	68%	78%

ADDITIONAL AMOUNTS FOR SPECIFIC TYPES OF JOBSITE CONDITIONS (amount subject to any overtime premiums):
Additional $ 0.50 per hour when required to work underground, such as in tunnels for roads, railroads, or water.
Additional $ 0.50 per hour when required to work at a height of 40 feet above the ground or roof level.

SUPPLEMENTAL BENEFITS per hour:

1st term	$ 9.25 plus 3% of hourly wage
All other terms	$ 25.33 plus 3% of hourly wage

2-325

Elevator Constructor 11/01/2023

JOB DESCRIPTION Elevator Constructor **DISTRICT** 6

ENTIRE COUNTIES
Broome, Cayuga, Chenango, Cortland, Franklin, Jefferson, Lewis, Onondaga, Oswego, St. Lawrence, Tioga, Tompkins

PARTIAL COUNTIES
Delaware: Only the towns of: Tompkins, Walton, Masonville, Sidney, Franklin and Deposit.
Madison: Only the towns of: Cazenovia, DeRuyter, Eaton, Fenner, Georgetown, Lebanon, Lenox, Nelson and Sullivan.
Oneida: Only the towns of: Camden, Florence and Vienna.

WAGES

Per hour:	07/01/2023	01/01/2024	01/01/2025	01/01/2026
Elevator Constructor	$ 53.69	$ 56.02	$ 58.455	$ 61.003
Helper	37.58	39.21	40.92	42.70

NOTE - The "Employer Registration" (30.1) use of a '4 Day/10 Hour Work schedules' will no longer be accepted or processed. All registered projects prior to June 30, 2023 will expire within the granted time frame.

For Pre-Registered Projects Four (4), Ten (10) hour days may be worked at straight time during a week, Monday thru Thursday. Friday may be used as a make-up day. Tuesday thru Friday may be worked with no make-up day. For further clarification contact your local Bureau Office.

SUPPLEMENTAL BENEFITS
Per hour:

Journeyman	$ 37.335*	$ 37.885*	$ 38.435*	$ 38.985*

*NOTE - add 6% of regular hourly rate for all hours worked. Add 8% of regular hourly rate if more than 5 years of service.

OVERTIME PAY
See (D, O) on OVERTIME PAGE

HOLIDAY
Paid: See (5, 6, 15, 16) on HOLIDAY PAGE
Overtime: See (5, 6, 15, 16) on HOLIDAY PAGE
NOTE: When a paid holiday falls on a Saturday, it shall be observed on Friday. When a paid holiday falls on Sunday, it shall be observed on Monday.

REGISTERED APPRENTICES
WAGES per hour: 1 year terms at the following percentage of the Elevator Constructor wage.

0-6 months	6-12 months	2nd year	3rd year	4th year
50%	55%	65%	70%	80%

SUPPLEMENTAL BENEFITS per hour:

0-6 months: 6% of the hourly apprentice rate paid, no additional supplemental benefits.

All other terms: Same as Journeyman.

6-62.1

Glazier 11/01/2023

JOB DESCRIPTION Glazier **DISTRICT** 5

ENTIRE COUNTIES
Broome, Chemung, Chenango, Delaware, Otsego, Schuyler, Steuben, Tioga, Tompkins

WAGES

Per hour:	07/01/2023
Glazier	$ 27.90

** NOTE-The "Employer Registration" (30.1) use of a '4 Day/10 Hour Work schedules' will no longer be accepted or processed. All registered projects prior to JUNE 30, 2023 will expire within the granted time frame.

For Pre-Registered Projects Four(4),Ten(10)hour days may be worked at straight time during a week Monday thru Thursday. Friday may be used as a make-up day. Tuesday thru Friday may be worked with no make-up day. For further clarification contact your local Bureau Office

SUPPLEMENTAL BENEFITS

Per hour:

Journeyman	$ 28.70

OVERTIME PAY

See (B, E*, E2, Q**) on OVERTIME PAGE.

HOLIDAY

Paid:	See (1) on HOLIDAY PAGE
Overtime:	See (5, 6) on HOLIDAY PAGE

REGISTERED APPRENTICES

1000 hour terms

Appr. 1st term	$17.50
Appr. 2nd term	18.50
Appr. 3rd term	19.50
Appr. 4th term	20.50
Appr. 5th term	21.50
Appr. 6th term	22.50
Appr. 7th term	23.50
Appr. 8th term	24.50

Supplemental Benefits per hour:

Appr. 1st term	$ 12.91
Appr. 2nd term	12.91
Appr. 3rd term	18.91
Appr. 4th term	18.91
Appr. 5th term	19.91
Appr. 6th term	19.91
Appr. 7th term	20.91
Appr. 8th term	20.91

5-677z3

Insulator - Heat & Frost 11/01/2023

JOB DESCRIPTION Insulator - Heat & Frost **DISTRICT** 6

ENTIRE COUNTIES

Broome, Cayuga, Chemung, Chenango, Cortland, Herkimer, Jefferson, Lewis, Madison, Oneida, Onondaga, Oswego, Otsego, Schuyler, Seneca, St. Lawrence, Tioga, Tompkins

WAGES

Per hour:	07/01/2023
Asbestos Installer	$ 38.50
Insulation Installer	38.50
(On mechanical systems only)	

NOTE: THE FOLLOWING RATES WILL APPLY ON ALL CONTRACTING AGENCY MANDATED SHIFTS WORKED.

1ST SHIFT	$ 38.50
2ND SHIFT	44.27
3RD SHIFT	46.20

NOTE - The "Employer Registration" (30.1) use of a '4 Day/10 Hour Work schedules' will no longer be accepted or processed. All registered projects prior to June 30, 2023 will expire within the granted time frame.

For Pre-Registered Projects Four (4), Ten (10) hour days may be worked at straight time during a week, Monday thru Thursday. Friday may be used as a make-up day. Tuesday thru Friday may be worked with no make-up day. For further clarification contact your local Bureau Office.

SUPPLEMENTAL BENEFITS
Per hour:

Journeyman	$ 25.09

OVERTIME PAY
See (*B1, **K, P) on OVERTIME PAGE
*NOTE: First 10 hours on Saturday.
**NOTE: Holidays that fall on Sunday are subject to double time.

HOLIDAY

Paid:	See (1) on HOLIDAY PAGE
Overtime:	See (2*,4,6,28) on HOLIDAY PAGE
	*Triple time for Labor Day if worked.

REGISTERED APPRENTICES
WAGES per hour: One year terms at the following percentage of Journeyman's wage.

1st	2nd	3rd	4th
60%	70%	80%	90%
$ 23.10	$ 26.95	$ 30.80	$ 34.65

SUPPLEMENTAL BENEFITS per hour:

$ 22.59	$ 22.59	$ 25.09	$ 25.09

6-30-Syracuse

Ironworker 11/01/2023

JOB DESCRIPTION Ironworker **DISTRICT** 6

ENTIRE COUNTIES
Broome, Cayuga, Cortland, Onondaga, Oswego, Seneca, Tioga, Tompkins

PARTIAL COUNTIES
Chenango: Only the Townships of Lincklaen, Otselic, Pitcher, Pharsalia, German, McDonough, Preston, Norwich, Smithville, Oxford, Guilford, Greene, Coventry, Bainbridge and Afton.
Jefferson: Only the Townships of Alexandria, Theresa, Clayton, Orleans, Cape Vincent, Lyme, Brownville, Pamelia, LeRay, Hounsfield, Watertown, Rutland, Adams, Henderson, Rodman, Ellisburg, Lorraine and Worth.
Madison: Only the Townships of Sullivan, Lenox, Lincoln, Fenner, Smithfield, Cazenovia, Nelson, DeRuyter and Georgetown.
Schuyler: Only the Townships of Cayuta, Catharine, Hector and Montour.
Wayne: Only the Townships of Galen, Savannah, Rose, Butler, Huron and Wolcott

WAGES
Structural, Reinforcing, Re-bar, Machinery Mover & Rigger, Ornamental & Curtain Wall, Window Wall, Pre-Glazed Metal Framed Windows Attached to Steel or Masonry Including Caulking, Fence Erector (Chain Link/Security), Sheeter/Bridge Rail, Pre-Cast Erector, Stone Derrickman, Pre-Engineered Building Erector, Welder

Per hour:	07/01/2023
Ironworker	$ 33.00

NOTE: Shift work mandated by the project owner. All shifts will be (8) hours.

1st Shift	$ 33.00
2nd Shift	36.30
3rd Shift	37.95

WHEN A SINGLE IRREGULAR SHIFT IS WORKED, WITH START TIMES BASED ON SECOND AND THIRD SHIFTS, ADD 10 % TO THE WAGE RATE POSTED ABOVE.

SUPPLEMENTAL BENEFITS
Per hour:

Journeyman	$ 30.83

OVERTIME PAY

See (B, E, Q) on OVERTIME PAGE

HOLIDAY

Paid: See (1) on HOLIDAY PAGE
Overtime: See (5, 6) on HOLIDAY PAGE

NOTE: Any holiday which occurs on Sunday shall be observed the following Monday.

REGISTERED APPRENTICES

WAGES per hour: One year terms at the following rates.

1st	2nd	3rd	4th
$ 19.50	$ 21.50	$ 23.50	$ 25.50

SUPPLEMENTAL BENEFITS per hour:

1st year	$ 12.03
2nd year	20.26
3rd year	21.43
4th year	22.61

6-60

Laborer - Building 11/01/2023

JOB DESCRIPTION Laborer - Building **DISTRICT** 2

ENTIRE COUNTIES

Broome, Chemung, Steuben

PARTIAL COUNTIES

Chenango: Entire County except the Townships of Sherburne, Columbus and New Berlin.
Delaware: Only the Townships of Sidney, Masonville, Walton, Tompkins, Deposit, Hancock, and Colchester.
Schuyler: Entire County except the Township of Catherine and the Village of Odessa.
Tioga: Entire County except Townships of Candor & Spencer

WAGES

Per hour:

GROUP #1: Basic Laborer - excavation, concrete vibrator, power-driven buggie, demolition (including acetylene torch work) that is customarily done by a laborer

GROUP #2: Air Tool Operators, Mason Tenders

GROUP #3: Blaster, Rock Drill (compressor driven)

GROUP #4: Asbestos, Hazardous, Toxic Waste, Lead and Mold Remediation

	07/01/2023	07/01/2024 Additional	07/01/2025 Additional	07/01/2026 Additional
GROUP #1	$ 26.25	$ 1.20*	$ 1.25*	$ 1.25*
GROUP #2	27.25	1.20*	1.25*	1.25*
GROUP #3	28.25	1.20*	1.25*	1.25*
GROUP #4	28.25	1.20*	1.25*	1.25*

*To be allocated at a later date.

IMPORTANT NOTES:
- Laborer tasks on Renewable Energy and Green Energy construction work shall be paid at the appropriate Heavy & Highway rates.
- Wage and supplement rates for the operation of forklift and skid steer may be found under the classification "Operating Engineer".

NOTE - The 'Employer Registration' (30.1) use of a '4 Day/10 Hour Work schedules' will no longer be accepted or processed. All registered projects prior to June 30,2023 will expire within the granted time frame.

For Pre-Registered Projects Four (4), Ten (10) hour days may be worked at straight time during a week, Monday thru Thursday. Friday may be used as a make-up day. Tuesday thru Friday may be worked with no make-up day. For further clarification contact your local Bureau Office.

SUPPLEMENTAL BENEFITS

Per hour:

Journeyman: $ 21.50

OVERTIME PAY

See (B, E, E2, Q) on OVERTIME PAGE

HOLIDAY
Paid: See (1) on HOLIDAY PAGE
Overtime: See (5, 6) on HOLIDAY PAGE
When a Holiday falls on Sunday it shall be observed on the following Monday.

REGISTERED APPRENTICES
WAGES: 1000 hour terms at the following percent of Journeyman's wage

1st	2nd	3rd	4th
70%	80%	85%	90%

SUPPLEMENTAL BENEFITS per hour:

1st Term	$ 14.60
2nd Term	15.85
3rd Term	16.73
4th Term	17.60

2-785 (7)

Laborer - Building 11/01/2023

JOB DESCRIPTION Laborer - Building **DISTRICT** 2

ENTIRE COUNTIES
Cortland, Tompkins

PARTIAL COUNTIES
Schuyler: Only the Township of Catherine including the Village of Odessa.
Tioga: Townships of Candor & Spencer

WAGES
Per hour:

GROUP #1: Basic Laborer - excavation, concrete vibrator, power-driven buggie, demolition (including acetylene torch work) that is customarily done by a laborer

GROUP #2: Air Tool Operators, Mason Tenders

GROUP #3: Blaster, Rock Drill (compressor driven)

GROUP #4: Asbestos, Hazardous, Toxic Waste, Lead and Mold Remediation

	07/01/2023	07/01/2024 Additional	07/01/2025 Additional	07/01/2026 Additional
GROUP #1	$ 26.25	$ 1.00*	$ 1.00*	$ 1.25*
GROUP #2	27.25	1.00*	1.00*	1.25*
GROUP #3	28.25	1.00*	1.00*	1.25*
GROUP #4	28.25	1.00*	1.00*	1.25*

*To be allocated at a later date.

IMPORTANT NOTES:
- Laborer tasks on Renewable Energy and Green Energy construction work shall be paid at the appropriate Heavy & Highway rates.
- Wage and supplement rates for the operation of forklift and skid steer may be found under the classification "Operating Engineer".

NOTE - The 'Employer Registration' (30.1) use of a '4 Day/10 Hour Work schedules' will no longer be accepted or processed. All registered projects prior to June 30,2023 will expire within the granted time frame.

For Pre-Registered Projects Four (4), Ten (10) hour days may be worked at straight time during a week, Monday thru Thursday. Friday may be used as a make-up day. Tuesday thru Friday may be worked with no make-up day. For further clarification contact your local Bureau Office.

SUPPLEMENTAL BENEFITS
Per hour:

Journeyman	$ 21.95

OVERTIME PAY
See (B, E, E2, Q) on OVERTIME PAGE

HOLIDAY
Paid: See (1) on HOLIDAY PAGE
Overtime: See (5, 6) on HOLIDAY PAGE

When a holiday falls on Sunday, it shall be observed on the following Monday.

REGISTERED APPRENTICES
WAGES: 1000 hour terms at the following percentage of Journeyman's wage.

1st	2nd	3rd	4th
70%	80%	85%	90%

SUPPLEMENTAL BENEFITS per hour:

1st term	$ 14.60
2nd term	15.85
3rd term	16.73
4th term	17.60

2-785b

Laborer - Heavy&Highway 11/01/2023

JOB DESCRIPTION Laborer - Heavy&Highway **DISTRICT** 2

ENTIRE COUNTIES
Broome, Chemung, Cortland, Schuyler, Steuben, Tioga, Tompkins

PARTIAL COUNTIES
Chenango: Entire County except the Townships of Sherburne, Columbus and New Berlin.
Delaware: Only the Townships of Sidney, Masonville, Walton, Tompkins, Deposit, Hancock and Colchester.

WAGES
Per hour:

GROUP A: Drill Helper, Flagman, Outboard and Hand Boats.

GROUP B: Basic Rate, Bull Float (where used for strike off only), Chain Saw, Concrete Aggregate Bin, Concrete Bootmen, Gin Buggy, Hand or Machine Vibrator, Jack Hammer, Mason Tender, Mortar Mixer, Pavement Breaker, Handlers of Steel Mesh, Small Generators for Laborers Tools, Installation of Bridge Drainage Pipe, Pipe Layers, Vibrator Type Rollers, Tamper, Drill Doctor, Water Pump Operators (1-1/2" & Single Diaphragm), Nozzle (Asphalt, Gunite, Seeding, and Sand Blasting), Laborers on Chain Link Fence Erection, Rock Splitter and Power Unit, Pusher Type Concrete Saw and all other Gas, Electric, and Air Tool Operators, Wrecking Laborer.

GROUP C: Drilling equipment - only where a separate air compressor unit supplies power, Acetylene Torch Operators, Asphalt Raker, Powder Man, Tail or Screw Operator on Asphalt Paver.

GROUP D: Blasters, Form Setters (slab steel forms on highways, roads, streets & airport runways), Stone or Granite Curb Setters.

GROUP E: Hazardous Waste defined as when an employee performs hazardous waste removal, lead abatement and removal, asbestos abatement and removal work on State and/or Federally designated waste site and were relevant State and/or Federal regulations require employees to use or wear required forms of personal protection.

	07/01/2023	07/01/2024 Additional
GROUP A	$ 35.06	$ 2.50*
GROUP B	35.26	2.50*
GROUP C	35.46	2.50*
GROUP D	35.66	2.50*
GROUP E	38.26	2.50*

*To be allocated at a later date.

NOTE ADDITIONAL AMOUNTS FOR THE FOLLOWING CONDITIONS:
- A single irregular work shift starting any time between 5:00 PM and 1:00 AM on governmental mandated night work shall be paid an additional $3.00 per hour.
- When an employee is required by the employer and/or by the material data safety sheets of a product, during its application, to wear a half or full-face replaceable cartridge respirator for more than (2) hours, then in such case said employee(s) will be paid the Group E rate for the shift.

IMPORTANT NOTES:
- Laborer tasks on Renewable Energy and Green Energy construction work shall be paid at the appropriate Heavy & Highway rates.
- Wage and supplement rates for the operation of forklift and skid steer may be found under the classification "Operating Engineer".

SUPPLEMENTAL BENEFITS
Per hour:

Journeyman	$ 23.85

OVERTIME PAY
See (B, E, Q) on OVERTIME PAGE

HOLIDAY

Paid:	See (5, 6) on HOLIDAY PAGE
Overtime:	See (5, 6) on HOLIDAY PAGE

- If Holiday falls on Sunday, it will be celebrated on Monday. If the Holiday falls on Saturday, it will be celebrated on Saturday.
- An Employee must work the scheduled working day before and the scheduled working day after a holiday to receive holiday pay. However, an employee not able to report because of proven sickness, death in immediate family, or accident shall be entitled to holiday pay.

REGISTERED APPRENTICES
WAGES: 1000 hour terms at the following percentage of Journeyman's GROUP B wage:

1st	2nd	3rd	4th
70%	80%	85%	90%

SUPPLEMENTAL BENEFITS per hour:

1st term	$ 21.60
2nd term	22.35
3rd term	22.73
4th term	23.10

2-785h

Laborer - Tunnel 11/01/2023

JOB DESCRIPTION Laborer - Tunnel **DISTRICT** 2

ENTIRE COUNTIES
Broome, Chemung, Cortland, Schuyler, Steuben, Tioga, Tompkins

PARTIAL COUNTIES
Chenango: Entire County except the Townships of Sherburne, Columbus, and New Berlin.
Delaware: Only the Townships of Sidney, Masonville, Walton, Tompkins, Deposit, Hancock and Colchester.

WAGES
Per hour:

GROUP A: Change House Man

GROUP B: Miners and all Machine Men, Safety Miner, All Shaft work, Caisson work, Drilling, Blow Pipe, all Air Tools, Tugger, Scaling, Nipper, Guniting pot to nozzle, Bit Grinder, Signal Man (top and bottom), Concrete Man, Shield Driven Tunnels, mixed face and soft ground, liner plate tunnels in free air.

GROUP C: Blaster

GROUP D: Hazardous waste removal work on a State and/or Federally designated waste site where relevant State and/or Federal regulations require employees to use or wear required forms of personal protection.

	07/01/2023	07/01/2024 Additional
Group A	$ 38.24	$ 2.50*
Group B	38.44	2.50*
Group C	41.24	2.50*
Group D	41.44	2.50*

*To be allocated at a later date.

NOTE ADDITIONAL AMOUNTS FOR THE FOLLOWING CONDITIONS:
- A single irregular work shift starting any time between 5:00 PM and 1:00 AM on governmental mandated night work shall be paid an additional $3.00 per hour.
- When an employee is required by the employer and/or by the material data safety sheets of a product, during its application, to wear a half or full face replaceable cartridge respirator for more then (2) hours, then in such case said employee(s) will be paid the Group D rate for the shift.

SUPPLEMENTAL BENEFITS
Per hour:

Journeyman	$ 23.85

OVERTIME PAY
See (B, E, Q) on OVERTIME PAGE

- If Holiday falls on Sunday, it will be celebrated on Monday. If the Holiday falls on Saturday, it will be celebrated on Friday.
- An Employee must work the scheduled working day before and the scheduled working day after a holiday to receive holiday pay. However, an employee not able to report because of proven sickness, death in immediate family, or accident shall be entitled to holiday pay.

HOLIDAY

Paid: See (5, 6) on HOLIDAY PAGE
Overtime: See (5, 6) on HOLIDAY PAGE
If the holiday falls on Saturday, it will be celebrated on Friday. If the holiday falls on Sunday, it will be celebrated on Monday

REGISTERED APPRENTICES

WAGES: 1000 hour terms at the following percentage of Group B wage

1st	2nd	3rd	4th
70%	80%	85%	90%

SUPPLEMENTAL BENEFITS per hour:

1st Term	$ 8.25
2nd Term	8.25
3rd Term	16.25
4th Term	23.85

2-785T

Lineman Electrician 11/01/2023

JOB DESCRIPTION Lineman Electrician **DISTRICT** 6

ENTIRE COUNTIES

Albany, Allegany, Broome, Cattaraugus, Cayuga, Chautauqua, Chemung, Chenango, Clinton, Columbia, Cortland, Delaware, Dutchess, Erie, Essex, Franklin, Fulton, Genesee, Greene, Hamilton, Herkimer, Jefferson, Lewis, Livingston, Madison, Monroe, Montgomery, Niagara, Oneida, Onondaga, Ontario, Orange, Orleans, Oswego, Otsego, Putnam, Rensselaer, Rockland, Saratoga, Schenectady, Schoharie, Schuyler, Seneca, St. Lawrence, Steuben, Sullivan, Tioga, Tompkins, Ulster, Warren, Washington, Wayne, Wyoming, Yates

WAGES

A Lineman/Technician shall perform all overhead aerial work. A Lineman/Technician on the ground will install all electrical panels, connect all grounds, install and connect all electrical conductors, assembly of all electrical materials, conduit, pipe, or raceway; placing of fish wire; pulling of cables, wires or fiber optic cable through such raceways; splicing of conductors; dismantling of such structures, lines or equipment.

A Groundman/Truck Driver shall: Build and set concrete forms, handle steel mesh, set footer cages, transport concrete in a wheelbarrow, hand or machine concrete vibrator, finish concrete footers, mix mortar, grout pole bases, cover and maintain footers while curing in cold weather, operate jack hammer, operate hand pavement breaker, tamper, concrete and other motorized saws, as a drill helper, operate and maintain generators, water pumps, chainsaws, sand blasting, operate mulching and seeding machine, air tools, electric tools, gas tools, load and unload materials, hand shovel and/or broom, prepare and pour mastic and other fillers, assist digger operator/equipment operator in ground excavation and restoration, landscape work and painting. Only when assisting a lineman technician, a groundman/truck driver may assist in installing conduit, pipe, cables and equipment.

NOTE: Includes Teledata Work within ten (10) feet of High Voltage Transmission Lines. Also includes digging of holes for poles, anchors, footer, and foundations for electrical equipment.

Below rates applicable on all overhead and underground distribution and maintenance work, and all overhead and underground transmission line work and the installation of fiber optic cable where no other construction trades are or have been involved. (Ref #14.01.01)

Per hour:	07/01/2023	05/06/2024
Lineman, Technician	$ 57.40	$ 58.90
Crane, Crawler Backhoe	57.40	58.90
Welder, Cable Splicer	57.40	58.90
Digging Mach. Operator	51.66	53.01
Tractor Trailer Driver	48.79	50.07
Groundman, Truck Driver	45.92	47.12
Equipment Mechanic	45.92	47.12
Flagman	34.44	35.34

Additional $1.00 per hour for entire crew when a helicopter is used.

Below rates applicable on all electrical sub-stations, switching structures, fiber optic cable and all other work not defined as "Utility outside electrical work". (Ref #14.02.01-A)

Lineman, Technician	$ 57.40	$ 58.90
Crane, Crawler Backhoe	57.40	58.90
Cable Splicer	63.14	64.79

Certified Welder, Pipe Type Cable	60.27	61.85
Digging Mach. Operator	51.66	53.01
Tractor Trailer Driver	48.79	50.07
Groundman, Truck Driver	45.92	47.12
Equipment Mechanic	45.92	47.12
Flagman	34.44	35.34

Additional $1.00 per hour for entire crew when a helicopter is used.

Below rates apply on switching structures, maintenance projects, railroad catenary install/maintenance third rail installation, bonding of rails and pipe type cable and installation of fiber optic cable. (Ref #14.02.01-B)

Lineman, Tech, Welder	$ 58.72	$ 60.22
Crane, Crawler Backhoe	58.72	60.22
Cable Splicer	64.59	66.24
Certified Welder, Pipe Type Cable	61.66	63.23
Digging Mach. Operator	52.85	54.20
Tractor Trailer Driver	49.91	51.19
Groundman, Truck Driver	46.98	48.18
Equipment Mechanic	46.98	48.18
Flagman	35.23	36.13

Additional $1.00 per hour for entire crew when a helicopter is used.

Below rates applicable on all overhead and underground transmission line work & fiber optic cable where other construction trades are or have been involved. This applies to transmission line work only, not other construction. (Ref #14.03.01)

Lineman, Tech, Welder	$ 59.91	$ 61.41
Crane, Crawler Backhoe	59.91	61.41
Cable Splicer	59.91	61.41
Digging Mach. Operator	53.92	55.27
Tractor Trailer Driver	50.92	52.20
Groundman, Truck Driver	47.93	49.13
Equipment Mechanic	47.93	49.13
Flagman	35.95	36.85

Additional $1.00 per hour for entire crew when a helicopter is used.

NOTE: THE FOLLOWING RATES WILL APPLY ON ALL CONTRACTING AGENCY MANDATED MULTIPLE SHIFTS OF AT LEAST FIVE (5) DAYS DURATION WORKED BETWEEN THE HOURS LISTED BELOW:

1ST SHIFT	8:00 AM to 4:30 PM REGULAR RATE
2ND SHIFT	4:30 PM to 1:00 AM REGULAR RATE PLUS 17.3 %
3RD SHIFT	12:30 AM to 9:00 AM REGULAR RATE PLUS 31.4 %

NOTE - The "Employer Registration" (30.1) use of a '4 Day/10 Hour Work schedules' will no longer be accepted or processed. All registered projects prior to June 30, 2023 will expire within the granted time frame.

For Pre-Registered Projects Four (4), Ten (10) hour days may be worked at straight time during a week, Monday thru Thursday. Friday may be used as a make-up day. Tuesday thru Friday may be worked with no make-up day. For further clarification contact your local Bureau Office.

SUPPLEMENTAL BENEFITS

Per hour:

	07/01/2023	05/06/2024
Lineman, Technician, or Equipment Operators with Crane License	$ 29.40 *plus 7% of the hourly wage paid	$ 30.90 *plus 7% of the hourly wage paid
All other Journeyman	$ 26.40 *plus 7% of the hourly wage paid	$ 26.90 *plus 7% of the hourly wage paid

*The 7% is based on the hourly wage paid, straight time or premium time.

OVERTIME PAY
See (B, E, Q, X) on OVERTIME PAGE. *Note* Double time for all emergency work designated by the Dept. of Jurisdiction.
NOTE: WAGE CAP - Double the straight time hourly base wage shall be the maximum hourly wage compensation for any hour worked. Contractor is still responsible to pay the hourly benefit amount for each hour worked.

HOLIDAY

Paid	See (5, 6, 8, 13, 25) on HOLIDAY PAGE plus Governor of NYS Election Day.
Overtime	See (5, 6, 8, 13, 25) on HOLIDAY PAGE plus Governor of NYS Election Day.

NOTE: All paid holidays falling on Saturday shall be observed on the preceding Friday. All paid holidays falling on Sunday shall be observed on the following Monday. Supplements for holidays paid at straight time.

REGISTERED APPRENTICES
WAGES per hour: 1000 hour terms at the following percentage of the applicable Journeyman Lineman wage.

1st	2nd	3rd	4th	5th	6th	7th
60%	65%	70%	75%	80%	85%	90%

SUPPLEMENTAL BENEFITS per hour:

07/01/2023	05/06/2024
$ 26.40 *plus 7% of the hourly wage paid	$ 26.90 *plus 7% of the hourly wage paid

*The 7% is based on the hourly wage paid, straight time or premium time.

6-1249a

Lineman Electrician - Teledata 11/01/2023

JOB DESCRIPTION Lineman Electrician - Teledata **DISTRICT** 6

ENTIRE COUNTIES
Albany, Allegany, Broome, Cattaraugus, Cayuga, Chautauqua, Chemung, Chenango, Clinton, Columbia, Cortland, Delaware, Dutchess, Erie, Essex, Franklin, Fulton, Genesee, Greene, Hamilton, Herkimer, Jefferson, Lewis, Livingston, Madison, Monroe, Montgomery, Niagara, Oneida, Onondaga, Ontario, Orange, Orleans, Oswego, Otsego, Putnam, Rensselaer, Rockland, Saratoga, Schenectady, Schoharie, Schuyler, Seneca, St. Lawrence, Steuben, Sullivan, Tioga, Tompkins, Ulster, Warren, Washington, Wayne, Westchester, Wyoming, Yates

WAGES
Per hour:

For outside work, stopping at first point of attachment (demarcation).

	07/01/2023	01/01/2024	01/01/2025
Cable Splicer	$ 37.73	$ 39.24	$ 40.81
Installer, Repairman	$ 35.81	$ 37.24	$ 38.73
Teledata Lineman	$ 35.81	$ 37.24	$ 38.73
Tech., Equip. Operator	$ 35.81	$ 37.24	$ 38.73
Groundman	$ 18.98	$ 19.74	$ 20.53

NOTE: EXCLUDES Teledata work within ten (10) feet of High Voltage (600 volts and over) transmission lines. For this work please see LINEMAN.

NOTE: THE FOLLOWING RATES WILL APPLY ON ALL CONTRACTING AGENCY MANDATED MULTIPLE SHIFTS OF AT LEAST FIVE (5) DAYS DURATION WORKED:

1ST SHIFT	REGULAR RATE
2ND SHIFT	REGULAR RATE PLUS 10%
3RD SHIFT	REGULAR RATE PLUS 15%

SUPPLEMENTAL BENEFITS

Per hour:	07/01/2023	01/01/2024	01/01/2025
Journeyman	$ 5.70 *plus 3% of the hourly wage paid	$ 5.70 *plus 3% of the hourly wage paid	$ 5.70 *plus 3% of the hourly wage paid

*The 3% is based on the hourly wage paid, straight time rate or premium rate.

OVERTIME PAY
See (B, E, Q) on OVERTIME PAGE
NOTE: WAGE CAP - Double the straight time hourly base wage shall be the maximum hourly wage compensation for any hour worked. Contractor is still responsible to pay the hourly benefit amount for each hour worked.

HOLIDAY
Paid: See (1) on HOLIDAY PAGE
Overtime: See (5, 6, 16) on HOLIDAY PAGE

6-1249LT - Teledata

Lineman Electrician - Traffic Signal, Lighting 11/01/2023

JOB DESCRIPTION Lineman Electrician - Traffic Signal, Lighting **DISTRICT** 6

ENTIRE COUNTIES
Albany, Allegany, Broome, Cattaraugus, Cayuga, Chautauqua, Chemung, Chenango, Clinton, Cortland, Delaware, Erie, Essex, Franklin, Fulton, Genesee, Greene, Hamilton, Herkimer, Jefferson, Lewis, Livingston, Madison, Monroe, Montgomery, Niagara, Oneida, Onondaga, Ontario, Orleans, Oswego, Otsego, Rensselaer, Saratoga, Schenectady, Schoharie, Schuyler, Seneca, St. Lawrence, Steuben, Sullivan, Tioga, Tompkins, Warren, Washington, Wayne, Wyoming, Yates

WAGES
Lineman/Technician shall perform all overhead aerial work. A Lineman/Technician on the ground will install all electrical panels, connect all grounds, install and connect all electrical conductors which includes, but is not limited to road loop wires; conduit and plastic or other type pipes that carry conductors, flex cables and connectors, and to oversee the encasement or burial of such conduits or pipes.

A Groundman/Truck Driver shall: Build and set concrete forms, handle steel mesh, set footer cages, transport concrete in a wheelbarrow, hand or machine concrete vibrator, finish concrete footers, mix mortar, grout pole bases, cover and maintain footers while curing in cold weather, operate jack hammer, operate hand pavement breaker, tamper, concrete and other motorized saws, as a drill helper, operate and maintain generators, water pumps, chainsaws, sand blasting, operate mulching and seeding machine, air tools, electric tools, gas tools, load and unload materials, hand shovel and/or broom, prepare and pour mastic and other fillers, assist digger operator/equipment operator in ground excavation and restoration, landscape work and painting. Only when assisting a lineman technician, a groundman/truck driver may assist in installing conduit, pipe, cables and equipment.

A flagger's duties shall consist of traffic control only.
(Ref #14.01.01)

Per hour:	07/01/2023	05/06/2024
Lineman, Technician	$ 49.32	$ 50.54
Crane, Crawler Backhoe	49.32	50.54
Certified Welder	51.79	53.07
Digging Machine	44.39	45.49
Tractor Trailer Driver	41.92	42.96
Groundman, Truck Driver	39.46	40.43
Equipment Mechanic	39.46	40.43
Flagman	29.59	30.32

Above rates are applicable for installation, testing, operation, maintenance and repair on all Traffic Control (Signal) and Illumination (Lighting) projects, Traffic Monitoring Systems, and Road Weather Information Systems. Includes digging of holes for poles, anchors, footer foundations for electrical equipment; assembly of all electrical materials or raceway; placing of fish wire; pulling of cables, wires or fiber optic cable through such raceways; splicing of conductors; dismantling of such structures, lines or equipment.

NOTE: THE FOLLOWING RATES WILL APPLY ON ALL CONTRACTING AGENCY MANDATED MULTIPLE SHIFTS OF AT LEAST FIVE (5) DAYS DURATION WORKED BETWEEN THE HOURS LISTED BELOW:

1ST SHIFT	8:00 AM TO 4:30 PM	REGULAR RATE
2ND SHIFT	4:30 PM TO 1:00 AM	REGULAR RATE PLUS 17.3%
3RD SHIFT	12:30 AM TO 9:00 AM	REGULAR RATE PLUS 31.4%

NOTE - The "Employer Registration" (30.1) use of a '4 Day/10 Hour Work schedules' will no longer be accepted or processed. All registered projects prior to June 30, 2023 will expire within the granted time frame.

For Pre-Registered Projects Four (4), Ten (10) hour days may be worked at straight time during a week, Monday thru Thursday. Friday may be used as a make-up day. Tuesday thru Friday may be worked with no make-up day. For further clarification contact your local Bureau Office.

SUPPLEMENTAL BENEFITS
Per hour worked (but also required on non-worked holidays):

	07/01/2023	05/06/2024
Lineman, Technician, or Equipment Operators with Crane License	$ 29.40 *plus 7% of the hourly wage paid	$ 30.90 *plus 7% of the hourly wage paid
All other Journeyman	$ 26.40 *plus 7% of the hourly wage paid	$ 26.90 *plus 7% of the hourly wage paid

*The 7% is based on the hourly wage paid, straight time or premium time.

OVERTIME PAY
See (B, E, Q) on OVERTIME PAGE. *Note* Double time for all emergency work designated by the Dept. of Jurisdiction.
NOTE: WAGE CAP - Double the straight time hourly base wage shall be the maximum hourly wage compensation for any hour worked. Contractor is still responsible to pay the hourly benefit amount for each hour worked.

HOLIDAY
Paid: See (5, 6, 8, 13, 25) on HOLIDAY PAGE plus Governor of NYS Election Day.
Overtime: See (5, 6, 8, 13, 25) on HOLIDAY PAGE plus Governor of NYS Election Day.

NOTE: All paid holidays falling on Saturday shall be observed on the preceding Friday. All paid holidays falling on Sunday shall be observed on the following Monday. Supplements for holidays paid at straight time.

REGISTERED APPRENTICES
WAGES per hour: 1000 hour terms at the following percentage of the applicable Journeyman Lineman wage.

1st	2nd	3rd	4th	5th	6th	7th
60%	65%	70%	75%	80%	85%	90%

SUPPLEMENTAL BENEFITS per hour:

07/01/2023	05/06/2024
$ 26.40 *plus 7% of the hourly wage paid	$ 26.90 *plus 7% of the hourly wage paid

*The 7% is based on the hourly wage paid, straight time or premium time.

6-1249a-LT

Lineman Electrician - Tree Trimmer 11/01/2023

JOB DESCRIPTION Lineman Electrician - Tree Trimmer **DISTRICT** 6

ENTIRE COUNTIES
Albany, Allegany, Broome, Cattaraugus, Cayuga, Chautauqua, Chemung, Chenango, Clinton, Columbia, Cortland, Delaware, Dutchess, Erie, Essex, Franklin, Fulton, Genesee, Greene, Hamilton, Herkimer, Jefferson, Lewis, Livingston, Madison, Monroe, Montgomery, Niagara, Oneida, Onondaga, Ontario, Orange, Orleans, Oswego, Otsego, Putnam, Rensselaer, Rockland, Saratoga, Schenectady, Schoharie, Schuyler, Seneca, St. Lawrence, Steuben, Sullivan, Tioga, Tompkins, Ulster, Warren, Washington, Wayne, Wyoming, Yates

WAGES
Applies to line clearance, tree work and right-of-way preparation on all new or existing energized overhead or underground electrical, telephone and CATV lines. This also would include stump removal near underground energized electrical lines, including telephone and CATV lines.

Per hour:	07/01/2023	12/31/2023
Tree Trimmer	$ 29.80	$ 31.44
Equipment Operator	26.35	27.80
Equipment Mechanic	26.35	27.80
Truck Driver	21.95	23.15
Groundman	18.07	19.07
Flag person	14.20	14.20*

*NOTE- Rate effective on 01/01/2024 - $15.00 due to minimum wage increase

SUPPLEMENTAL BENEFITS
Per hour:

	07/01/2023	12/31/2023
Journeyman	$ 10.48 *plus 4.5% of the hourly wage paid	$ 10.48 *plus 4.5% of the hourly wage paid

* The 3% is based on the hourly wage paid, straight time rate or premium rate.

OVERTIME PAY
See (B, E, Q, X) on OVERTIME PAGE
NOTE: WAGE CAP - Double the straight time hourly base wage shall be the maximum hourly wage compensation for any hour worked. Contractor is still responsible to pay the hourly benefit amount for each hour worked.

HOLIDAY
Paid: See (5, 6, 8, 15) on HOLIDAY PAGE
Overtime: See (5, 6, 8, 15, 16, 25) on HOLIDAY PAGE
NOTE: All paid holidays falling on a Saturday shall be observed on the preceding Friday.
All paid holidays falling on a Sunday shall be observed on the following Monday.

6-1249TT

Mason - Building 11/01/2023

JOB DESCRIPTION Mason - Building **DISTRICT** 5

ENTIRE COUNTIES
Broome, Chenango, Delaware, Otsego, Tioga

WAGES
Per hour: 07/01/2023

Building:	
Bricklayer, Cement	$ 33.84
Mason, Plasterer, Stone	
Mason, Tuck Pointer	

** NOTE-The "Employer Registration" (30.1) use of a '4 Day/10 Hour Work schedules' will no longer be accepted or processed. All registered projects prior to JUNE 30, 2023 will expire within the granted time frame.

For Pre-Registered Projects Four(4),Ten(10)hour days may be worked at straight time during a week Monday thru Thursday. Friday may be used as a make-up day. Tuesday thru Friday may be worked with no make-up day. For further clarification contact your local Bureau Office.

SUPPLEMENTAL BENEFITS
Per hour:

Journeyman	$ 25.76

OVERTIME PAY
See (B,E,E2*,Q) on OVERTIME PAGE
*Note - Or other conditions beyond the employer's control such as fire or natural disaster.

HOLIDAY
Paid: See (1) on HOLIDAY PAGE
Overtime: See (5, 6) on HOLIDAY PAGE

REGISTERED APPRENTICES
Wages per hour:

One year terms at the following percentage of Journeyman's wage:

1st	2nd	3rd	4th
$ 21.61	$ 26.69	$ 27.82	$ 30.46

Supplemental benefits per hour:

1st	2nd	3rd	4th
$ 21.48	$ 21.90	$ 24.44	$ 25.47

5-3B - Bing - Z2

Mason - Heavy&Highway 11/01/2023

JOB DESCRIPTION Mason - Heavy&Highway **DISTRICT** 5

ENTIRE COUNTIES
Allegany, Broome, Chautauqua, Chemung, Chenango, Cortland, Delaware, Genesee, Livingston, Monroe, Ontario, Orleans, Otsego, Schuyler, Seneca, Steuben, Tioga, Tompkins, Wayne, Wyoming, Yates

PARTIAL COUNTIES
Cattaraugus: Enitre county except in the Township of Perrysburg and the Village of Gowanda only the Bricklayer classification applies.
Erie: Only the Bricklayer classification applies.
Niagara: Only the Bricklayer classification applies.

WAGES

Per hour:	07/01/2023
Heavy & Highway:	
Cement Mason	$ 36.88
Bricklayer	36.88

** NOTE-The "Employer Registration" (30.1) use of a '4 Day/10 Hour Work schedules' will no longer be accepted or processed. All registered projects prior to JUNE 30, 2023 will expire within the granted time frame.

For Pre-Registered Projects Four(4),Ten(10)hour days may be worked at straight time during a week Monday thru Thursday. Friday may be used as a make-up day. Tuesday thru Friday may be worked with no make-up day. For further clarification contact your local Bureau Office.

SUPPLEMENTAL BENEFITS
Per hour:

Journeyman	$ 23.53

OVERTIME PAY
See (B, E, E2, Q) on OVERTIME PAGE

HOLIDAY

Paid:	See (1) on HOLIDAY PAGE
Overtime:	See (5, 6) on HOLIDAY PAGE

REGISTERED APPRENTICES
Wages per hour:

1500 hour terms at the following percentage of Journeyman's wage:

1st	2nd	3rd	4th
50%	60%	70%	80%

Supplemental benefits per hour:

1st term	$ 14.03
2nd term	$ 22.97
3rd term	$ 23.11
4th term	$ 23.25

5-3h

Mason - Tile Finisher 11/01/2023

JOB DESCRIPTION Mason - Tile Finisher **DISTRICT** 5

ENTIRE COUNTIES
Broome, Chenango, Cortland, Delaware, Otsego, Tioga, Tompkins

WAGES

Wages	
Per hour:	07/01/2023
Building:	
Marble, Slate, Terrazzo and Tile Finisher	$ 31.00

** NOTE-The "Employer Registration" (30.1) use of a '4 Day/10 Hour Work schedules' will no longer be accepted or processed. All registered projects prior to JUNE 30, 2023 will expire within the granted time frame.

For Pre-Registered Projects Four(4),Ten(10)hour days may be worked at straight time during a week Monday thru Thursday. Friday may be used as a make-up day. Tuesday thru Friday may be worked with no make-up day. For further clarification contact your local Bureau Office.

SUPPLEMENTAL BENEFITS
Per hour:

Journeyman	$ 20.47

OVERTIME PAY

See (B,E,E2*,Q) on OVERTIME PAGE
*Note - Or other conditions beyond the employer's control such as fire or natural disaster.

HOLIDAY
Paid: See (1) on HOLIDAY PAGE
Overtime: See (5, 6) on HOLIDAY PAGE

REGISTERED APPRENTICES
Wages per hour:

One year terms at the following percentage of Journeyman's wage:

1st	2nd	3rd
$ 18.60	$ 21.70	$ 24.80

Supplemental benefits per hour:

1st	2nd	3rd
$ 13.29	$ 13.58	$ 17.93

5-3TF - Z4

Mason - Tile Setter 11/01/2023

JOB DESCRIPTION Mason - Tile Setter **DISTRICT** 5

ENTIRE COUNTIES
Broome, Chemung, Chenango, Cortland, Delaware, Otsego, Schuyler, Steuben, Tioga, Tompkins

PARTIAL COUNTIES
Allegany: Towns of Alfred, Almond, Andover and Burns.

WAGES

Wages Per Hour:	07/01/2023
Building:	
Marble, Slate, Terrazzo and Tile Setter	$ 33.24

** NOTE-The "Employer Registration" (30.1) use of a '4 Day/10 Hour Work schedules' will no longer be accepted or processed. All registered projects prior to JUNE 30, 2023 will expire within the granted time frame.

For Pre-Registered Projects Four(4),Ten(10)hour days may be worked at straight time during a week Monday thru Thursday. Friday may be used as a make-up day. Tuesday thru Friday may be worked with no make-up day. For further clarification contact your local Bureau Office.

SUPPLEMENTAL BENEFITS
Per hour:

Journeyman $ 24.01

OVERTIME PAY
See (B,E,E2*,Q) on OVERTIME PAGE
*Note - Or other conditions beyond the employer's control such as fire or natural disaster.

HOLIDAY
Paid: See (1) on HOLIDAY PAGE
Overtime: See (5, 6) on HOLIDAY PAGE

REGISTERED APPRENTICES
Wages per hour:

One year terms at the following percentage of Joureyman's wage:

1st	2nd	3rd	4th
$ 19.94	$ 23.27	$ 26.59	$ 29.92

Supplemental benefits per hour:

1st	2nd	3rd	4th
$ 13.76	$ 14.12	$ 23.26	$ 23.63

5-3TS - Z4

Millwright 11/01/2023

JOB DESCRIPTION Millwright **DISTRICT** 6

ENTIRE COUNTIES
Albany, Allegany, Broome, Cattaraugus, Cayuga, Chautauqua, Chemung, Chenango, Clinton, Columbia, Cortland, Delaware, Erie, Essex, Franklin, Fulton, Genesee, Greene, Hamilton, Herkimer, Jefferson, Lewis, Livingston, Madison, Monroe, Montgomery, Niagara, Oneida, Onondaga, Ontario, Orleans, Oswego, Otsego, Rensselaer, Saratoga, Schenectady, Schoharie, Schuyler, Seneca, St. Lawrence, Steuben, Sullivan, Tioga, Tompkins, Ulster, Warren, Washington, Wayne, Wyoming, Yates

WAGES
THE FOLLOWING RATE APPLIES TO ANY GAS/STEAM TURBINE AND OR RELATED COMPONENT WORK, INCLUDING NEW INSTALLATIONS OR MAINTENANCE AND ANY/ALL WORK PERFORMED WITHIN THE PROPERTY LIMITS OF A NUCLEAR FACILITY.

Per hour:	07/01/2023	07/01/2024 Additional	07/01/2025 Additional
Millwright - Power Generation	$ 43.05	$ 2.50	$2.50

NOTE: ADDITIONAL PREMIUMS PAID FOR THE FOLLOWING WORK LISTED BELOW (amount subject to any overtime premiums):
- Certified Welders shall receive an additional $1.75 per hour provided he/she is directed to perform certified welding.
- If a work site has been declared a hazardous site by the Owner and the use of protective gear (including, as a minimum, air purifying canister-type chemical respirators) are required, then that employee shall receive an additional $1.50 per hour.
- An employee performing the work of a machinist shall receive an additional $2.00 per hour. For the purposes of this premium to apply, a "machinist" is a person who uses a lathe, Bridgeport, milling machine or similar type of tool to make or modify parts.
- When performing work underground at 500 feet and below, the employee shall receive an additional $1.00 per hour.

SUPPLEMENTAL BENEFITS
Per hour paid:

Journeyman	$ 27.40*

*NOTE: Subject to OT premium

OVERTIME PAY
See (B, E, E2, Q, V) on OVERTIME PAGE

HOLIDAY
Paid: See (1) on HOLIDAY PAGE
Overtime: See (5, 6) on HOLIDAY PAGE
NOTE: Any holiday that falls on Sunday shall be observed the following Monday. Any holiday that falls on Saturday shall be observed the preceding Friday.

REGISTERED APPRENTICES
WAGES per hour: One year terms at the following percentage of Journeyman's wage:

Appr. 1st year	65 %*
Appr. 2nd year	75 %*
Appr. 3rd year	80 %*
Appr. 4th year	90 %*

*NOTE: Additional premium for the following work listed below:

Certified Welder	$ 1.75
Hazardous Waste Work	1.50
Machinist	2.00
Underground (500' and below)	1.00

SUPPLEMENTAL BENEFITS per hour:

Appr. 1st year	$ 11.89
Appr. 2nd year	22.75
Appr. 3rd year	24.30
Appr. 4th year	25.85

6-1163Power

Millwright **11/01/2023**

JOB DESCRIPTION Millwright **DISTRICT** 7

ENTIRE COUNTIES
Allegany, Broome, Cattaraugus, Cayuga, Chautauqua, Herkimer, Madison, Seneca, Tioga, Yates

WAGES

Per hour:	07/01/2023	07/01/2024 Additional	07/01/2025 Additional
Building	$ 34.11	$ 3.00	$ 3.00

Heavy & Highway	37.11	3.50	3.00

NOTE: ADDITIONAL PREMIUMS PAID FOR THE FOLLOWING WORK LISTED BELOW (amount subject to any overtime premiums):
- Certified Welders shall receive an additional $1.75 per hour provided he/she is directed to perform certified welding.
- On Building projects, If a work site has been declared a hazardous site by the Owner and the use of protective gear (including, as a minimum, air purifying canister-type chemical respirators) are required, then that employee shall receive an additional $1.50 per hour.
- H/H work performed on hazardous waste sites where employees are required to wear protective gear shall receive an additional $2.00 per hour over the Millwright H/H rate for all hours worked on the day protective gear was worn.
- An employee performing the work of a machinist shall receive an additional $2.00 per hour. For the purposes of this premium to apply, a "machinist" is a person who uses a lathe, Bridgeport, milling machine or similar type of tool to make or modify parts.
- When performing work underground at 500 feet and below, the employee shall receive an additional $1.00 per hour.

SUPPLEMENTAL BENEFITS
Per hour:

Journeyman	$ 24.43

OVERTIME PAY
See (B, E, E2, Q) on OVERTIME PAGE

HOLIDAY
Paid: See (1) on HOLIDAY PAGE
Overtime: See (5, 6) on HOLIDAY PAGE
NOTE: Any holiday that falls on Sunday shall be observed the following Monday. Any holiday that falls on a Saturday shall be observed the preceding Friday.

REGISTERED APPRENTICES
WAGES per hour: One year terms at the following percentage of Journeyman's wage:

Appr. 1st year	65 %*
Appr. 2nd year	75 %*
Appr. 3rd year	80 %*
Appr. 4th year	90 %*

*NOTE: Additional premium for the following work listed below:

Certified Welder	$ 1.75
Hazardous Waste (Bldg)	1.50
Hazardous Waste (H/H)	2.00
Machinist	2.00
Underground (500' and below)	1.00

SUPPLEMENTAL BENEFITS per hour:

Appr. 1st year	$ 11.64
Appr. 2nd year	20.59
Appr. 3rd year	21.87
Appr. 4th year	23.15

7-1163 Zone 2

Operating Engineer - Building 11/01/2023

JOB DESCRIPTION Operating Engineer - Building **DISTRICT** 1

ENTIRE COUNTIES
Broome, Chenango, Tioga

WAGES
CLASS A1*: Cranes, tower cranes, hydraulic cranes, locomotive crane, piledriver, cableway, derricks, whirlies, dragline, boom trucks (over 5 tons).

CLASS A:
Shovel, Excavators 18,001 lbs. and above(including rubber tire full swing), Gradalls, power road grader, all CMI equipment, front-end rubber tire loader, tractor-mounted drill (quarry master), mucking machine, concrete central mix plant, concrete pump, belcrete system, automated asphalt concrete plant, and tractor road paver, boom trucks 5 tons and under, maintenance engineer, self-contained crawler drill-hydraulic rock drill.

CLASS B:

Excavators 18,000 lbs. and under, Backhoes (rubber tired backhoe/loader combination), bulldozer, pushcat, tractor, traxcavator, scraper, LeTourneau grader, form fine grader, self-propelled soil compactor (fill roller), asphalt roller, blacktop spreader, power brooms, sweepers, trenching machine, Barber Green loader, side booms, hydro hammer, concrete spreader, concrete finishing machine, one drum hoist, power hoisting (single drum), hoist two drum or more, three drum engine, power hoisting (two drum and over), two drum and swinging engine, three drum swinging engine, hod hoist, A-L frame winches, core and well drillers (one drum), post hole digger, model CHB Vibro-Tamp or similar machine, batch bin and plant operator, dinky locomotive, skid steer loader, track excavator 5/8 cubic yard or smaller, front end rubber tired loader under four cubic yards, vacum machine (mounted or towed).

CLASS C:
Fork lift, high lift, all terrain fork lift: or similar, oiler, fireman and heavy-duty greaser, boilers and steam generators, pump, vibrator, motor mixer, air compressor, dust collector, welding machine, well point, mechanical heater, generators, temporary light plants, electric submersible pumps 4" and over, murphy type diesel generator, conveyor, elevators, concrete mixer, beltcrete power pack (belcrete system), seeding, and mulching machines, pumps, rotating telehandler (that does not require NYS crane license).

*** In the event that equipment listed above is operated by robotic control, the classification covering the operation will be the same as if manually operated.

WAGES per hour

	07/01/2023	07/01/2024
Class A1*	$47.71	$49.65
Class A	45.31	47.25
Class B	44.85	46.79
Class C	42.54	44.48

(*) TONNAGE RATING PREMIUMS:
Note: Additional value subject to same premiums as shown for OT
All cranes 1000 tons and over, A1 rate plus $7.00
All cranes 800-999 tons, A1 rate plus $6.00
All cranes 600-799 tons, A1 rate plus $5.00
All cranes 400-599 tons, A1 rate plus $4.00
All cranes 200-399 tons, A1 rate plus $3.00
All cranes 111-199 tons, A1 rate plus $2.25
All cranes 110 tons and under, A1 rate only

Additional $0.50 per hr over A1 rate for Tower Cranes.
Additional $2.50 per hr over B rate for Nuclear Leader work.
Additional $2.50 per hour if work requires Personal Protective Equipment for hazardous waste site activities with a level C or over rating.

NOTE - The "Employer Registration" (30.1) use of a '4 Day/10 Hour Work schedules' will no longer be accepted or processed. All registered projects prior to June 30, 2023 will expire within the granted time frame.

For Pre-Registered Projects Four (4), Ten (10) hour days may be worked at straight time during a week, Monday thru Thursday. Friday may be used as a make-up day. Tuesday thru Friday may be worked with no make-up day. For further clarification contact your local Bureau Office.

SUPPLEMENTAL BENEFITS
Per hour

	07/01/2023	07/01/2024
Journeyman	$ 30.75	$ 31.85

OVERTIME PAY
See (B, E, Q) on OVERTIME PAGE

HOLIDAY
Paid: See (1) on HOLIDAY PAGE
Overtime: See (5, 6) on HOLIDAY PAGE
Note: If a holiday falls on Sunday, it will be celebrated on Monday. If the holiday falls on Saturday, it will be celebrated on Friday.

REGISTERED APPRENTICES
Wages per hour

1000 hours terms at the following percentage of Journeyperson's wage Class B:

1st	2nd	3rd	4th
60%	70%	80%	90%

Supplemental Benefits per hour worked

	07/01/2023	07/01/2024

All terms	$ 26.15	$ 27.25

1-158 BCT

Operating Engineer - Heavy&Highway 11/01/2023

JOB DESCRIPTION Operating Engineer - Heavy&Highway **DISTRICT** 1

ENTIRE COUNTIES
Albany, Broome, Chenango, Clinton, Columbia, Essex, Franklin, Fulton, Greene, Hamilton, Herkimer, Montgomery, Otsego, Rensselaer, Saratoga, Schenectady, Schoharie, Tioga, Warren, Washington

PARTIAL COUNTIES
Dutchess: Defined as north of the northern boundary line of City of Poughkeepsie then due east to Route 115 to Bedell Road then east along Bedell Road to VanWagner Road then north along VanWagner Road to Bower Road then east along Bower Road to Rte. 44 east to Route 343 then along Route 343 east to the northern boundary of Town of Dover Plains and east along the northern boundary of Town of Dover Plains to Connecticut.

WAGES
CLASSIFICATION A1*: All Cranes

CLASSIFICATION A:
Asphalt Curb Machine (Self Propelled, Slipform), Asphalt Paver, Automated Concrete Spreader (CMI Type), Automatic Fine Grader, Backhoe (Except Tractor Mounted, Rubber Tired), Backhoe Excavator Full Swing (CAT 212 or similar type), Back Filling Machine, Belt Placer (CMI Type), Blacktop Plant (Automated), Blacktop Roller, Boom truck, GPS operated Bull Dozer, Cableway, Caisson Auger, Central Mix Concrete Plant (Automated), Concrete Curb Machine (Self Propelled, Slipform), Concrete Pump, Crane, Cherry Picker, Derricks (steel erection), Dragline, Overhead Crane (Gantry or Straddle type), Pile Driver, Truck Crane, Directional Drilling Machine, Dredge, Dual Drum Paver, Excavator (All PurposeHydraulically Operated) (Gradall or Similar), Front End Loader (4 cu. yd. and Over), Head Tower (Sauerman or Equal), Hoist (Two or Three Drum), Holland Loader, Maintenance Engineer, Mine Hoist, Mucking Machine or Mole, Pavement Breaker(SP) Wertgen; PB-4 and similar type, Power Grader, Profiler (over 105 H.P.), Quad 9, Quarry Master (or equivalent), Rotating Telehandler, Scraper (Including Challenger Type), Shovel, Side Boom, Slip Form Paver (If a second man is needed, he shall be an Oiler), Tractor Drawn BeltType Loader, Truck or Trailer Mounted Log Chipper (Self Feeder), Tug Operator (Manned Rented Equipment Excluded), Tunnel Shovel

CLASSIFICATION B:
Backhoe (Tractor Mounted, Rubber Tired), Bituminous Recycler Machine, Bituminous Spreader and Mixer, Blacktop Plant (NonAutomated), Blast or Rotary Drill (Truck or Tractor Mounted), Brokk, Boring Machine, Cage Hoist, Central Mix Plant [(NonAutomated) and All Concrete Batching Plants], Concrete Paver (Over 16S), Crawler Drill (Self-contained), Crusher, Diesel Power Unit, Drill Rigs, Tractor Mounted, Front End Loader (Under 4 cu. yd.), Greaseman/Lubrication Engineer, HiPressure Boiler (15 lbs. and over), Hoist (One Drum), Hydro-Axe, Kolman Plant Loader and Similar Type Loaders (If Employer requires another man to clean the screen or to maintain the equipment, he shall be an Oiler), L.C.M. Work Boat Operator, Locomotive, Material handling knuckle boom, Mini Excavator (under 18,000 lbs.), Mixer (for stabilized base self-propelled), Monorail Machine, Plant Engineer, Prentice Loader, Profiler (105 H.P. and under), Pug Mill, Pump Crete, Ready Mix Concrete Plant, Refrigeration Equipment (for soil stabilization), Road Widener, Roller (all above subgrade), Sea Mule, Self-contained Ride-on Rock Drill(Excluding Air-Track Type Drill), Skidder, Tractor with Dozer and/or Pusher, Trencher, Tugger Hoist, Vacum machine (mounted or towed), Vermeer saw (ride on, any size or type), Welder, Winch, Winch Cat

CLASSIFICATION C:
A Frame Winch Hoist on Truck, Articulated Heavy Hauler, Aggregate Plant, Asphalt or Concrete Grooving Machine (ride on), Ballast Regulator(Ride-on), Boiler (used in conjunction with production), Bituminous Heater (self-propelled), Boat (powered), Cement and Bin Operator, Concrete Pavement Spreader and Finisher Concrete Paver or Mixer (16' and under), Concrete Saw (self-propelled), Conveyor, Deck Hand, Directional Drill Machine Locator, Drill (Core and Well), Farm Tractor with accessories, Fine Grade Machine, Fireman, Fork Lift, Form Tamper, Grout Pump, Gunite Machine, Hammers (Hydraulic self-propelled), Hydra-Spiker (ride-on), Hydraulic Pump (jacking system), Hydro-Blaster (Water), Mulching Machine, Oiler, Parapet Concrete or Pavement Grinder, Post Hole Digger and Post Driver, Power Broom (towed), Power Heaterman, Power Sweeper, Revinius Widener, Roller (Grade and Fill), Scarifier (ride-on), Shell Winder, Skid steer loader (Bobcat or similar; including all attachments), Span-Saw (ride-on), Steam Cleaner, Tamper (ride-on), Tie Extractor (ride-on), Tie Handler (ride-on), Tie Inserter (ride-on), Tie Spacer (ride-on), Tire Repair, Track Liner (ride-on), Tractor, Tractor (with towed accessories), Vibratory Compactor, Vibro Tamp, Well Point, and the following hands-off equipment: Compressors, Dust Collectors, Generators, Pumps, Welding Machines, Light Plants and Heaters

- Note for all above classifications of Operating Engineer - In the event that equipment listed above is operated by robotic control, the classification covering the operation will be the same as if manually operated.

WAGES per hour

	07/01/2023	07/01/2024
Class A1*	$55.63	57.90
Class A	52.63	54.90
Class B	51.72	53.99
Class C	49.15	51.42

(*) TONNAGE RATING PREMIUMS:
Cranes over 1000 tons, A1 rate plus $7.00

Cranes from 800-999 tons, A1 rate plus $6.00
Cranes from 600-799 tons, A1 rate plus $5.00
Cranes from 400-599 tons, A1 rate plus $4.00
Cranes from 200-399 tons, A1 rate plus $3.00
Cranes from 111-199 tons, A1 rate plus $2.00
Cranes from 65-110 tons, A1 rate plus $1.50
Cranes from 0-64 Tons, A1 rate only
NOTE: Additional value subject to same premiums as shown for OT

-- Tower Cranes, A1 rate plus $3.00
-- Cranes in Luffer Configuration, A1 rate plus $5.00
-- Cranes with external ballast (tray or wagon), A1 rate plus $5.00
NOTE: Additional value subject to same premiums as shown for OT

Additional $2.50 per hour for All Employees who work a single irregular work shift, of at least 5 consecutive days, starting from 5:00 PM to 1:00 AM that is mandated by the Contracting Agency.

Additional $2.50 per hr. for hazardous waste removal work on State and/or Federally designated waste site which require employees to wear Level C or above forms of personal protection.

NOTE - The "Employer Registration" (30.1) use of a '4 Day/10 Hour Work schedules' will no longer be accepted or processed. All registered projects prior to June 30, 2023 will expire within the granted time frame.

For Pre-Registered Projects Four (4), Ten (10) hour days may be worked at straight time during a week, Monday thru Thursday. Friday may be used as a make-up day. Tuesday thru Friday may be worked with no make-up day. For further clarification contact your local Bureau Office.

SUPPLEMENTAL BENEFITS
Per hour

	07/01/2023	07/01/2024
Journeyperson	$ 31.50	$ 32.60

OVERTIME PAY
See (B, E, Q) on OVERTIME PAGE

HOLIDAY
Paid: See (5, 6) on HOLIDAY PAGE
Overtime: See (5, 6) on HOLIDAY PAGE
Note: If the holiday falls on Sunday, it will be observed on Monday. If the observed Monday Holiday is worked, pay shall be double time plus Holiday pay for time worked. If the Holiday falls on a Saturday and is worked pay shall be double time plus Holiday pay for time worked. If the Holiday falls on a Saturday employer can choose to observe the paid holiday Saturday or give Friday off with holiday pay.

REGISTERED APPRENTICES
Wages per hour

1000 hours terms at the following percentage of Journeyperson's wage Class B

1st	2nd	3rd	4th
60%	70%	80%	90%

Supplemental Benefits per hour worked

	07/01/2023	07/01/2024
All Terms	$ 26.25	$27.10

1-158H/H Alb

Operating Engineer - Survey Crew 11/01/2023

JOB DESCRIPTION Operating Engineer - Survey Crew **DISTRICT** 12

ENTIRE COUNTIES
Albany, Allegany, Broome, Cayuga, Chemung, Chenango, Clinton, Columbia, Cortland, Essex, Franklin, Fulton, Greene, Hamilton, Herkimer, Jefferson, Lewis, Livingston, Madison, Monroe, Montgomery, Oneida, Onondaga, Ontario, Oswego, Otsego, Rensselaer, Saratoga, Schenectady, Schoharie, Schuyler, Seneca, St. Lawrence, Steuben, Tioga, Tompkins, Warren, Washington, Wayne, Yates

PARTIAL COUNTIES
Dutchess: The northern portion of the county from the northern boundary line of the City of Poughkeepsie, north.
Genesee: Only the portion of the county that lies east of a line down the center of Route 98 to include all area that lies within the City of Batavia.

WAGES

These rates apply to Building, Tunnel and Heavy Highway.

Per hour:
SURVEY CLASSIFICATIONS:

Party Chief - One who directs a survey party.
Instrument Person - One who operates the surveying instruments.
Rod Person - One who holds the rods and assists the Instrument Person.

	07/01/2023
Party Chief	$ 48.97
Instrument Person	44.99
Rod Person	33.37

Additional $3.00/hr. for Tunnel Work
Additional $2.50/hr. for Hazardous Work Site

SUPPLEMENTAL BENEFITS
Per hour worked:

Journeyman	$ 28.90

OVERTIME PAY
See (B, E, P, *X) on OVERTIME PAGE
*Note: $24.60/Hr. Only for "ALL" premium hours paid when worked.

HOLIDAY
Paid: See (5, 6) on HOLIDAY PAGE
Overtime: See (5, 6) on HOLIDAY PAGE

REGISTERED APPRENTICES
WAGES: 1000 hour terms based on the Percentage of Rod Persons Wage:

	07/01/2023
0-1000	60%
1001-2000	70%
2001-3000	80%

SUPPLEMENTAL BENEFIT per hour worked:

0-1000	$ 20.68 / PHP	$17.53
1001-2000	23.70 / "	19.95
2001-3000	26.73 / "	22.43

NOTE: PHP is premium hours paid when worked.

12-158-545 D.H.H.

Operating Engineer - Survey Crew - Consulting Engineer 11/01/2023

JOB DESCRIPTION Operating Engineer - Survey Crew - Consulting Engineer **DISTRICT** 12

ENTIRE COUNTIES
Albany, Allegany, Broome, Cayuga, Chemung, Chenango, Clinton, Columbia, Cortland, Essex, Franklin, Fulton, Greene, Hamilton, Herkimer, Jefferson, Lewis, Livingston, Madison, Monroe, Montgomery, Oneida, Onondaga, Ontario, Oswego, Otsego, Rensselaer, Saratoga, Schenectady, Schoharie, Schuyler, Seneca, St. Lawrence, Steuben, Tioga, Tompkins, Warren, Washington, Wayne, Yates

PARTIAL COUNTIES
Dutchess: The northern portion of the county from the northern boundary line of the City of Poughkeepsie, north.
Genesee: Only the portion of the county that lies east of a line down the center of Route 98 to include all area that lies within the City of Batavia.

WAGES
These rates apply to feasibility and preliminary design surveying, line and grade surveying for inspection or supervision of construction when performed under a Consulting Engineer Agreement.

Per hour:
SURVEY CLASSIFICATIONS:

Party Chief - One who directs a survey party.
Instrument Person - One who operates the surveying instruments.
Rod Person - One who holds the rods and assists the Instrument Person.

	07/01/2023
Party Chief	$ 48.97
Instrument Person	44.99
Rod Person	33.37

Additional $3.00/hr. for Tunnel Work.
Additional $2.50/hr. for EPA or DEC certified toxic or hazardous waste work.

SUPPLEMENTAL BENEFITS
Per hour worked:

Journeyman	$ 28.90

OVERTIME PAY
See (B, E, Q, *X) on OVERTIME PAGE
*Note: $24.10/Hr. Only for "ALL" premium hours paid when worked.

HOLIDAY

Paid:	See (5, 6) on HOLIDAY PAGE
Overtime:	See (5, 6) on HOLIDAY PAGE

REGISTERED APPRENTICES
WAGES: 1000 hour terms based on percentage of Rod Persons Wage:

	07/01/2023
0-1000	60%
1001-2000	70%
2001-3000	80%

SUPPLEMENTAL BENEFIT per hour worked:

0-1000	$ 20.68 / PHP	$17.53
1001-2000	$ 23.70 / "	19.95
2001-3000	$ 26.73 / "	22.43

NOTE: PHP is premium hours paid when worked.

12-158-545 DCE

Operating Engineer - Tunnel 11/01/2023

JOB DESCRIPTION Operating Engineer - Tunnel **DISTRICT** 7

ENTIRE COUNTIES
Albany, Allegany, Broome, Cayuga, Chemung, Chenango, Clinton, Columbia, Cortland, Essex, Franklin, Fulton, Greene, Hamilton, Herkimer, Jefferson, Lewis, Livingston, Madison, Monroe, Montgomery, Oneida, Onondaga, Ontario, Oswego, Otsego, Rensselaer, Saratoga, Schenectady, Schoharie, Schuyler, Seneca, St. Lawrence, Steuben, Tioga, Tompkins, Warren, Washington, Wayne, Yates

PARTIAL COUNTIES
Dutchess: Northern part of Dutchess, to the northern boundary line of the City of Poughkeepie, then due east to Route 115 to Bedell Road, then east along Bedell Road to VanWagner Road, then north along VanWagner Road to Bower Road, then east along Bower Road to Rte. 44 east to Rte. 343, then along Rte. 343 east to the northern boundary of the Town of Dover Plains and east along the northern boundary of the Town of Dover Plains, to the borderline of the State of Connecticut.
Genesee: Only that portion of the county that lies east of a line drawn down the center of Route 98 and the entirety of the City of Batavia.

WAGES
CLASS A: Automatic Concrete Spreader (CMI Type); Automatic Fine Grader; Backhoe (except tractor mounted, rubber tired); Belt Placer (CMI Type); Blacktop Plant (automated); Cableway; Caisson Auger; Central Mix Concrete Plant (automated); Concrete Curb Machine (self-propelled slipform); Concrete Pump (8" or over); Dredge; Dual Drum Paver; Excavator; Front End Loader (4 cu. yd & over); Gradall; Head Tower (Sauerman or Equal); Hoist (shaft); Hoist (two or three Drum); Log Chipper/Loader (self-feeder); Maintenance Engineer (shaft and tunnel); any Mechanical Shaft Drill; Mine Hoist; Mining Machine(Mole and similar types); Mucking Machine or Mole; Overhead Crane (Gantry or Straddle Type); Pile Driver; Power Grader; Remote Controlled Mole or Tunnel Machine; Scraper; Shovel; Side Boom; Slip Form Paver (If a second man is needed, they shall be an Oiler); Tripper/Maintenance Engineer (shaft & tunnel); Tractor Drawn Belt-Type Loader; Tug Operator (manned rented equipment excluded); Tunnel Shovel.

CLASS B: Automated Central Mix Concrete Plant; Backhoe (topside); Backhoe (track mounted, rubber tired); Backhoe (topside); Bituminous Spreader and Mixer, Blacktop Plant (non-automated); Blast or Rotary Drill (truck or tractor mounted); Boring Machine; Cage Hoist; Central Mix Plant(non-automated); all Concrete Batching Plants; Compressors (4 or less exceeding 2,000 c.f.m. combined capacity); Concrete Pump; Crusher; Diesel Power Unit; Drill Rigs (tractor mounted); Front End Loader (under 4 cu. yd.); Grayco Epoxy Machine; Hoist (One Drum); Hoist (2 or 3 drum topside); Knuckle Boom material handler; Kolman Plant Loader & similar type Loaders (if employer requires another person to clean the screen or to maintain the equipment, they shall be an Oiler); L.C.M. Work Boat Operator; Locomotive; Maintenance Engineer (topside); Maintenance Grease Man; Mixer (for stabilized base-self-propelled); Monorail Machine; Plant Engineer; Personnel Hoist; Pump Crete; Ready Mix Concrete Plant; Refrigeration Equipment (for soil stabilization); Road Widener; Roller (all above sub-grade); Sea Mule; Shotcrete Machine; Shovel (topside); Tractor with Dozer and/or Pusher; Trencher; Tugger Hoist; Tunnel Locomotive; Vacuum Machine (mounted or towed); Welder; Winch; Winch Cat.

CLASS C: A Frame Truck; All Terrain Telescoping Material Handler; Ballast Regulator (ride-on); Compressors (4 not to exceed 2,000 c.f.m. combined capacity; or 3 or less with more than 1200 c.f.m. but not to exceed 2,000 c.f.m.); Compressors ((any size, but subject to other provisions for compressors), Dust Collectors, Generators, Pumps, Welding Machines, Light Plants (4 or any type combination)); Concrete Pavement Spreaders and Finishers; Conveyor; Drill (core); Drill (well); Electric Pump used in conjunction with Well Point System; Farm Tractor with Accessories; Fine Grade Machine; Fork Lift; Grout Pump (over 5 cu. ft.); Gunite Machine; Hammers (hydraulic-self-propelled); Hydra-Spiker (ride-on); Hydra-Blaster (water); Hydro-Blaster; Motorized Form Carrier; Post Hole Digger and Post Driver; Power Sweeper; Roller grade & fill); Scarifer (ride-on); Span-Saw (ride-on); Submersible Electric Pump (when used in lieu of well points); Tamper (ride-on); Tie-Extractor (ride-on), Tie Handler (ride-on), Tie Inserter (ride-on), Tie Spacer (ride-on); Track Liner (ride-on); Tractor with towed accessories; Vibratory Compactor; Vibro Tamp, Well Point.

CLASS D: Aggregate Plant; Cement & Bin Operator; Compressors (3 or less not to exceed 1,200 c.f.m. combined capacity); Compressors ((any size, but subject to other provisions for compressors), Dust Collectors, Generators, Pumps, Welding Machines, Light Plants (3 or less or any type or combination)); Concrete Saw (self-propelled); Form Tamper; Greaseman; Hydraulic Pump (jacking system); Junior Engineer; Light Plants; Mulching Machine; Oiler; Parapet Concrete or Pavement Grinder; Power Broom (towed); Power Heaterman (when used for production); Revinius Widener; Shell Winder; Steam Cleaner; Tractor.

Per hour:	07/01/2023	07/01/2024	07/01/2025
CLASS A	$ 53.52	$ 55.91	$ 58.44
CLASS B	52.30	54.69	57.22
CLASS C	49.51	51.90	54.43
CLASS D	46.50	48.89	51.42

Additional $5.00 per hour for Hazardous Waste Work on a state or federally designated hazardous waste site where the Operating Engineer is in direct contact with hazardous material and when personal protective equipment is required for respiratory, skin and eye protection. Fringe benefits will be paid at the hourly wage premium.

CRANES:
Crane 1: All cranes, including self-erecting.
Crane 2: All Lattice Boom Cranes and all cranes with a manufacturer's rating of fifty (50) ton and over.
Crane 3: All hydraulic cranes and derricks with a manufacturer's rating of forty nine (49) ton and below, including boom trucks.

Crane 1	$ 57.52	$ 59.91	$ 62.44
Crane 2	56.52	58.91	61.44
Crane 3	55.52	57.91	60.44

SUPPLEMENTAL BENEFITS

Per hour:			
	$ 24.20	$ 25.05	$ 25.90
	+ 9.60*	+ 9.85*	+ 10.10*

* This portion of benefits subject to same premium rate as shown for overtime wages.

OVERTIME PAY
See (B, B2, E, Q, X) on OVERTIME PAGE

HOLIDAY
Paid: See (5, 6) on HOLIDAY PAGE
Overtime: See (5, 6) on HOLIDAY PAGE
If a holiday falls on Sunday, it shall be observed on Monday.

REGISTERED APPRENTICES
WAGES:(1000) hours terms at the following percentage of Journeyman's Class B wage.

1st term	60%
2nd term	65%
3rd term	70%
4th term	75%

SUPPLEMENTAL BENEFITS per hour: Same as Journeyman.

7-158-832TL.

Painter **11/01/2023**

JOB DESCRIPTION Painter **DISTRICT** 2

ENTIRE COUNTIES
Broome, Chenango, Tioga

WAGES
Per hour:

	07/01/2023	05/01/2024 Additional	05/01/2025 Additional
Painter	$ 27.00	$ 1.35*	$ 1.60*
Taper, Paperhangers, and Vinyl hangers	28.35	1.38*	1.64*

*To be allocated at a later date.

ADDITIONAL AMOUNTS FOR SPECIFIC TYPES OF JOBSITE CONDITIONS (amount subject to any overtime premiums):
- Additional $ 1.10 per hour for Brush and Roll Epoxy (Solvent Base Only)
- Additional $ 0.60 per hour for Swing Scaffold, Boatswain chair, Spray helper, Steam cleaning acid and high pressure water, Power grinders with respirator
- Additional $ 0.60 per hour for Structural steel (buildings) defined as new or old construction where ceilings, walls or the steel itself is to be painted from open trusses which require climbing or crawling without the support of solid scaffolding or scaffolding starting at the floor or ground level.
- Additional $ 1.00 per hour for Spray Painting
- Additional $ 1.00 per hour for Steeple Jack (Over 100 feet)
- Additional $ 1.50 per hour for Spray Epoxy (Solvent Based)
- Additional $ 0.90 per hour for Sandblasting

NOTE - SEE BRIDGE PAINTER RATES FOR BRIDGES & TANKS

NOTE - The 'Employer Registration' (30.1) use of a '4 Day/10 Hour Work schedules' will no longer be accepted or processed. All registered projects prior to June 30,2023 will expire within the granted time frame.

For Pre-Registered Projects Four (4), Ten (10) hour days may be worked at straight time during a week, Monday thru Thursday. Friday may be used as a make-up day. Tuesday thru Friday may be worked with no make-up day. For further clarification contact your local Bureau Office.

SUPPLEMENTAL BENEFITS
Per hour:
Journeyman $ 23.23

OVERTIME PAY
See (B, E2, F, R) on OVERTIME PAGE

HOLIDAY
Paid: See (1) on HOLIDAY PAGE
Overtime: See (5, 6) on HOLIDAY PAGE
A Holiday that falls on a Sunday will be celebrated on Monday, a holiday that falls on a Saturday will be celebrated on Friday.

REGISTERED APPRENTICES
WAGES:

Painter: 750 hour terms at the Painter Apprentice wage rate:

1st	2nd	3rd	4th	5th	6th	7th	8th
$ 18.00	$ 19.00	$ 20.00	$ 21.00	$ 22.00	$ 23.00	$ 24.00	$ 25.00

Taper: 750 hour terms at the following Journeyman Taper Apprentice wage rate:

1st	2nd	3rd	4th	5th	6th
$ 20.00	$ 21.00	$ 22.00	$ 23.00	$ 24.00	$ 25.00

ADDITIONAL AMOUNTS FOR SPECIFIC TYPES OF JOBSITE CONDITIONS (amount subject to any overtime premiums):
- Additional $ 1.10 per hour for Brush and Roll Epoxy (Solvent Base Only)
- Additional $ 0.60 per hour for Swing Scaffold, Boatswain chair, Spray helper, Steam cleaning acid and high pressure water, Power grinders with respirator
- Additional $ 0.60 per hour for Structural steel (buildings) defined as new or old construction where ceilings, walls or the steel itself is to be painted from open trusses which require climbing or crawling without the support of solid scaffolding or scaffolding starting at the floor or ground level.

- Additional $ 1.00 per hour for Spray Painting
- Additional $ 1.00 per hour for Steeple Jack (Over 100 feet)
- Additional $ 1.50 per hour for Spray Epoxy (Solvent Based)
- Additional $ 0.90 per hour for Sandblasting

SUPPLEMENTAL BENEFITS per hour:
Painter/Decorator:

1st	2nd	3rd	4th	5th	6th	7th	8th
$ 6.00	$ 7.00	$ 8.00	$ 9.10	$ 11.00	$ 11.00	$ 13.00	$ 14.00

Taper/Drywall Finisher:

1st	2nd	3rd	4th	5th	6th
$ 6.00	$ 7.00	$ 8.00	$ 10.00	$ 13.00	$ 14.00

2-178 B

Painter 11/01/2023

JOB DESCRIPTION Painter **DISTRICT** 3

ENTIRE COUNTIES
Allegany, Broome, Cattaraugus, Cayuga, Chautauqua, Chemung, Chenango, Cortland, Delaware, Erie, Genesee, Herkimer, Jefferson, Lewis, Livingston, Madison, Monroe, Niagara, Oneida, Onondaga, Ontario, Orleans, Oswego, Otsego, Schuyler, Seneca, St. Lawrence, Steuben, Tioga, Tompkins, Wayne, Wyoming, Yates

WAGES

Per hour:	07/01/2023
Bridge	$ 42.06
Tunnel	42.06
Tank*	40.06

For Bridge Painting Contracts, ALL WORKERS on and off the bridge (including Flagmen) are to be paid Painter's Rate; the contract must be ONLY for Bridge Painting.

Tank rate applies to indoor and outdoor tanks, tank towers, standpipes, digesters, waste water treatment tanks, chlorinator tanks, etc. Covers all types of tanks including but not limited to steel tanks, concrete tanks, fiberglass tanks, etc.

Note an additional $1.50 per hour is required when the contracting agency or project specification requires any shift to start prior to 6:00am or after 12:00 noon.

SUPPLEMENTAL BENEFITS
Per hour:
$ 30.89

OVERTIME PAY
Exterior work only See (B, E4, F*, R) on OVERTIME PAGE.
All other work See (B, F*, R) on OVERTIME PAGE.
*Note - Saturday is payable at straight time if the employee misses work, except where a doctor's or hospital verification of illness is produced Monday through Friday when work was available to the employee.

HOLIDAY
Paid: See (1) on HOLIDAY PAGE
Overtime: See (5, 6) on HOLIDAY PAGE

REGISTERED APPRENTICES
Wages per hour:

750 hour terms at the following percentage of Journeyman's wage rate:

1st	2nd	3rd	4th	5th	6th
$ 24.00	$ 26.00	$ 28.00	$ 30.00	$ 34.00	$ 38.00

Supplemental benefits per hour:

1st	2nd	3rd	4th	5th	6th
$ 6.60	$ 6.95	$ 7.30	$ 7.65	$ 8.00	$ 8.35

3-4-Bridge, Tunnel, Tank

Painter - Metal Polisher 11/01/2023

JOB DESCRIPTION Painter - Metal Polisher **DISTRICT** 8

ENTIRE COUNTIES

Albany, Allegany, Bronx, Broome, Cattaraugus, Cayuga, Chautauqua, Chemung, Chenango, Clinton, Columbia, Cortland, Delaware, Dutchess, Erie, Essex, Franklin, Fulton, Genesee, Greene, Hamilton, Herkimer, Jefferson, Kings, Lewis, Livingston, Madison, Monroe, Montgomery, Nassau, New York, Niagara, Oneida, Onondaga, Ontario, Orange, Orleans, Oswego, Otsego, Putnam, Queens, Rensselaer, Richmond, Rockland, Saratoga, Schenectady, Schoharie, Schuyler, Seneca, St. Lawrence, Steuben, Suffolk, Sullivan, Tioga, Tompkins, Ulster, Warren, Washington, Wayne, Westchester, Wyoming, Yates

WAGES

	07/01/2023
Metal Polisher	$ 38.18
Metal Polisher*	39.28
Metal Polisher**	42.18

*Note: Applies on New Construction & complete renovation
** Note: Applies when working on scaffolds over 34 feet.

SUPPLEMENTAL BENEFITS

Per Hour:	07/01/2023
Journeyworker:	
All classification	$ 12.34

OVERTIME PAY
See (B, E, P, T) on OVERTIME PAGE

HOLIDAY
Paid: See (5, 6, 11, 15, 16, 25, 26) on HOLIDAY PAGE
Overtime: See (5, 6, 9, 11, 15, 16, 25, 26) on HOLIDAY PAGE

REGISTERED APPRENTICES
Wages per hour:
One (1) year term at the following wage rates:

	07/01/2023
1st year	$ 16.00
2nd year	17.00
3rd year	18.00
1st year*	$ 16.39
2nd year*	17.44
3rd year*	18.54
1st year**	$ 18.50
2nd year**	19.50
3rd year**	20.50

*Note: Applies on New Construction & complete renovation
** Note: Applies when working on scaffolds over 34 feet.

Supplemental benefits:
Per hour:

1st year	$ 8.69
2nd year	8.69
3rd year	8.69

8-8A/28A-MP

Plumber 11/01/2023

JOB DESCRIPTION Plumber **DISTRICT** 2

ENTIRE COUNTIES
Broome, Chenango

PARTIAL COUNTIES
Cortland: Only the Township of Marathon.
Delaware: Only the Townships of Andes, Bovina, Colchester, Davenport, Delhi, Deposit, Franklin, Hamden, Hancock, Harpersfield, Kortright, Masonville, Meredith, Sidney, Stamford, Tompkins and Walton.
Madison: Only the Township of Georgetown.
Otsego: Only the Townships of Burlington, Butternuts, Decatur, Edmeston, Hartwick, Laurens, Maryland, Milford, Morris, New Lisbon, Oneonta, Otego, Pittsfield, Unadilla, Westford and Worchester.
Tioga: Only the Townships of Newark Valley and Owego.

WAGES
Per hour: 07/01/2023

Plumber	$ 40.38
Steamfitter	40.38

Agency-mandated shift operations:

1. Shift work shall start no earlier than 6AM Monday and will conclude no later than 9AM Saturday (overtime premiums applicable after 8 hours in a shift).

2. Single irregular shiftwork, less than 3 consecutive days will be paid at the rate of time and one-half of the regular hourly rate.

3. 3 consecutive work days or more:
First Shift - No Premium (Starting 6AM-9AM)
Second Shift - Regular hourly rate plus 12%
Third Shift - Regular hourly rate plus 18%

SUPPLEMENTAL BENEFITS
Per hour:

Journeyman	$ 14.65
	+16.64*

*This portion of the benefit is subject to the SAME PREMIUM as shown for overtime on projects over $100 million in total construction costs (including engineering & architecture).

OVERTIME PAY
See (B, E, Q, *V) on OVERTIME PAGE
*portion of supplemental benefits subject to V code when project cost is over one hundred million (including engineering & architecture).

HOLIDAY
Paid: See (1) on HOLIDAY PAGE
Overtime: See (5, 6) on HOLIDAY PAGE
When a Holiday falls on Sunday, it will be celebrated the following day. If the holiday falls on a Saturday, it will be observed that day unless so determined by the Federal Government to be celebrated on a different day.

REGISTERED APPRENTICES
WAGES: One year terms at the following percentage of Journeyman's wage.

1st.	2nd.	3rd.	4th.	5th.
50%	55%	60%	70%	85%

SUPPLEMENTAL BENEFITS per hour:

1st term	$ 14.65
	+8.10*
All other terms	$ 14.65
	+12.64*

*This portion of the benefit is subject to the SAME PREMIUM as shown for overtime on projects over $100 million in total construction costs (including engineering & architecture).

2-112s-SF

Plumber 11/01/2023

JOB DESCRIPTION Plumber **DISTRICT** 6

ENTIRE COUNTIES
Chemung, Cortland, Onondaga, Schuyler, Tompkins

PARTIAL COUNTIES
Madison: Only the Townships of Sullivan, Cazenovia and DeRuyter.
Seneca: Only the Townships of Covert and Lodi.
Steuben: Only the Townships of Addison, Bath, Bradford, Campbell, Caton, Corning, Erwin, Hornby, Lindley, Pulteney, Rathbone, Thurston, Tuscarora, Urbana and Wayne.
Tioga: Only the Townships of Barton, Berkshire, Candor, Nichols, Richford, Spencer and Tioga.

WAGES
Per hour: 07/01/2023

Plumber/Steamfitter	$ 42.01
Pipefitter/Welder/HVAC	42.01
Refrigeration	42.01

SINGLE IRREGULAR WORK SHIFT: Additional 15% premium added to the wages above for a single irregular work shift outside of normal working hours.

NOTE - The "Employer Registration" (30.1) use of a '4 Day/10 Hour Work schedules' will no longer be accepted or processed. All registered projects prior to June 30, 2023 will expire within the granted time frame.

For Pre-Registered Projects Four (4), Ten (10) hour days may be worked at straight time during a week, Monday thru Thursday. Friday may be used as a make-up day. Tuesday thru Friday may be worked with no make-up day. For further clarification contact your local Bureau Office.

SUPPLEMENTAL BENEFITS
Per hour:

Journeyman	$ 26.90*

*NOTE: $10.27 of the supplemental benefits are paid at the same premium as shown for overtime work performed at semi-conductor manufacturer and/or fabrication plants.

OVERTIME PAY
Time and one half for the 9th & 10th hours Monday thru Friday and first 10 hours on Saturday. All other overtime hours are double-time.

HOLIDAY

Paid:	See (1) on HOLIDAY PAGE
Overtime:	See (5, 6) on HOLIDAY PAGE

NOTE: If a holiday falls on Saturday, the holiday will be observed on the prior Friday. If a holiday falls on Sunday, it will be observed on the following Monday.

REGISTERED APPRENTICES
WAGES per hour: One year terms at the following percentage of the Journeyman's wage:

1st	2nd	3rd	4th	5th
50%	55%	60%	70%	85%

SUPPLEMENTAL BENEFITS per hour*:

1st	$ 13.00
2nd	23.56
3rd	23.93
4th	24.66
5th	25.77

*NOTE: Below is the portion of supplemental benefits paid at overtime premiums for work performed at semi-conductor manufacturer and/or fabrication plants:

1st	n/a
2nd	$ 8.58
3rd	$ 8.77
4th	$ 9.14
5th	$ 9.71

6-81-SF

Roofer 11/01/2023

JOB DESCRIPTION Roofer **DISTRICT** 2

ENTIRE COUNTIES
Broome, Chemung, Chenango, Delaware, Otsego, Schoharie, Schuyler, Steuben, Tioga, Tompkins

WAGES

Per hour:	07/01/2023	06/01/2024 Additional	06/01/2025 Additional
Roofer, Waterproofer	$ 29.51 + 0.99*	$ 2.50**	$ 2.50**

*This amount is paid for all hours worked, whether regular or premium hours.
**To be allocated at a later date
NOTE ADDITIONAL PREMIUMS PAID FOR THE FOLLOWING WORK LISTED BELOW (amount not subject to overtime premiums):
- On days where more than one shift is worked on the job, the hours worked after 4:30 PM and before 6:30 AM will be paid an additional $1.90 per hour premium. This premium is not for use in emergency repair situations.
- Premium of $1.25 per hour will be paid for the application, rip-off or handling of pitch products. The premium will be paid for pitch that is showing, covered or buried on the roof.

- Premium of $1.25 per hour will be paid for asbestos abatement requiring a half face respirator.

SUPPLEMENTAL BENEFITS
Per hour:

Journeyman	$ 19.84

OVERTIME PAY
See (B, E, Q) on OVERTIME PAGE

HOLIDAY
Paid: See (1) on HOLIDAY PAGE
Overtime: See (5, 6) on HOLIDAY PAGE

REGISTERED APPRENTICES
Wages:
Hours per term

0-667 Hrs.	$ 20.66 + 0.69*
668-1335 Hrs.	22.14 + 0.74*
1336-2002 Hrs.	23.61 + 0.79*
2003-2669 Hrs.	25.08 + 0.84*
2670-3336 Hrs.	26.56 + 0.89*
3337-4000 Hrs.	28.04 + 0.94*

*This amount is paid for all hours worked, whether regular or premium hours.
NOTE ADDITIONAL PREMIUMS PAID FOR THE FOLLOWING WORK LISTED BELOW (amount not subject to overtime premiums):
- On days where more than one shift is worked on the job, the hours worked after 4:30 PM and before 6:30 AM will be paid an additional $1.90 per hour premium. This premium is not for use in emergency repair situations.
- Premium of $1.25 per hour will be paid for the application, rip-off or handling of pitch products. The premium will be paid for pitch that is showing, covered or buried on the roof.
- Premium of $1.25 per hour will be paid for asbestos abatement requiring a half face respirator.

Supplemental Benefits:

0-667 Hrs.	$ 16.87
668-1335 Hrs.	17.36
1336-2002 Hrs.	17.87
2003-2669 Hrs.	18.35
2670-3336 Hrs.	18.85
3337-4000 Hrs.	19.34

2-203elmi

Sheetmetal Worker 11/01/2023

JOB DESCRIPTION Sheetmetal Worker **DISTRICT** 2

ENTIRE COUNTIES
Allegany, Broome, Chemung, Delaware, Otsego, Schuyler, Steuben, Tioga, Tompkins

WAGES
Per hour:

	07/01/2023	05/01/2024 Additional
Sheetmetal Worker	$ 36.84	$ 1.75*
Polyresin Fiberglass	36.94	1.75*
CAD Operator	37.84	1.75*

*To be allocated at a later date.

SUPPLEMENTAL BENEFITS
Per hour:

Journeyman:	$ 21.46

OVERTIME PAY
See (*B1, Q) on OVERTIME PAGE
*On Saturday, time and one half of the hourly rate for the first ten (10) hours, then two (2) times the hourly wage rate for all hours after ten (10) hours worked.

HOLIDAY
Paid: See (1) on HOLIDAY PAGE
Overtime: See (5, 6) on HOLIDAY PAGE
Note: Holidays are observed on the Holiday, not on the day that it is locally observed.

REGISTERED APPRENTICES
WAGES per hour:

Half Year Terms

	1st	2nd	3rd	4th	5th	6th	7th	8th
07/01/2023	22.10	22.10	23.94	25.79	27.63	29.47	31.31	33.16

SUPPLEMENTAL BENEFITS per hour:

	1st	2nd	3rd	4th	5th	6th	7th	8th
07/01/2023	1.68	1.68	17.85	17.93	18.01	18.09	18.17	18.25

2-112

Sprinkler Fitter 11/01/2023

JOB DESCRIPTION Sprinkler Fitter **DISTRICT** 1

ENTIRE COUNTIES
Allegany, Broome, Cattaraugus, Cayuga, Chautauqua, Chemung, Chenango, Clinton, Columbia, Cortland, Delaware, Erie, Essex, Franklin, Fulton, Genesee, Greene, Hamilton, Herkimer, Jefferson, Lewis, Livingston, Madison, Monroe, Montgomery, Niagara, Oneida, Onondaga, Ontario, Orleans, Oswego, Otsego, Schoharie, Schuyler, Seneca, St. Lawrence, Steuben, Tioga, Tompkins, Washington, Wayne, Wyoming, Yates

WAGES

Per hour	07/01/2023
Sprinkler Fitter	$ 40.04

SUPPLEMENTAL BENEFITS

Per hour	
Journeyperson	$ 28.24

OVERTIME PAY
See (B, E, Q) on OVERTIME PAGE

HOLIDAY
Paid: See (1) on HOLIDAY PAGE
Overtime: See (5, 6) on HOLIDAY PAGE
Note: When a holiday falls on Sunday, the following Monday shall be considered a holiday and all work performed on either day shall be at the double time rate. When a holiday falls on Saturday, the preceding Friday shall be considered a holiday and all work performed on either day shall be at the double time rate.

REGISTERED APPRENTICES
Wages per hour

One Half Year terms at the following wage.

1st	2nd	3rd	4th	5th	6th	7th	8th	9th	10th
$ 19.15	$ 21.28	$ 23.16	$ 25.29	$ 27.41	$ 29.54	$ 31.67	$ 33.80	$ 35.93	$ 38.05

Supplemental Benefits per hour

1st	2nd	3rd	4th	5th	6th	7th	8th	9th	10th
$ 8.74	$ 8.74	$ 20.32	$ 20.32	$ 20.57	$ 20.57	$ 20.57	$ 20.57	$ 20.57	$ 20.57

1-669

Teamster - Building 11/01/2023

JOB DESCRIPTION Teamster - Building **DISTRICT** 6

ENTIRE COUNTIES
Broome, Cayuga, Cortland, Delaware, Onondaga, Seneca, Tompkins, Yates

PARTIAL COUNTIES
Allegany: Only the Townships of Almond, Burns, and Alfred.
Chenango: Only the Townships of Afton, Bainbridge, Coventry, Greene, Guilford, Oxford and Smithville.
Madison: Only the Townships of Cazenovia, DeRuyter, Fenner, Georgetown, Lenox, Nelson and Sullivan.
Oswego: All Townships except Redfield, Boylston and Sandy Creek.
Otsego: Only the Townships of Butternuts, Laurens, Maryland, Millford, Morris, Oneonta, Otego, Unadilla, and Worchester.
Steuben: Only the Townships of Prattsburg, Canisteo, Fremont, Cohoctan, Dansville, Hornell, Hartsville, Greenwood, West Union, Troupsburg, and Jasper.
Tioga: Only the Townships of Berkshire, Candor, Newark Valley, Nichols, Owego, Richford, and Tioga. All territory east of Nichols/Smithboro to Broome County, within State of New York.

WAGES
GROUP A: Straight Trucks
GROUP B: Tractor Trailer, Farm Tractor, Fuel Truck.
GROUP C: Euclid.

GROUP D: On site Mechanic.

Per hour:	07/01/2023	06/01/2024	06/01/2025
Building: (under $ 5 million*)			
GROUP A,B,C,D	$ 28.43	$ 31.43	$ 34.43
Building: (over $ 5 million*)			
GROUP A,B	$ 29.48	$ 32.48	$ 35.48
GROUP C	29.83	32.83	35.83
GROUP D	29.63	32.63	35.63

* Total project cost including General Construction, Plumbing, HVAC and Electrical

SUPPLEMENTAL BENEFITS
Per hour:

(under $5 million*)	$ 29.37	$ 30.02	$ 30.87
(over $5 million*)	30.14	30.80	31.67

* Total project cost including General Construction, Plumbing, HVAC and Electrical

OVERTIME PAY
(D, O) on OVERTIME PAGE

HOLIDAY
Paid: See (1) on HOLIDAY PAGE
Overtime: See (5, 6) on HOLIDAY PAGE

6-317

Teamster - Building / Heavy&Highway 11/01/2023

JOB DESCRIPTION Teamster - Building / Heavy&Highway **DISTRICT** 7

ENTIRE COUNTIES
Chemung, Livingston, Monroe, Ontario, Schuyler, Wayne

PARTIAL COUNTIES
Genesee: Only in the townships of Oakfield, Elba, Batavia, Byron, Alexander, Bethany, Pavilion, Leroy, Stafford, and Bergen.
Orleans: Only in the townships of Gaines, Carlton, Barre, Kendall, Murray, Clarendon, and Albion.
Steuben: Only the Townships of: Addison, Avoca, Bath, Bradford, Cameron, Campbell, Caton, Corning, Erwin, Hornby, Howard, Lindley, Pulteney, Rathbone, Thurston, Tuscarora, Urbana, Wayland, Wayne, Wheeler, and Woodhull.
Tioga: Only from Nichols/Smithboro towards the City of Elmira (west).
Wyoming: Only in the townships of Attica, Orangeville, Wethersfield, Eagle, Genesee Falls, Castile, Ganesville, Perry, Warsaw, Middlebury, Covington, and Pike.

WAGES
*NOTE - THIS RATE APPLIES ONLY TO MILLING OPERATIONS (ASPHALT or CONCRETE) WHEN MATERIALS ARE TO BE REMOVED FROM THE PROJECT SITE.

Per hour:	07/01/2023
Teamster - Mill Rate	$ 22.64

SUPPLEMENTAL BENEFITS
Per hour:

Journeyman	$ 12.70

OVERTIME PAY
See (B, E, Q) on OVERTIME PAGE

HOLIDAY
Paid: See (1) on HOLIDAY PAGE
Overtime: See (5, 6) on HOLIDAY PAGE

7-118-Mill

Teamster - Building / Heavy&Highway 11/01/2023

JOB DESCRIPTION Teamster - Building / Heavy&Highway **DISTRICT** 7

ENTIRE COUNTIES
Chemung, Livingston, Monroe, Ontario, Schuyler, Wayne

PARTIAL COUNTIES
Genesee: Only in the townships of Oakfield, Elba, Batavia, Byron, Alexander, Bethany, Pavilion, Leroy, Stafford, and Bergen.

Orleans: Only in the townships of Gaines, Carlton, Barre, Kendall, Murray, Clarendon, and Albion.
Steuben: Only the Townships of: Addison, Avoca, Bath, Bradford, Cameron, Campbell, Caton, Corning, Erwin, Hornby, Howard, Lindley, Pulteney, Rathbone, Thurston, Tuscarora, Urbana, Wayland, Wayne, Wheeler, and Woodhull.
Tioga: Only from Nichols/Smithboro towards the City of Elmira (west).
Wyoming: Only in the townships of Attica, Orangeville, Wethersfield, Eagle, Genesee Falls, Castile, Ganesville, Perry, Warsaw, Middlebury, Covington, and Pike.

WAGES

GROUP #1: Warehousemen*, Yardmen*, Truck helpers, Pickups, Panel trucks, Flatboy material trucks (straight jobs), Single Axle dump trucks, Dumpsters, Material Checkers/Receivers*, Greasers, Tiremen, Mechanics Helpers/Parts Chasers.
GROUP #2: Tandems and Batch Trucks, Mechanics.
GROUP #3: Semi-trailers, Low-Boy trucks, Asphalt distributor trucks, and Agitator, Mixer trucks and Dumpcrete type vehicles, Truck mechanic, Fuel trucks.
GROUP #4: Articulated off-road material hauler, Specialized earth moving equipment, Euclid type, or similar off-highway equipment, where not self-loaded, Straddle (Ross) carrier, and self-contained concrete mobile truck.
GROUP #5: Off-highway Tandem back-dump, Twin engine equipment and double-hitched equipment where not self-loaded.

*NOTE - Applies when a temporary warehouse structure is built/utilized specifically for a public work project.

Per hour:	07/01/2023
GROUP #1	$ 26.78
GROUP #2	26.83
GROUP #3	26.88
GROUP #4	27.03
GROUP #5	27.18

Additional $1.50 per hour for hazardous waste removal work on a City, County, State and/or Federal Designated waste site and regulations require employee to use or wear personal protection.

SUPPLEMENTAL BENEFITS

Per hour:

Journeyman	$ 26.37

OVERTIME PAY

See (B, E, Q) on OVERTIME PAGE

HOLIDAY

Paid: See (1) on HOLIDAY PAGE
Overtime: See (5, 6) on HOLIDAY PAGE

7-118

Teamster - Heavy&Highway 11/01/2023

JOB DESCRIPTION Teamster - Heavy&Highway **DISTRICT** 2

ENTIRE COUNTIES

Broome, Delaware

PARTIAL COUNTIES

Chenango: Only the Townships of Smithville, Greene, Coventry, Oxford, Afton, Bainbridge and Guilford.
Otsego: Only the Townships of Butternuts, Laurens, Maryland, Milford, Morris, Oneonta, Otego, Unadilla and Worchester.
Tioga: Only the Townships of Nichols, Tioga, Candor, Richford, Berkshire, Newark Valley and Owego.

WAGES

Per hour:

GROUP #1: Warehousemen, Yardmen, Truck Helpers, Pickups, Panel Trucks, Flatboy Material Trucks (straight jobs), Single Axle Dump Trucks, Dumpsters, Material Checkers and Receivers, Greasers, Truck Tiremen, Mechanic Helpers and Parts Chasers, Tandems and Batch Trucks, Mechanics, Dispatcher. Semi-Trailers, Low-boy Trucks, Asphalt Distributor Trucks, Agitator, Mixer Trucks and Dumpcrete type vehicles, Truck Mechanic, Fuel Trucks.

GROUP #2: Specialized Earth Moving Equipment-Euclid type or similar off-highway where not self-loading. Straddle (Ross) Carrier, and self-contained concrete mobile truck. Off-highway Tandem Back-Dump, Twin Engine Equipment and Double-Hitched Equipment where not self-loading.

	07/01/2023	07/01/2024
Group #1	$ 31.57	$ 33.57
Group #2	31.66	33.66

NOTES
- An additional $1.50 per hour shall be paid to an employee who performs hazardous waste removal work on a City, County, State and/or Federally designated waste site where employee is required to use or wear personal protective equipment.

- A single irregular work shift can star an time between 5:00pm and 1:00am. All employees who work a single irregular shift on governmental mandated night work shall be paid an additional $2.50 per hour (applicable on projects bid on or after 07/01/2020).

SUPPLEMENTAL BENEFITS

Per hour paid:

07/01/2023	07/01/2024
$ 27.26	$ 27.76

OVERTIME PAY

See (B, E, Q, X) on OVERTIME PAGE

HOLIDAY

Paid: See (5, 6) on HOLIDAY PAGE
Overtime: See (5, 6) on HOLIDAY PAGE

If a holiday falls on Sunday, it will be celebrated Monday.
Any employee laid off within the week in which a holiday falls shall receive holiday pay.

2-317(Bing)

Welder 11/01/2023

JOB DESCRIPTION Welder **DISTRICT** 1

ENTIRE COUNTIES

Albany, Allegany, Bronx, Broome, Cattaraugus, Cayuga, Chautauqua, Chemung, Chenango, Clinton, Columbia, Cortland, Delaware, Dutchess, Erie, Essex, Franklin, Fulton, Genesee, Greene, Hamilton, Herkimer, Jefferson, Kings, Lewis, Livingston, Madison, Monroe, Montgomery, Nassau, New York, Niagara, Oneida, Onondaga, Ontario, Orange, Orleans, Oswego, Otsego, Putnam, Queens, Rensselaer, Richmond, Rockland, Saratoga, Schenectady, Schoharie, Schuyler, Seneca, St. Lawrence, Steuben, Suffolk, Sullivan, Tioga, Tompkins, Ulster, Warren, Washington, Wayne, Westchester, Wyoming, Yates

WAGES

Per hour 07/01/2023

Welder: To be paid the same rate of the mechanic performing the work.*

*EXCEPTION: If a specific welder certification is required, then the 'Certified Welder' rate in that trade tag will be paid.

OVERTIME PAY

HOLIDAY

1-As Per Trade

Overtime Codes

Following is an explanation of the code(s) listed in the OVERTIME section of each classification contained in the attached schedule. Additional requirements may also be listed in the HOLIDAY section.

NOTE: Supplemental Benefits are 'Per hour worked' (for each hour worked) unless otherwise noted

(AA)	Time and one half of the hourly rate after 7 and one half hours per day
(A)	Time and one half of the hourly rate after 7 hours per day
(B)	Time and one half of the hourly rate after 8 hours per day
(B1)	Time and one half of the hourly rate for the 9th & 10th hours week days and the 1st 8 hours on Saturday. Double the hourly rate for all additional hours
(B2)	Time and one half of the hourly rate after 40 hours per week
(C)	Double the hourly rate after 7 hours per day
(C1)	Double the hourly rate after 7 and one half hours per day
(D)	Double the hourly rate after 8 hours per day
(D1)	Double the hourly rate after 9 hours per day
(E)	Time and one half of the hourly rate on Saturday
(E1)	Time and one half 1st 4 hours on Saturday; Double the hourly rate all additional Saturday hours
(E2)	Saturday may be used as a make-up day at straight time when a day is lost during that week due to inclement weather
(E3)	Between November 1st and March 3rd Saturday may be used as a make-up day at straight time when a day is lost during that week due to inclement weather, provided a given employee has worked between 16 and 32 hours that week
(E4)	Saturday and Sunday may be used as a make-up day at straight time when a day is lost during that week due to inclement weather
(E5)	Double time after 8 hours on Saturdays
(F)	Time and one half of the hourly rate on Saturday and Sunday
(G)	Time and one half of the hourly rate on Saturday and Holidays
(H)	Time and one half of the hourly rate on Saturday, Sunday, and Holidays
(I)	Time and one half of the hourly rate on Sunday
(J)	Time and one half of the hourly rate on Sunday and Holidays
(K)	Time and one half of the hourly rate on Holidays
(L)	Double the hourly rate on Saturday
(M)	Double the hourly rate on Saturday and Sunday
(N)	Double the hourly rate on Saturday and Holidays
(O)	Double the hourly rate on Saturday, Sunday, and Holidays
(P)	Double the hourly rate on Sunday
(Q)	Double the hourly rate on Sunday and Holidays
(R)	Double the hourly rate on Holidays
(S)	Two and one half times the hourly rate for Holidays

(S1) Two and one half times the hourly rate the first 8 hours on Sunday or Holidays One and one half times the hourly rate all additional hours.

(T) Triple the hourly rate for Holidays

(U) Four times the hourly rate for Holidays

(V) Including benefits at SAME PREMIUM as shown for overtime

(W) Time and one half for benefits on all overtime hours.

(X) Benefits payable on Paid Holiday at straight time. If worked, additional benefit amount will be required for worked hours. (Refer to other codes listed.)

Holiday Codes

PAID Holidays:

Paid Holidays are days for which an eligible employee receives a regular day's pay, but is not required to perform work. If an employee works on a day listed as a paid holiday, this remuneration is in addition to payment of the required prevailing rate for the work actually performed.

OVERTIME Holiday Pay:

Overtime holiday pay is the premium pay that is required for work performed on specified holidays. It is only required where the employee actually performs work on such holidays. The applicable holidays are listed under HOLIDAYS: OVERTIME. The required rate of pay for these covered holidays can be found in the OVERTIME PAY section listings for each classification.

Following is an explanation of the code(s) listed in the HOLIDAY section of each classification contained in the attached schedule. The Holidays as listed below are to be paid at the wage rates at which the employee is normally classified.

(1)	None
(2)	Labor Day
(3)	Memorial Day and Labor Day
(4)	Memorial Day and July 4th
(5)	Memorial Day, July 4th, and Labor Day
(6)	New Year's, Thanksgiving, and Christmas
(7)	Lincoln's Birthday, Washington's Birthday, and Veterans Day
(8)	Good Friday
(9)	Lincoln's Birthday
(10)	Washington's Birthday
(11)	Columbus Day
(12)	Election Day
(13)	Presidential Election Day
(14)	1/2 Day on Presidential Election Day
(15)	Veterans Day
(16)	Day after Thanksgiving
(17)	July 4th
(18)	1/2 Day before Christmas
(19)	1/2 Day before New Years
(20)	Thanksgiving
(21)	New Year's Day
(22)	Christmas
(23)	Day before Christmas
(24)	Day before New Year's
(25)	Presidents' Day
(26)	Martin Luther King, Jr. Day
(27)	Memorial Day
(28)	Easter Sunday

(29) Juneteenth

New York State Department of Labor - Bureau of Public Work
State Office Building Campus
Building 12 - Room 130
Albany, New York 12226

REQUEST FOR WAGE AND SUPPLEMENT INFORMATION

As Required by Articles 8 and 9 of the NYS Labor Law

Fax (518) 485-1870 or mail this form for new schedules or for determination for additional occupations.

This Form Must Be Typed

Submitted By: (Check Only One) ☐ Contracting Agency ☐ Architect or Engineering Firm ☐ Public Work District Office Date:

A. Public Work Contract to be let by: (Enter Data Pertaining to Contracting/Public Agency)

1. Name and complete address ☐ (Check if new or change)

Telephone Fax

E-Mail:

2. NY State Units (see Item 5).

- ☐ 01 DOT
- ☐ 02 OGS
- ☐ 03 Dormitory Authority
- ☐ 04 State University Construction Fund
- ☐ 05 Mental Hygiene Facilities Corp.
- ☐ 06 OTHER N.Y. STATE UNIT
- ☐ 07 City
- ☐ 08 Local School District
- ☐ 09 Special Local District, i.e., Fire, Sewer, Water District
- ☐ 1O Village
- ☐ 11 Town
- ☐ 12 County
- ☐ 13 Other Non-N.Y. State (Describe)

3. SEND REPLY TO ☐ (check if new or change)
Name and complete address:

Telephone Fax

E-Mail:

4. SERVICE REQUIRED. Check appropriate box and provide project information.

☐ New Schedule of Wages and Supplements.

APPROXIMATE BID DATE :

☐ Additional Occupation and/or Redetermination

PRC NUMBER ISSUED PREVIOUSLY FOR THIS PROJECT :

OFFICE USE ONLY

B. PROJECT PARTICULARS

5. Project Title _____

Description of Work _____

Contract Identification Number _____

Note: For NYS units, the OSC Contract No. _____

6. Location of Project:
Location on Site _____

Route No/Street Address _____

Village or City _____

Town _____

County _____

7. Nature of Project - Check One:

- ☐ 1. New Building
- ☐ 2. Addition to Existing Structure
- ☐ 3. Heavy and Highway Construction (New and Repair)
- ☐ 4. New Sewer or Waterline
- ☐ 5. Other New Construction (Explain)
- ☐ 6. Other Reconstruction, Maintenance, Repair or Alteration
- ☐ 7. Demolition
- ☐ 8. Building Service Contract

8. OCCUPATION FOR PROJECT :

- ☐ Construction (Building, Heavy Highway/Sewer/Water)
- ☐ Tunnel
- ☐ Residential
- ☐ Landscape Maintenance
- ☐ Elevator maintenance
- ☐ Exterminators, Fumigators
- ☐ Fire Safety Director, NYC Only
- ☐ Fuel Delivery
- ☐ Guards, Watchmen
- ☐ Janitors, Porters, Cleaners, Elevator Operators
- ☐ Moving furniture and equipment
- ☐ Trash and refuse removal
- ☐ Window cleaners
- ☐ Other (Describe)

9. Does this project comply with the Wicks Law involving separate bidding? YES ☐ NO ☐

10. Name and Title of Requester

Signature

SEE PAGE TWO FOR LAWS RELATING TO PUBLIC WORK CONTRACTS

NEW YORK STATE DEPARTMENT OF LABOR
Bureau of Public Work - Debarment List

LIST OF EMPLOYERS INELIGIBLE TO BID ON OR BE AWARDED ANY PUBLIC WORK CONTRACT

Under Article 8 and Article 9 of the NYS Labor Law, a contractor, sub-contractor and/or its successor shall be debarred and ineligible to submit a bid on or be awarded any public work or public building service contract/sub-contract with the state, any municipal corporation or public body for a period of five (5) years from the date of debarment when:

- Two (2) final determinations have been rendered within any consecutive six-year (6) period determining that such contractor, sub-contractor and/or its successor has WILLFULLY failed to pay the prevailing wage and/or supplements;
- One (1) final determination involves falsification of payroll records or the kickback of wages and/or supplements.

The agency issuing the determination and providing the information, is denoted under the heading 'Fiscal Officer'. DOL = New York State Department of Labor; NYC = New York City Comptroller's Office; AG = New York State Attorney General's Office; DA = County District Attorney's Office.

Debarment Database: To search for contractors, sub-contractors and/or their successors debarred from bidding or being awarded any public work contract or subcontract under NYS Labor Law Articles 8 and 9, or under NYS Workers' Compensation Law Section 141-b, access the database at this link: https://apps.labor.ny.gov/EDList/searchPage.do

For inquiries where WCB is listed as the "Agency", please call 1-866-546-9322

NYSDOL Bureau of Public Work Debarment List 11/03/2023

Article 8

AGENCY	Fiscal Officer	FEIN	EMPLOYER NAME	EMPLOYER DBA NAME	ADDRESS	DEBARMENT START DATE	DEBARMENT END DATE
DOL	DOL	*****5754	0369 CONTRACTORS, LLC		515 WEST AVE UNIT PH 13NORWALK CT 06850	05/12/2021	05/12/2026
DOL	DOL	*****4018	ADIRONDACK BUILDING RESTORATION INC.		4156 WILSON ROAD EAST TABERG NY 13471	03/26/2019	03/26/2024
DOL	AG	*****1812	ADVANCED BUILDERS & LAND DEVELOPMENT, INC.		400 OSER AVE #2300HAUPPAUGE NY 11788	09/11/2019	09/11/2024
DOL	DOL	*****1687	ADVANCED SAFETY SPRINKLER INC		261 MILL ROAD P.O BOX 296EAST AURORA NY 14052	05/29/2019	05/29/2024
DOL	NYC		ALL COUNTY SEWER & DRAIN, INC.		7 GREENFIELD DR WARWICK NY 10990	03/25/2022	03/25/2027
DOL	NYC		AMJED PARVEZ		401 HANOVER AVENUE STATEN ISLAND NY 10304	01/11/2021	01/11/2026
DOL	DOL		ANGELO F COKER		2610 SOUTH SALINA STREET SUITE 14SYRACUSE NY 13205	09/17/2020	09/17/2025
DOL	DOL		ANGELO F COKER		2610 SOUTH SALINA STREET SUITE 14SYRACUSE NY 13205	12/04/2018	12/04/2023
DOL	DOL		ANGELO GARCIA		515 WEST AVE UNIT PH 13NORWALK CT 06850	05/12/2021	05/12/2026
DOL	DOL		ANGELO TONDO		449 WEST MOMBSHA ROAD MONROE NY 10950	06/06/2022	06/06/2027
DOL	DOL		ANITA SALERNO		158 SOLAR ST SYRACUSE NY 13204	01/07/2019	01/07/2024
DOL	DOL	*****4231	ANKER'S ELECTRIC SERVICE, INC.		10 SOUTH 5TH ST LOCUST VALLEY NY 11560	09/26/2022	09/26/2027
DOL	NYC		ARADCO CONSTRUCTION CORP		115-46 132RD ST SOUTH OZONE PARK NY 11420	09/17/2020	09/17/2025
DOL	DOL		ARNOLD A. PAOLINI		1250 BROADWAY ST BUFFALO NY 14212	02/03/2020	02/03/2025
DOL	NYC		ARSHAD MEHMOOD		168-42 88TH AVENUE JAMAICA NY 11432	11/20/2019	11/20/2024
DOL	NYC		AVM CONSTRUCTION CORP		117-72 123RD ST SOUTH OZONE PARK NY 11420	09/17/2020	09/17/2025
DOL	NYC		AZIDABEGUM		524 MCDONALD AVENUE BROOKLYN NY 11218	09/17/2020	09/17/2025
DOL	DOL	*****8421	B & B DRYWALL, INC		206 WARREN AVE APT 1WHITE PLAINS NY 10603	12/14/2021	12/14/2026
DOL	NYC		BALWINDER SINGH		421 HUDSON ST SUITE C5NEW YORK NY 10014	02/20/2019	02/20/2024
DOL	NYC	*****8416	BEAM CONSTRUCTION, INC.		50 MAIN ST WHITE PLAINS NY 10606	01/04/2019	01/04/2024
DOL	DOL		BERNARD BEGLEY		38 LONG RIDGE ROAD BEDFORD NY 10506	12/18/2019	12/18/2024
DOL	NYC	*****2113	BHW CONTRACTING, INC.		401 HANOVER AVENUE STATEN ISLAND NY 10304	01/11/2021	01/11/2026
DOL	DOL	*****3627	BJB CONSTRUCTION CORP.		38 LONG RIDGE ROAD BEDFORD NY 10506	12/18/2019	12/18/2024
DOL	DOL	*****4512	BOB BRUNO EXCAVATING, INC		5 MORNINGSIDE DR AUBURN NY 13021	05/28/2019	05/28/2024
DOL	DOL		BOGDAN MARKOVSKI		370 W. PLEASANTVIEW AVE SUITE 2.329HACKENSACK NJ 07601	02/11/2019	02/11/2024
DOL	DOL		BRADLEY J SCHUKA		4 BROTHERS ROAD WAPPINGERS FALLS NY 12590	10/20/2020	10/20/2025
DOL	DOL	*****9383	C.C. PAVING AND EXCAVATING, INC.		2610 SOUTH SALINA ST SUITE 12SYRACUSE NY 13205	09/17/2020	09/17/2025
DOL	DOL	*****9383	C.C. PAVING AND EXCAVATING, INC.		2610 SOUTH SALINA ST SUITE 12SYRACUSE NY 13205	12/04/2018	12/04/2023
DOL	DOL	*****4083	C.P.D. ENTERPRISES, INC		P.O BOX 281 WALDEN NY 12586	03/03/2020	03/03/2025
DOL	DOL	*****5161	CALADRI DEVELOPMENT CORP.		1223 PARK ST. PEEKSKILL NY 10566	05/17/2021	05/17/2026
DOL	DOL	*****3391	CALI ENTERPRISES, INC.		1223 PARK STREET PEEKSKILL NY 10566	05/17/2021	05/17/2026
DOL	NYC		CALVIN WALTERS		465 EAST THIRD ST MT. VERNON NY 10550	09/09/2019	09/09/2024
DOL	AG	*****7247	CENTURY CONCRETE CORP		2375 RAYNOR ST RONKONKOMA NY 11779	08/04/2021	08/04/2026
DOL	DOL	*****0026	CHANTICLEER CONSTRUCTION LLC		4 BROTHERS ROAD WAPPINGERS FALLS NY 12590	10/20/2020	10/20/2025

DOL	NYC	*****2117	CHARAN ELECTRICAL ENTERPRISES		9-11 40TH AVENUE LONG ISLAND CITY NY 11101	09/26/2023	09/26/2028
DOL	NYC		CHARLES ZAHRADKA		863 WASHINGTON STREET FRANKLIN SQUARE NY 11010	03/10/2020	03/10/2025
DOL	DOL		CHRISTOPHER GRECO		26 NORTH MYRTLE AVENUE SPRING VALLEY NY 10956	02/18/2021	02/18/2026
DOL	DOL		CHRISTOPHER PAPASTEFANOU A/K/A CHRIS PAPASTEFANOU		1445 COMMERCE AVE BRONX NY 10461	05/30/2019	05/30/2024
DOL	DOL		CRAIG JOHANSEN		10 SOUTH 5TH ST LOCUST VALLEY NY 11560	09/26/2022	09/26/2027
DOL	DOL	*****3228	CROSS-COUNTY LANDSCAPING AND TREE SERVICE, INC.	ROCKLAND TREE SERVICE	26 NORTH MYRTLE AVENUE SPRING VALLEY NY 10956	02/18/2021	02/18/2026
DOL	DOL	*****2524	CSI ELECTRICAL & MECHANICAL INC		42-32 235TH ST DOUGLASTON NY 11363	01/14/2019	01/14/2024
DOL	DOL	*****7619	DANCO CONSTRUCTION UNLIMITED INC.		485 RAFT AVENUE HOLBROOK NY 11741	10/19/2021	10/19/2026
DOL	DOL		DANIEL ROBERT MCNALLY		7 GREENFIELD DRIVE WARWICK NY 10990	03/25/2022	03/25/2027
DOL	DOL		DARIAN L COKER		2610 SOUTH SALINA ST SUITE 2CSYRACUSE NY 13205	09/17/2020	09/17/2025
DOL	DOL		DARIAN L COKER		2610 SOUTH SALINA ST SUITE 2CSYRACUSE NY 13205	12/04/2018	12/04/2023
DOL	NYC		DAVID WEINER		14 NEW DROP LANE 2ND FLOORSTATEN ISLAND NY 10306	11/14/2019	11/14/2024
DOL	DOL		DELPHI PAINTING & DECORATING CO INC		1445 COMMERCE AVE BRONX NY 10461	05/30/2019	05/30/2024
DOL	DOL	*****5175	EAGLE MECHANICAL AND GENERAL CONSTRUCTION LLC		11371 RIDGE RD WOLCOTT NY 14590	02/03/2020	02/03/2025
DOL	AG		EDWIN HUTZLER		23 NORTH HOWELLS RD BELLPORT NY 11713	08/04/2021	08/04/2026
DOL	DA		EDWIN HUTZLER		2375 RAYNOR STREET RONKONKOMA NY 11779	08/04/2021	08/04/2026
DOL	DOL		EFTIS GROUP INC.		29-10 38TH AVENUE LONG ISLAND CITY NY 11101	10/11/2023	10/11/2028
DOL	DOL	*****0780	EMES HEATING & PLUMBING CONTR		5 EMES LANE MONSEY NY 10952	01/20/2002	01/20/3002
DOL	NYC	*****5917	EPOCH ELECTRICAL, INC		97-18 50TH AVE CORONA NY 11368	04/19/2018	04/19/2024
DOL	DOL		FAIGY LOWINGER		11 MOUNTAIN RD 28 VAN BUREN DRMONROE NY 10950	03/20/2019	03/20/2024
DOL	DA		FREDERICK HUTZLER		2375 RAYNOR STREET RONKONKOMA NY 11779	08/04/2021	08/04/2026
DOL	NYC	*****6616	G & G MECHANICAL ENTERPRISES, LLC.		1936 HEMPSTEAD TURNPIKE EAST MEDOW NY 11554	11/29/2019	11/29/2024
DOL	DOL		GABRIEL FRASSETTI			04/10/2019	04/10/2024
DOL	NYC		GAYATRI MANGRU		21 DAREWOOD LANE VALLEY STREAM NY 11581	09/17/2020	09/17/2025
DOL	DA		GEORGE LUCEY		150 KINGS STREET BROOKLYN NY 11231	01/19/1998	01/19/2998
DOL	DOL		GIGI SCHNECKENBURGER		261 MILL RD EAST AURORA NY 14052	05/29/2019	05/29/2024
DOL	DA		GIOVANNA TRAVALJA		3735 9TH ST LONG ISLAND CITY NY 11101	01/05/2023	01/05/2028
DOL	DA	*****0213	GORILLA CONTRACTING GROUP, LLC		505 MANHATTAN AVE WEST BABYLON NY 11704	10/05/2023	10/05/2028
DOL	DOL		HANS RATH		24 ELDOR AVENUE NEW CITY NY 10956	02/03/2020	02/03/2025
DOL	DOL		HERBERT CLEMEN		42 FOWLER AVENUE CORTLAND MANOR NY 10567	01/24/2023	01/24/2028
DOL	DOL		HERBERT CLEMEN		42 FOWLER AVENUE CORTLAND MANOR NY 10567	10/25/2022	10/25/2027
DOL	DOL		IRENE KASELIS		32 PENNINGTON AVE WALDWICK NJ 07463	05/30/2019	05/30/2024
DOL	DOL	*****9211	J. WASE CONSTRUCTION CORP.		8545 RT 9W ATHENS NY 12015	03/09/2021	03/09/2026
DOL	DOL		J.M.J CONSTRUCTION		151 OSTRANDER AVENUE SYRACUSE NY 13205	11/21/2022	11/21/2027
DOL	DOL		J.R. NELSON CONSTRUCTION		531 THIRD STREET ALBANY NY 12206	12/22/2022	12/22/2027

DOL	DOL		J.R. NELSON CONSTRUCTION		531 THIRD STREET ALBANY NY 12206	10/25/2022	10/25/2027
DOL	DOL		J.R. NELSON, LLC		531 THIRD STREET ALBANY NY 12206	12/22/2022	12/22/2027
DOL	DOL		J.R. NELSON, LLC		531 THIRD STREET ALBANY NY 12206	10/25/2022	10/25/2027
DOL	DOL		J.R.N COMPANIES, LLC		531 THIRD STREET ALBANY NY 12206	12/12/2022	12/12/2027
DOL	DOL		J.R.N COMPANIES, LLC		531 THIRD STREET ALBANY NY 12206	10/25/2022	10/25/2027
DOL	DOL	*****1147	J.R.N. CONSTRUCTION, LLC		531 THIRD ST ALBANY NY 12206	12/22/2022	12/22/2027
DOL	DOL	*****1147	J.R.N. CONSTRUCTION, LLC		531 THIRD ST ALBANY NY 12206	10/25/2022	10/25/2027
DOL	DOL		JAMES J. BAKER		7901 GEE ROAD CANASTOTA NY 13032	08/17/2021	08/17/2026
DOL	DOL		JASON P. RACE		3469 STATE RT. 69 PERISH NY 13131	09/29/2021	09/29/2026
DOL	DOL		JASON P. RACE		3469 STATE RT. 69 PERISH NY 13131	02/09/2022	02/09/2027
DOL	DOL		JASON P. RACE		3469 STATE RT. 69 PERISH NY 13131	11/15/2022	11/15/2027
DOL	DOL		JASON P. RACE		3469 STATE RT. 69 PERISH NY 13131	03/01/2022	03/01/2027
DOL	DOL	*****7993	JBS DIRT, INC.		7901 GEE ROAD CANASTOTA NY 13032	08/17/2021	08/17/2026
DOL	DOL	*****2435	JEFFEL D. JOHNSON	JMJ7 AND SON	5553 CAIRNSTRAIL CLAY NY 13041	11/21/2022	11/21/2027
DOL	DOL		JEFFEL JOHNSON ELITE CARPENTER REMODEL AND CONSTRUCTION		C2 EVERGREEN CIRCLE LIVERPOOL NY 13090	11/21/2022	11/21/2027
DOL	DOL	*****2435	JEFFREY M. JOHNSON	JMJ7 AND SON	5553 CAIRNS TRAIL CLAY NY 13041	11/21/2022	11/21/2027
DOL	NYC		JENNIFER GUERRERO		1936 HEMPSTEAD TURNPIKE EAST MEADOW NY 11554	11/29/2019	11/29/2024
DOL	DOL		JIM PLAUGHER		17613 SANTE FE LINE ROAD WAYNEFIELD OH 45896	07/16/2021	07/16/2026
DOL	DOL		JMJ7 & SON CONSTRUCTION, LLC		5553 CAIRNS TRAIL LIVERPOOL NY 13041	11/21/2022	11/21/2027
DOL	DOL		JMJ7 AND SONS CONTRACTORS		5553 CAIRNS TRAIL CLAY NY 13041	11/21/2022	11/21/2027
DOL	DOL		JMJ7 CONTRACTORS		7014 13TH AVENUE BROOKLYN NY 11228	11/21/2022	11/21/2027
DOL	DOL		JMJ7 CONTRACTORS AND SONS		5553 CAIRNS TRAIL CLAY NY 13041	11/21/2022	11/21/2027
DOL	DOL		JMJ7 CONTRACTORS, LLC		5553 CAIRNS TRAIL CLAY NY 13041	11/21/2022	11/21/2027
DOL	DOL		JOHN GOCEK		14B COMMERCIAL AVE ALBANY NY 12065	11/14/2019	11/14/2024
DOL	DOL		JOHN MARKOVIC		47 MANDON TERRACE HAWTHORN NJ 07506	03/29/2021	03/29/2026
DOL	DOL		JOHN WASE		8545 RT 9W ATHENS NY 12015	03/09/2021	03/09/2026
DOL	DOL		JON E DEYOUNG		261 MILL RD P.O BOX 296EAST AURORA NY 14052	05/29/2019	05/29/2024
DOL	DOL		JORGE RAMOS		8970 MIKE GARCIA DR MANASSAS VA 20109	07/16/2021	07/16/2026
DOL	DOL		JOSEPH K. SALERNO		1010 TILDEN AVE UTICA NY 13501	07/24/2023	07/24/2028
DOL	DOL		JOSEPH K. SALERNO II		1010 TILDEN AVE UTICA NY 13501	07/24/2023	07/24/2028
DOL	DOL	*****5116	JP RACE PAINTING, INC. T/A RACE PAINTING		3469 STATE RT. 69 PERISH NY 13131	02/09/2022	02/09/2027
DOL	DOL	*****5116	JP RACE PAINTING, INC. T/A RACE PAINTING		3469 STATE RT. 69 PERISH NY 13131	11/15/2022	11/15/2027
DOL	DOL	*****5116	JP RACE PAINTING, INC. T/A RACE PAINTING		3469 STATE RT. 69 PERISH NY 13131	09/29/2021	09/29/2026
DOL	DOL	*****5116	JP RACE PAINTING, INC. T/A RACE PAINTING		3469 STATE RT. 69 PERISH NY 13131	03/01/2022	03/01/2027
DOL	DOL	*****5116	JP RACE PAINTING, INC. T/A RACE PAINTING		3469 STATE RT. 69 PERISH NY 13131	03/01/2022	03/01/2027
DOL	DOL	*****1147	JRN CONSTRUCTION, LLC		531 THIRD STREET ALBANY NY 12206	10/25/2022	10/25/2027

DOL	DOL	*****1147	JRN CONSTRUCTION, LLC		531 THIRD STREET ALBANY NY 12206	12/22/2022	12/22/2027
DOL	DOL		JRN PAVING, LLC		531 THIRD STREET ALBANY NY 12206	10/25/2022	10/25/2027
DOL	DOL		JRN PAVING, LLC		531 THIRD STREET ALBANY NY 12206	12/22/2022	12/22/2027
DOL	DOL		JULIUS AND GITA BEHREND		5 EMES LANE MONSEY NY 10952	11/20/2002	11/20/3002
DOL	DOL		KARIN MANGIN		796 PHELPS ROAD FRANKLIN LAKES NJ 07417	12/01/2020	12/01/2025
DOL	DOL		KATE E. CONNOR		7088 INTERSTATE ISLAND RD SYRACUSE NY 13209	03/31/2021	03/31/2026
DOL	DOL	*****2959	KELC DEVELOPMENT, INC		7088 INTERSTATE ISLAND RD SYRACUSE NY 13209	03/31/2021	03/31/2026
DOL	DOL		KIMBERLY F. BAKER		7901 GEE ROAD CANASTOTA NY 13032	08/17/2021	08/17/2026
DOL	DOL		KMA GROUP II, INC.		29-10 38TH AVENUE LONG ISLAND CITY NY 11101	10/11/2023	10/11/2028
DOL	DOL	*****1833	KMA GROUP INC.		29-10 38TH AVENUE LONG ISLAND CITY NY 11101	10/11/2023	10/11/2028
DOL	DOL		KMA INSULATION, INC.		29-10 38TH AVENUE LONG ISLAND CITY NY 11101	10/11/2023	10/11/2028
DOL	NYC		KULWANT S. DEOL		9-11 40TH AVENUE LONG ISLAND CITY NY 11101	09/26/2023	09/26/2028
DOL	DA	*****8816	LAKE CONSTRUCTION AND DEVELOPMENT CORPORATION		150 KINGS STREET BROOKLYN NY 11231	08/19/1998	08/19/2998
DOL	DOL		LEROY E. NELSON JR		531 THIRD ST ALBANY NY 12206	10/25/2022	10/25/2027
DOL	DOL		LEROY E. NELSON JR		531 THIRD ST ALBANY NY 12206	12/22/2022	12/22/2027
DOL	AG	*****3291	LINTECH ELECTRIC, INC.		3006 TILDEN AVE BROOKLYN NY 11226	02/16/2022	02/16/2027
DOL	DOL		LOUIS A. CALICCHIA		1223 PARK ST. PEEKSKILL NY 10566	05/17/2021	05/17/2026
DOL	NYC		LUBOMIR PETER SVOBODA		27 HOUSMAN AVE STATEN ISLAND NY 10303	12/26/2019	12/26/2024
DOL	NYC		M & L STEEL & ORNAMENTAL IRON CORP.		27 HOUSMAN AVE STATEN ISLAND NY 10303	12/26/2019	12/26/2024
DOL	DOL	*****2196	MAINSTREAM SPECIALTIES, INC.		11 OLD TOWN RD SELKIRK NY 12158	02/02/2021	02/02/2026
DOL	DA		MANUEL P TOBIO		150 KINGS STREET BROOKLYN NY 14444	08/19/1998	08/19/2998
DOL	DA		MANUEL TOBIO		150 KINGS STREET BROOKLYN NY 11231	08/19/1998	08/19/2998
DOL	NYC		MAREK FABIJANOWSKI		50 MAIN ST WHITE PLAINS NY 10606	01/04/2019	01/04/2024
DOL	NYC		MARIA NUBILE		84-22 GRAND AVENUE ELMHURST NY 11373	03/10/2020	03/10/2025
DOL	DOL		MATTHEW P. KILGORE		4156 WILSON ROAD EAST TABERG NY 13471	03/26/2019	03/26/2024
DOL	DOL	*****4829	MILESTONE ENVIRONMENTAL CORPORATION		704 GINESI DRIVE SUITE 29MORGANVILLE NJ 07751	04/10/2019	04/10/2024
DOL	NYC	*****9926	MILLENNIUM FIRE PROTECTION, LLC		325 W. 38TH STREET SUITE 204NEW YORK NY 10018	11/14/2019	11/14/2024
DOL	NYC	*****0627	MILLENNIUM FIRE SERVICES, LLC		14 NEW DROP LNE 2ND FLOORSTATEN ISLAND NY 10306	11/14/2019	11/14/2024
DOL	DOL	*****1320	MJC MASON CONTRACTING, INC.		42 FOWLER AVENUE CORTLAND MANOR NY 10567	10/25/2022	10/25/2027
DOL	DOL	*****1320	MJC MASON CONTRACTING, INC.		42 FOWLER AVENUE CORTLAND MANOR NY 10567	01/24/2023	01/24/2028
DOL	NYC		MUHAMMED A. HASHEM		524 MCDONALD AVENUE BROOKLYN NY 11218	09/17/2020	09/17/2025
DOL	NYC		NAMOW, INC.		84-22 GRAND AVENUE ELMHURST NY 11373	03/10/2020	03/10/2025
DOL	DOL	*****7790	NATIONAL BUILDING & RESTORATION CORP		1010 TILDEN AVE UTICA NY 13501	07/24/2023	07/24/2028
DOL	DOL	*****1797	NATIONAL CONSTRUCTION SERVICES, INC		1010 TILDEN AVE UTICA NY 13501	07/24/2023	07/24/2028
DOL	DA	*****9786	NATIONAL INSULATION & GC CORP		180 MILLER PLACE HICKSVILLE NY 11801	12/12/2018	12/12/2023

DOL	NYC		NAVIT SINGH		402 JERICHO TURNPIKE NEW HYDE PARK NY 11040	08/10/2022	08/10/2027
DOL	DA		NICHOLAS T. ANALITIS		505 MANHATTAN AVE WEST BABYLON NY 11704	10/05/2023	10/05/2028
DOL	DOL		NICHOLE E. FRASER A/K/A NICHOLE RACE		3469 STATE RT. 69 PERISH NY 13131	03/01/2022	03/01/2027
DOL	DOL		NICHOLE E. FRASER A/K/A NICHOLE RACE		3469 STATE RT. 69 PERISH NY 13131	11/15/2022	11/15/2027
DOL	DOL		NICHOLE E. FRASER A/K/A NICHOLE RACE		3469 STATE RT. 69 PERISH NY 13131	09/29/2021	09/29/2026
DOL	DOL		NICHOLE E. FRASER A/K/A NICHOLE RACE		3469 STATE RT. 69 PERISH NY 13131	02/09/2022	02/09/2027
DOL	DOL	*****7429	NICOLAE I. BARBIR	BESTUCCO CONSTRUCTI ON, INC.	444 SCHANTZ ROAD ALLENTOWN PA 18104	09/17/2020	09/17/2025
DOL	NYC	*****5643	NYC LINE CONTRACTORS, INC.		402 JERICHO TURNPIKE NEW HYDE PARK NY 11040	08/10/2022	08/10/2027
DOL	DOL		PAULINE CHAHALES		935 S LAKE BLVD MAHOPAC NY 10541	03/02/2021	03/02/2026
DOL	DOL		PETER STEVENS		11 OLD TOWN ROAD SELKIRK NY 12158	02/02/2021	02/02/2026
DOL	DOL		PETER STEVENS		8269 21ST ST BELLEROSE NY 11426	12/22/2022	12/22/2027
DOL	DOL	*****0466	PRECISION BUILT FENCES, INC.		1617 MAIN ST PEEKSKILL NY 10566	03/03/2020	03/03/2025
DOL	NYC		RASHEL CONSTRUCTION CORP		524 MCDONALD AVENUE BROOKLYN NY 11218	09/17/2020	09/17/2025
DOL	DOL	*****1068	RATH MECHANICAL CONTRACTORS, INC.		24 ELDOR AVENUE NEW CITY NY 10956	02/03/2020	02/03/2025
DOL	DOL	*****2633	RAW POWER ELECTRIC CORP.		3 PARK CIRCLE MIDDLETOWN NY 10940	07/11/2022	07/11/2027
DOL	DA	*****7559	REGAL CONTRACTING INC.		24 WOODBINE AVE NORTHPORT NY 11768	10/01/2020	10/01/2025
DOL	DOL	*****9148	RICH T CONSTRUCTION		107 WILLOW WOOD LANE CAMILLUS NY 13031	11/13/2018	11/13/2023
DOL	DOL		RICHARD REGGIO		1617 MAIN ST PEEKSKILL NY 10566	03/03/2020	03/03/2025
DOL	DOL		RICHARD TIMIAN JR.		108 LAMONT AVE SYRACUSE NY 13209	11/13/2018	11/13/2023
DOL	DOL		ROBBYE BISSESAR		89-51 SPRINGFIELD BLVD QUEENS VILLAGE NY 11427	01/11/2003	01/11/3003
DOL	DOL		ROBERT A. VALERINO		3841 LANYARD COURT NEW PORT RICHEY FL 34652	07/09/2019	07/09/2024
DOL	DOL		ROBERT BRUNO		5 MORNINGSIDE DRIVE AUBURN NY 13021	05/28/2019	05/28/2024
DOL	DOL		ROMEO WARREN		161 ROBYN RD MONROE NY 10950	07/11/2022	07/11/2027
DOL	DOL		RONALD MESSEN		14B COMMERCIAL AVE ALBANY NY 12065	11/14/2019	11/14/2024
DOL	DOL	*****7172	RZ & AL INC.		198 RIDGE AVENUE VALLEY STREAM NY 11581	06/06/2022	06/06/2027
DOL	DOL	*****1365	S & L PAINTING, INC.		11 MOUNTAIN ROAD P.O BOX 408MONROE NY 10950	03/20/2019	03/20/2024
DOL	DOL		SAL FRESINA MASONRY CONTRACTORS, INC.		1935 TEALL AVENUE SYRACUSE NY 13206	07/16/2021	07/16/2026
DOL	DOL		SAL MASONRY CONTRACTORS, INC.		(SEE COMMENTS) SYRACUSE NY 13202	07/16/2021	07/16/2026
DOL	DOL	*****9874	SALFREE ENTERPRISES INC		P.O BOX 14 2821 GARDNER RDPOMPEI NY 13138	07/16/2021	07/16/2026
DOL	DOL		SALVATORE A FRESINA A/K/A SAM FRESINA		107 FACTORY AVE P.O BOX 11070SYRACUSE NY 13218	07/16/2021	07/16/2026
DOL	DOL		SAM FRESINA		107 FACTORY AVE P.O BOX 11070SYRACUSE NY 13218	07/16/2021	07/16/2026
DOL	NYC	*****0349	SAM WATERPROOFING INC		168-42 88TH AVENUE APT.1 AJAMAICA NY 11432	11/20/2019	11/20/2024
DOL	DA	*****0476	SAMCO ELECTRIC CORP.		3735 9TH ST LONG ISLAND CITY NY 11101	01/05/2023	01/05/2028
DOL	NYC	*****1130	SCANA CONSTRUCTION CORP.		863 WASHINGTON STREET FRANKLIN SQUARE NY 11010	03/10/2020	03/10/2025
DOL	DOL	*****2045	SCOTT DUFFIE	DUFFIE'S ELECTRIC, INC.	P.O BOX 111 CORNWALL NY 12518	03/03/2020	03/03/2025

DOL	DOL		SCOTT DUFFIE		P.O BOX 111 CORNWALL NY 12518	03/03/2020	03/03/2025
DOL	NYC	*****6597	SHAIRA CONSTRUCTION CORP.		421 HUDSON STREET SUITE C5NEW YORK NY 10014	02/20/2019	02/20/2024
DOL	DOL		SHULEM LOWINGER		11 MOUNTAIN ROAD 28 VAN BUREN DRMONROE NY 10950	03/20/2019	03/20/2024
DOL	DA		SILVANO TRAVALJA		3735 9TH ST LONG ISLAND CITY NY 11101	01/05/2023	01/05/2028
DOL	DOL	*****0440	SOLAR GUYS INC.		8970 MIKE GARCIA DR MANASSAS VA 20109	07/16/2021	07/16/2026
DOL	NYC		SOMATIE RAMSUNAHAI		115-46 132ND ST SOUTH OZONE PARK NY 11420	09/17/2020	09/17/2025
DOL	DOL	*****2221	SOUTH BUFFALO ELECTRIC, INC.		1250 BROADWAY ST BUFFALO NY 14212	02/03/2020	02/03/2025
DOL	NYC	*****3661	SPANIER BUILDING MAINTENANCE CORP		200 OAK DRIVE SYOSSET NY 11791	03/14/2022	03/14/2027
DOL	DOL		STANADOS KALOGELAS		485 RAFT AVENUE HOLBROOK NY 11741	10/19/2021	10/19/2026
DOL	DOL	*****3496	STAR INTERNATIONAL INC		89-51 SPRINGFIELD BLVD QUEENS VILLAGE NY 11427	08/11/2003	08/11/3003
DOL	DOL	*****6844	STEAM PLANT AND CHX SYSTEMS INC.		14B COMMERCIAL AVENUE ALBANY NY 12065	11/14/2019	11/14/2024
DOL	DOL	*****9933	STEED GENERAL CONTRACTORS, INC.		1445 COMMERCE AVE BRONX NY 10461	05/30/2019	05/30/2024
DOL	DOL	*****9528	STEEL-IT, LLC.		17613 SANTE FE LINE ROAD WAYNESFIELD OH 45896	07/16/2021	07/16/2026
DOL	DOL		STEFANOS PAPASTEFANOU, JR. A/K/A STEVE PAPASTEFANOU, JR.		256 WEST SADDLE RIVER RD UPPER SADDLE RIVER NJ 07458	05/30/2019	05/30/2024
DOL	DOL	*****3800	SUBURBAN RESTORATION CO. INC.		5-10 BANTA PLACE FAIR LAWN PLACE NJ 07410	03/29/2021	03/29/2026
DOL	DOL	*****1060	SUNN ENTERPRISES GROUP, LLC		370 W. PLEASANTVIEW AVE SUITE 2.329HACKENSACK NJ 07601	02/11/2019	02/11/2024
DOL	DOL	*****9150	SURGE INC.		8269 21ST STREET BELLEROSE NY 11426	12/22/2022	12/22/2027
DOL	DOL		SYED RAZA		198 RIDGE AVENUE NY 11581	06/06/2022	06/06/2027
DOL	DOL	*****8209	SYRACUSE SCALES, INC.		158 SOLAR ST SYRACUSE NY 13204	01/07/2019	01/07/2024
DOL	DOL		TERRY THOMPSON		11371 RIDGE RD WOLCOTT NY 14590	02/03/2020	02/03/2025
DOL	DOL	*****9733	TERSAL CONSTRUCTION SERVICES INC		107 FACTORY AVE P.O BOX 11070SYRACUSE NY 13208	07/16/2021	07/16/2026
DOL	DOL		TERSAL CONTRACTORS, INC.		221 GARDNER RD P.O BOX 14POMPEI NY 13138	07/16/2021	07/16/2026
DOL	DOL		TERSAL DEVELOPMENT CORP.		1935 TEALL AVENUE SYRACUSE NY 13206	07/16/2021	07/16/2026
DOL	DOL		TEST		P.O BOX 123 ALBANY NY 12204	05/20/2020	05/20/2025
DOL	DOL	*****6789	TEST1000		P.O BOX 123 ALBANY NY 12044	03/01/2021	03/01/2026
DOL	DOL	*****5766	THE COKER CORPORATION	COKER CORPORATIO N	2610 SOUTH SALINA ST SUITE 14SYRACUSE NY 13205	12/04/2018	12/04/2023
DOL	DOL	*****5766	THE COKER CORPORATION	COKER CORPORATIO N	2610 SOUTH SALINA ST SUITE 14SYRACUSE NY 13205	09/17/2020	09/17/2025
DOL	DA	*****1050	TRI STATE CONSTRUCTION OF NY CORP.		50-39 175TH PLACE FRESH MEADOWS NY 11365	03/28/2022	03/28/2027
DOL	DA	*****4106	TRIPLE H CONCRETE CORP		2375 RAYNOR STREET RONKONKOMA NY 11779	08/04/2021	08/04/2026
DOL	DOL	*****8210	UPSTATE CONCRETE & MASONRY CONTRACTING CO INC		449 WEST MOMBSHA ROAD MONROE NY 10950	06/06/2022	06/06/2027
DOL	DOL	*****6418	VALHALLA CONSTRUCTION, LLC.		796 PHLEPS ROAD FRANKLIN LAKES NJ 07417	12/01/2020	12/01/2025
DOL	NYC	*****2426	VICKRAM MANGRU	VICK CONSTRUCTI ON	21 DAREWOOD LANE VALLEY STREAM NY 11581	09/17/2020	09/17/2025
DOL	NYC		VICKRAM MANGRU		21 DAREWOOD LANE VALLEY STREAM NY 11581	09/17/2020	09/17/2025

DOL	DOL		VICTOR ALICANTI		42-32 235TH ST DOUGLASTON NY 11363	01/14/2019	01/14/2024
DOL	DOL		VIKTORIA RATH		24 ELDOR AVENUE NEW CITY NY 10956	02/03/2020	02/03/2025
DOL	NYC	*****3673	WALTERS AND WALTERS, INC.		465 EAST AND THIRD ST MT. VERNON NY 10550	09/09/2019	09/09/2024
DOL	DOL	*****3296	WESTERN NEW YORK CONTRACTORS, INC.		3841 LAYNARD COURT NEW PORT RICHEY FL 34652	07/09/2019	07/09/2024
DOL	DOL	*****8266	WILLIAM CHRIS MCCLENDON	MCCLENDON ASPHALT PAVING	1646 FALLS STREET NIAGARA FALLS NY 14303	05/01/2023	05/01/2028
DOL	DOL		WILLIAM CHRIS MCCLENDON		1646 FALLS STREET NIAGARA FALLS NY 14303	05/01/2023	05/01/2028
DOL	DOL		WILLIAM G. PROERFRIEDT		85 SPRUCEWOOD ROAD WEST BABYLON NY 11704	01/19/2021	01/19/2026
DOL	DOL	*****5924	WILLIAM G. PROPHY, LLC	WGP CONTRACTIN G, INC.	54 PENTAQUIT AVE BAYSHORE NY 11706	01/19/2021	01/19/2026
DOL	DOL		XENOFON EFTHIMIADIS		29-10 38TH AVENUE LONG ISLAND CITY NY 11101	10/11/2023	10/11/2028

SECTION 01 08 00 - GENERAL COMMISSIONING REQUIREMENTS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General Conditions and other Division 01 Specification Sections, apply to this Section.
B. Owner's Project Requirements and Basis-of-Design documentation are included by reference for information only.

1.2 SUMMARY

A. Section Includes:

1. General requirements for coordinating and scheduling commissioning.
2. Commissioning meetings.
3. Commissioning reports.
4. Test equipment, instrumentation, and tools (including, but not limited to, proprietary test equipment, instrumentation, and tools) required to perform tests.
5. Use of test equipment, instrumentation, and tools for commissioning.
6. Construction checklist requirements, including, but not limited to, installation checks, startup, performance tests, and performance test demonstration.
7. Commissioning tests and commissioning test demonstration.
8. Adjusting, verifying, and documenting identified systems and assemblies.
9. Work to correct commissioning issues.
10. Work to repeat tests when equipment and systems fail acceptance criteria.

B. Related Requirements:

1. Section 01 33 00 "Submittal Procedures" for submittal procedures requirements for commissioning.

2. Section 01 77 00 "Closeout Procedures" for certificate of Construction Phase Commissioning Completion submittal requirements.

3. Section 01 78 23 "Operation and Maintenance Data" for preliminary operation and maintenance data submittal.

4. Section 23 08 00 "Commissioning of HVAC" for technical commissioning requirements for HVAC systems.

5. Section 26 08 00 "Commissioning of Electrical" for technical commissioning requirements for Electrical systems.

6. Individual Technical Specifications and Drawings: Equipment and systems design and installation, startup, field quality-control testing, and additional requirements indicated in the Contract Documents.

1.3 DEFINITIONS

A. Acceptance Criteria: Threshold of acceptable work quality or performance specified for a commissioning activity, including, but not limited to, construction checklists, performance tests, performance test demonstrations, commissioning tests and commissioning test demonstrations.

B. Basis-of-Design Document: A document prepared by Owner, Architect, or Commissioning Authority that records concepts, calculations, decisions, and product selections used to comply with Owner's Project Requirements and to suit applicable regulatory requirements, standards, and guidelines.

C. Commissioning Authority: An entity engaged by Owner, and identified in Section 011000 "Summary," to evaluate Commissioning-Process Work.

D. Commissioning Plan: A document, prepared by Commissioning Authority, that outlines the organization, schedule, allocation of resources, and documentation requirements of commissioning.

E. Commissioning: A quality-focused process for verifying and documenting that the facility and all of its systems and assemblies are planned, designed, installed, and tested to comply with Owner's Project Requirements. The requirements specified here are limited to the construction phase commissioning activities. The scope of commissioning is defined in Section 011200 "Multiple Contract Summary."

F. Construction Phase Commissioning Completion: The stage of completion and acceptance of commissioning when resolution of deficient conditions and issues discovered during commissioning and retesting until acceptable results are obtained has been accomplished. Owner will establish in writing the date Construction Phase Commissioning Completion is achieved. See Section 017700 "Closeout Procedures" for certificate of Construction Phase Commissioning Completion submittal requirements.

1. Commissioning is complete when the work specified in this Section and related Sections has been completed and accepted, including, but not limited to, the following:

   a. Completion of tests and acceptance of test results.
   b. Resolution of issues, as verified by retests performed and documented with acceptance of retest results.
   c. Comply with requirements in Section 017900 "Demonstration and Training."
   d. Completion and acceptance of submittals and reports.

G. Owner's Project Requirements: A document written by Owner, Architect, or Commissioning Authority that details the functional requirements of a project and the expectations of how it will be used and operated, including Project goals, measurable performance criteria, cost considerations, benchmarks, success criteria, and supporting information.

H. Owner's Witness: Commissioning Authority, Owner's Project Manager, or Architect-designated witness authorized to authenticate test demonstration data and to sign completed test data forms.

I. "Systems," "Assemblies," "Subsystems," "Equipment," and "Components": Where these terms are used together or separately, they shall mean "as-built" systems, assemblies, subsystems, equipment, and components.

J. Test: Performance tests, performance test demonstrations, commissioning tests, and commissioning test demonstrations.

K. Sampling Procedures and Tables for Inspection by Attributes: As defined in ASQ Z1.4.

1.4 COMPENSATION

A. Should Architect, Commissioning Authority, other Owner's witness, or Owner's staff perform additional services or incur additional expenses due to actions of Contractor listed below, compensate Owner for such additional services and expenses.

1. Failure to provide timely notice of commissioning activities schedule changes.
2. Failure to meet acceptance criteria for test demonstrations.

B. Contractor shall compensate Owner for such additional services and expenses at the rate of $175.00 per labor hour plus the current per mile rate for personnel travelling plus per diem allowances for meals and lodging according to current U.S. General Services Administration (GSA) Per Diem Rates.

1.5 COMMISSIONING TEAM

A. Members Appointed by Contractor(s):

1. Commissioning Coordinator: A person or entity employed by Contractor to manage, schedule, and coordinate commissioning.
2. Project superintendent and other employees that Contractor may deem appropriate for a particular portion of the commissioning.
3. Subcontractors, installers, suppliers, and specialists that Contractor may deem appropriate for a particular portion of the commissioning.
4. Appointed team members shall have the authority to act on behalf of the entity they represent.

B. Members Appointed by Owner:

1. Commissioning Authority, plus consultants that Commissioning Authority may deem appropriate for a particular portion of the commissioning.

2. Owner representative(s), facility operations and maintenance personnel, plus other employees, separate contractors, and consultants that Owner may deem appropriate for a particular portion of the commissioning.

3. Architect / Engineer, plus employees and consultants that Architect may deem appropriate for a particular portion of the commissioning.

1.6 SUBMITTALS

A. Comply with requirements in Section 013300 "Submittal Procedures" for submittal procedures general requirements for commissioning.

B. Commissioning Plan Information:

1. List of Contractor-appointed commissioning team members to include specific personnel and subcontractors to the performance of the various commissioning requirements.

2. Schedule of commissioning activities, integrated with the construction schedule. Comply with requirements in Section 013200 "Construction Progress Documentation" for construction schedule general requirements for commissioning.

3. Contractor personnel and subcontractors to participate in each test.

4. List of instrumentation required for each test to include identification of parties that will provide instrumentation for each test.

C. Commissioning Coordinator Letter of Authority:

1. Within 10 days after approval of Commissioning Coordinator qualifications, submit a letter of authority for Commissioning Coordinator, signed by a principal of Contractor's firm. Letter shall authorize Commissioning Coordinator to do the following:

a. Make inspections required for commissioning.
b. Coordinate, schedule, and manage commissioning of Contractor, subcontractors, and suppliers.
c. Obtain documentation required for commissioning from Contractor, subcontractors, and suppliers.
d. Report issues, delayed resolution of issues, schedule conflicts, and lack of cooperation or expertise on the part of members of the commissioning team.

D. Commissioning Coordinator Qualification Data: For entity coordinating Contractor's commissioning activities to demonstrate their capabilities and experience.

1. Experienced: When used with an entity or individual, "experienced" means having successfully completed a minimum of five 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.

E. Commissioning schedule.

F. Two-week look-ahead schedules.

G. List test instrumentation, equipment, and monitoring devices. Include the following information:

1. Make, model, serial number, and application for each instrument, equipment, and monitoring device.

2. Brief description of intended use.

3. Calibration record showing the following:

   a. Calibration agency, including name and contact information.
   b. Last date of calibration.
   c. Range of values for which calibration is valid.
   d. Certification of accuracy.
   e. N.I.S.T. traceability certification for calibration equipment.
   f. Due date of the next calibration.

H. Construction Checklists:

1. Material checks.
2. Installation checks.
3. Startup procedures, where required.

I. Test Reports:

1. Pre-Startup Report: Prior to start up of equipment or a system, submit signed, completed construction checklists.

2. Test Data Reports: At the end of each day in which tests are conducted, submit test data for tests performed.

3. Commissioning Issues Reports: Daily, at the end of each day in which tests are conducted, submit commissioning issue reports for tests for which acceptable results were not achieved.

4. Weekly Progress Report: Weekly, at the end of each week in which tests are conducted, submit a progress report.

5. Data Trend Logs: Submit data trend logs at the end of the trend log period.

6. System Alarm Logs: Daily, at the start of days following a day in which tests were performed, submit print-out of log of alarms that occurred since the last log was printed.

1.7 CLOSEOUT SUBMITTALS

A. Commissioning Report:

1. At Construction Phase Commissioning Completion, include the following:

   a. Pre-startup reports.

b. Approved test procedures.
c. Test data forms, completed and signed.
d. Progress reports.
e. Commissioning issues report log.
f. Commissioning issues reports showing resolution of issues.
g. Correspondence or other documents related to resolution of issues.
h. Other reports required by commissioning.
i. List unresolved issues and reasons they remain unresolved and should be exempted from the requirements for Construction Phase Commissioning Completion.
j. Report shall include commissioning work of Contractor.

B. Request for Certificate of Construction Phase Commissioning Completion.

C. Operation and Maintenance Data: For proprietary test equipment, instrumentation, and tools to include in operation and maintenance manuals.

1.8 QUALITY ASSURANCE

A. Commissioning Coordinator Qualifications:

1. Certification of commissioning process expertise. The following certifications are acceptable upon receipt of information demonstrating that certification is current and in good standing. Owner reserves the right to accept or reject other certifications as evidence of qualification.

   a. Certified Commissioning Professional, by Building Commissioning Association.
   b. Certified Building Commissioning Professional, by Association of Energy Engineers.
   c. Existing Building Commissioning Professional, by Association of Energy Engineers.
   d. Commissioning Process Management Professional, by American Society of Heating, Refrigerating and Air-Conditioning Engineers.
   e. Accredited Commissioning Process Authority Professional, by University of Wisconsin.
   f. Accredited Commissioning Process Manager, by University of Wisconsin.
   g. Accredited Green Commissioning Process Provider, by University of Wisconsin.

2. Absent one of the certifications above, provide documented experience on at least three projects of similar scope and complexity commissioning systems of similar complexity to those contained in these documents. Provide written references from the lead Commissioning Authority of each project attesting to applicant experience, responsibilities, and proven capabilities in regards to commissioning being equal to those required to gain one of the listed certifications. Each reference must be certified in accordance with the above requirements.

B. Calibration Agency Qualifications: Certified by The American Association of Laboratory Accreditation that the calibration agency complies with minimum requirements of ISO/IEC 17025.

1.9 COMMISSIONING AUTHORITY'S RESPONSIBILITIES

A. Commissioning Authority Responsibilities: Comply with requirements in Section 011200 "Summary of Multiple Contracts."

PART 2 - PRODUCTS

2.1 TEST EQUIPMENT, INSTRUMENTATION, AND TOOLS

A. Test equipment and instrumentation required to perform the commissioning shall remain the property of Contractor unless otherwise indicated.

B. Test equipment and instrumentation required to perform commissioning shall comply with the following criteria:

1. Be manufactured for the purpose of testing and measuring tests for which they are being used and have an accuracy to test and measure system performance within the tolerances required to determine acceptable performance.

2. Calibrated and certified.

a. Calibration performed and documented by a qualified calibration agency according to national standards applicable to the tools and instrumentation being calibrated. Calibration shall be current according to national standards or within test equipment and instrumentation manufacturer's recommended intervals, whichever is more frequent, but not less than within six months of initial use on Project. Calibration tags permanently affixed.

b. Repair and recalibrate test equipment and instrumentation if dismantled, dropped, or damaged since last calibrated.

3. Maintain test equipment and instrumentation.

4. Use test equipment and instrumentation only for testing or monitoring Work for which they are designed.

2.2 PROPRIETARY TEST EQUIPMENT, INSTRUMENTATION, AND TOOLS

A. Proprietary test equipment, instrumentation, and tools are those manufactured or prescribed by tested equipment manufacturer and required for work on its equipment as a condition of equipment warranty, or as otherwise required to service, repair, adjust, calibrate, or perform work on its equipment.

1. Identify proprietary test equipment, instrumentation, and tools required in the test equipment identification list submittal.
2. Proprietary test equipment, instrumentation, and tools shall become the property of Owner at Substantial Completion.

2.3 REPORT FORMAT AND ORGANIZATION

A. General Format and Organization:

1. Record report on compact disk.
2. Electronic Data: Portable document format (PDF); a single file with outline-organized bookmarks for major and minor tabs and tab contents itemized for specific reports.

B. Commissioning Report:

1. Include a table of contents and an index to each test.

2. Include major tabs for each Specification Section.

3. Include minor tabs for each test.

4. Within each minor tab, include the following:

a. Test specification.

b. Pre-startup reports.

c. Approved test procedures.

d. Test data forms, completed and signed.

e. Commissioning issue reports, showing resolution of issues, and documentation related to resolution of issues pertaining to a single test. Group data forms, commissioning issue reports showing resolution of issues, and documentation related to resolution of issues for each test repetition together within the minor tab, in reverse chronological order (most recent on top).

PART 3 - EXECUTION

3.1 PREPARATION

A. Review preliminary construction checklists and preliminary test procedures and data forms.

3.2 CONSTRUCTION CHECKLISTS

A. Construction checklists cannot modify or conflict with the Contract Documents.

B. Create construction checklists based on actual systems and equipment to be included in Project.

C. Material Checks: Compare specified characteristics and approved submittals with materials as received. Include factory tests and other evaluations, adjustments, and tests performed prior to shipment, if applicable.

1. Services connection requirements, including configuration, size, location, and other pertinent characteristics.

2. Included optional features.

3. Delivery Receipt Check: Inspect and record physical condition of materials and equipment on delivery to Project site, including agreement with approved submittals, cleanliness and lack of damage.

D. Installation Checklists: must in general document that equipment and systems are installed and started in accordance with the contract document requirements. See attachment #1 for sample checklists for a small group of representative equipment. Develop checklists in similar format with line items required designed to insure proper installation by installers:

1. Location according to Drawings and approved Shop Drawings.

2. Configuration.

3. Compliance with manufacturers' written installation instructions.

4. Attachment to structure.

5. Access clearance to allow for maintenance, service, repair, removal, and replacement without the need to disassemble or remove other equipment or building elements. Access coordinated with other building elements and equipment, including, but not limited to, ceiling and wall access panels, in a manner consistent with OSHA fall-protection regulations and safe work practices.

6. Utility connections are of the correct characteristics, as applicable.

7. Correct labeling and identification.

E. Startup Checks: Verify readiness of equipment to be energized. Include manufacturer's standard startup procedures and forms.

F. Startup: Perform and document initial operation of equipment to prove that it is installed properly and operates as intended according to manufacturer's standard startup procedures, minimum.

G. Performance Tests:

1. Static Tests: As specified elsewhere, including, but not limited to, duct and pipe leakage tests, insulation-resistance tests, and water-penetration tests.
2. Component Performance Tests: Tests evaluate the performance of an input or output of components under a full range of operating conditions.
3. Equipment and Assembly Performance Tests: Test and evaluate performance of equipment and assemblies under a full range of operating conditions and loads.
4. System Performance Tests: Test and evaluate performance of systems under a full range of operating conditions and loads.
5. Intersystem Performance Tests: Test and evaluate the interface of different systems under a full range of operating conditions and loads.

H. Deferred Construction Checklists: Obtain Owner approval of proposed deferral of construction checklists, including proposed schedule of completion of each deferred construction checklist, before submitting request for Certificate of Construction Phase Commissioning Completion. When approved, deferred construction checklists may be completed after date of Construction Phase Commissioning Completion. Include the following in request for Certificate of Construction Phase Commissioning Completion:

1. Identify deferred construction checklists by number and title.
2. Provide a target schedule for completion of deferred construction checklists.
3. Written approval of proposed deferred construction checklists, including approved schedule of completion of each deferred construction checklist.

I. Delayed Construction Checklists: Obtain Owner approval of proposed delayed construction checklists, including proposed schedule of completion of each delayed construction checklist, before submitting request for Certificate of Construction Phase Commissioning Completion. When approved, delayed construction checklists may be completed after date of Construction Phase Commissioning Completion. Include the following in request for Certificate of Construction Phase Commissioning Completion:

1. Identify delayed construction checklist by construction checklist number and title.
2. Provide a target schedule for completion of delayed construction checklists.
3. Written approval of proposed delayed construction checklists, including approved schedule of completion of each delayed construction checklist.

3.3 GENERAL EXECUTION REQUIREMENTS

A. Schedule and coordinate commissioning with the construction schedule.

B. Perform activities identified in construction checklists, including tests, and document results of actions as construction proceeds.

C. Perform test demonstrations for Owner's witness. Unless otherwise indicated in specific testing requirements, demonstrate tests for 100 percent of work to which the test applies.

D. Report test data and commissioning issue resolutions.

E. Schedule personnel to participate in and perform Commissioning-Process Work.

F. Installing contractors' commissioning responsibilities include, but are not limited to, the following:

1. Operating the equipment and systems they install during tests.
2. In addition, installing contractors may be required to assist in tests of equipment and systems with which their work interfaces.

3.4 COMMISSIONING COORDINATOR RESPONSIBILITIES

A. Management and Coordination: Manage, schedule, and coordinate commissioning, including, but not limited to, the following:

1. Coordinate with subcontractors on their commissioning responsibilities and activities.

2. Obtain, assemble, and submit commissioning documentation.

3. Attend periodic on-site commissioning meetings. Comply with requirements in Section 01 31 00 "Project Management and Coordination."

4. Develop and maintain the commissioning schedule. Integrate commissioning schedule into the construction schedule. Update schedule at specified intervals.

5. Review and comment on preliminary test procedures and data forms.

6. Report inconsistencies and issues in system operations.

7. Verify that tests have been completed and results comply with acceptance criteria, and that equipment and systems are ready before scheduling test demonstrations.

8. Direct and coordinate test demonstrations.

9. Coordinate witnessing of test demonstrations by Owner's witness.

10. Coordinate and manage training. Be present during training sessions to direct video recording, present training and direct the training presentations of others. Comply with requirements in Section 017900 "Demonstration and Training."

11. Prepare and submit specified commissioning reports.

12. Track commissioning issues until resolution and retesting is successfully completed.

13. Retain original records of Commissioning-Process Work, organized as required for the commissioning report. Provide Owner's representative access to these records on request.

14. Assemble and submit commissioning report.

3.5 COMMISSIONING TESTING

A. Quality Control: Construction checklists, including tests, are quality-control tools designed to improve the functional quality of Project. Test demonstrations evaluate the effectiveness of Contractor's quality-control process.

B. Owner's witness will be present to witness commissioning work requiring the signature of an owner's witness, including, but not limited to, test demonstrations. Owner's project manager will coordinate attendance by Owner's witness with Contractor's published commissioning schedule. Owner's witness will provide no labor or materials in the commissioning work. The only function of Owner's witness will be to observe and comment on the progress, completion, and results of commissioning.

C. Construction Checklists:

1. Complete construction checklists as Work is completed.

2. Distribute construction checklists to installers before they start work.

3. Installers:

   a. Verify installation using approved construction checklists as Work proceeds.
   b. Complete and sign construction checklists daily for work performed during the preceding day.

4. Provide Commissioning Authority access to construction checklists.

D. Installation Compliance Issues: Record as an installation compliance issue Work found to be incomplete, inaccessible, at variance with the Contract Documents, nonfunctional, or that does not comply with construction checklists. Record installation compliance issues on the construction checklist at the time they are identified. Record corrective action and how future Work should be modified before signing off the construction checklist.

E. Pre-Startup Audit: Prior to executing startup procedures, review completed installation checks to determine readiness for startup and operation. Report conditions, which, if left uncorrected, adversely impact the ability of systems or equipment to operate satisfactorily or to comply with acceptance criteria. Prepare pre-startup report for each system.

F. Test Procedures and Test Data Forms:

1. Test procedures shall define the step-by-step procedures to be used to execute tests and test demonstrations.

2. Test procedures shall be specific to the make, model, and application of the equipment and systems being tested.

3. Completed test data forms are the official records of the results of tests.

4. Commissioning Authority will provide to Contractor preliminary test procedures and test data forms for performance tests and commissioning tests after approval of Product Data, Shop Drawings, and preliminary operation and maintenance manual. Test procedures will in general be designed to demonstrate that operating characteristics conform to any or all required and / or approved performance characteristics.

5. Review preliminary test procedures and test data forms and provide comments within 14 days of receipt from Commissioning Authority. Review shall address the following:

   a. Equipment protection and warranty issues, including, but not limited to, manufacturers' installation and startup recommendations, and operation and maintenance instructions.

b. Applicability of the procedure to the specific software, equipment, and systems approved for installation.

6. After Contractor has reviewed and commented on the preliminary test procedures and test data forms, Commissioning Authority will revise and reissue the approved revised test procedures and test data forms marked "Approved for Testing."

7. Use only approved test procedures and test data forms marked "Approved for Testing" to perform and document tests and test demonstrations.

G. Performance of Tests:

1. The sampling rate for tests is 100 percent. The sampling rate for test demonstrations is 100 percent unless otherwise indicated.

2. Perform and complete each step of the approved test procedures in the order listed.

3. Record data observed during performance of tests on approved data forms at the time of test performance and when the results are observed.

4. Record test results that are not within the range of acceptable results on commissioning issue report forms in addition to recording the results on approved test procedures and data forms according to the "Commissioning Compliance Issues" Paragraph in this Article.

5. On completion of a test, sign the completed test procedure and data form. Tests for which test procedures and data forms are incomplete, not signed, or which indicate performance that does not comply with acceptance criteria will be rejected. Tests for which test procedures and data forms are rejected shall be repeated and results resubmitted.

H. Performance of Test Demonstration:

1. Perform test demonstrations on a sample of tests after test data submittals are approved. The sampling rate for test demonstrations shall be 100 percent of components which are not typical of at least 10, and shall be 25% of components which are typical of at least 10, unless otherwise indicated in the individual test specification.

2. Notify Owner's witness at least seven days in advance of each test demonstration.

3. Perform and complete each step of the approved test procedures in the order listed.

4. Record data observed during performance of test demonstrations on approved data forms at the time of demonstration and when the results are observed.

5. Provide full access to Owner's witness to directly observe the performance of all aspects of system response during the test demonstration. On completion of a test demonstration, sign the completed data form and obtain signature of Owner's witness at the time of the test to authenticate the reported results.

6. Test demonstration data forms not signed by Contractor and Owner's witness at the time of the completion of the procedure will be rejected. Test demonstrations for which data forms are rejected shall be repeated and results shall be resubmitted.

    a. Exception for Failure of Owner's Witness to Attend: Failure of Owner's witness to be present for agreed-on schedule of test demonstration shall not delay Contractor. If Owner's witness fails to attend a scheduled test, Contractor shall proceed with the scheduled test. On completion, Contractor shall sign the data form for Contractor and for Owner's witness, and shall note the absence of Owner's witness at the scheduled time and place.

7. False load test requirements are specified in related sections.

    a. Where false load testing is specified, provide temporary equipment, power, controls, wiring, piping, valves, and other necessary equipment and connections required to apply the specified load to the system. False load system shall be capable of steady-state operation and modulation at the level of load specified. Equipment and systems permanently installed in this work shall not be used to create the false load without Architect's written approval.

I. Deferred Tests:

1. Deferred Tests List: Identify, in the request for Certificate of Construction Phase Commissioning Completion, proposed deferred tests or other tests approved for deferral until specified seasonal or other conditions are available. When approved, deferred tests may be completed after the date of Construction Phase Commissioning Completion. Identify proposed deferred tests in the request for Certificate of Construction Phase Commissioning Completion as follows:

    a. Identify deferred tests by number and title.
    b. Provide a target schedule for completion of deferred tests.

2. Schedule and coordinate deferred tests. Schedule deferred tests when specified conditions are available. Notify Architect and Commissioning Authority at least seven calendar days (minimum) in advance of tests.
3. Where deferred tests are specified, coordinate participation of necessary personnel and of Architect, Commissioning Authority, and Owner's witness. Schedule deferred tests to minimize occupant and facility impact. Obtain Architect's approval of the proposed schedule.

J. Delayed Tests:

1. Delayed Tests List: Identify, in the request for Certificate of Construction Phase Commissioning Completion, proposed delayed tests. Obtain Owner approval of proposed delayed tests, including proposed schedule of completion of each delayed test, before submitting request for Certificate of Construction Phase Commissioning Completion. Include the following in the request for Certificate of Construction Phase Commissioning Completion:

a. Identify delayed tests by test number and title.
b. Written approval of proposed delayed tests, including approved schedule of completion of delayed tests.

2. Schedule and coordinate delayed tests. Schedule delayed tests when conditions that caused the delay have been rectified. Notify Architect and Commissioning Authority at least seven calendar days (minimum) in advance of tests.

3. Where delayed tests are approved, coordinate participation of necessary personnel and of Architect, Commissioning Authority, and Owner's witness. Schedule delayed tests to minimize occupant and facility impact. Obtain Architect's approval of the proposed schedule.

K. Commissioning Compliance Issues:

1. Test results that are not within the range of acceptable results are commissioning compliance issues.

2. Track and report commissioning compliance issues until resolution and retesting are successfully completed.

3. If a test demonstration fails, determine the cause of failure. Direct timely resolution of issue and then repeat the demonstration. If a test demonstration must be repeated due to failure caused by Contractor work or materials, reimburse Owner for billed costs for the participation in the repeated demonstration.

4. Test Results: If a test demonstration fails to meet the acceptance criteria, perform the following:

a. Complete a commissioning compliance issue report form promptly on discovery of test results that do not comply with acceptance criteria.
b. Submit commissioning compliance issue report form within 24 hours of the test.
c. Determine the cause of the failure.
d. Establish responsibility for corrective action if the failure is due to conditions found to be Contractor's responsibility.

5. Commissioning Compliance Issue Report: Provide a commissioning compliance issue report for each issue. Do not report multiple issues on the same commissioning compliance issue report.

a. Exception: If an entire class of devices is determined to exhibit the identical issue, they may be reported on a single commissioning compliance issue report. (For example, if all return-air damper actuators that are specified to fail to the open position are found to fail to the closed position, they may be reported on a single commissioning issue report. If a single commissioning issue report is used for multiple commissioning compliance issues, each device shall be identified in the report, and the total number of devices at issue shall be identified.

b. Complete and submit Part 1 of the commissioning compliance issue report immediately when the condition is observed.

c. Record the commissioning compliance issue report number and describe the deficient condition on the data form.

d. Resolve commissioning compliance issues promptly. Complete and submit Part 2 of the commissioning compliance issue report when issues are resolved.

6. Diagnose and correct failed test demonstrations as follows:

a. Perform diagnostic tests and activities required to determine the fundamental cause of issues observed.
b. Record each step of the diagnostic procedure prior to performing the procedure. Update written procedure as changes become necessary.
c. Record the results of each step of the diagnostic procedure.
d. Record the conclusion of the diagnostic procedure on the fundamental cause of the issue.
e. Determine and record corrective measures.
f. Include diagnosis of fundamental cause of issues in commissioning compliance issue report.

7. Retest:

a. Schedule and repeat the complete test procedure for each test demonstration for which acceptable results are not achieved. Obtain signature of Owner's witness on retest data forms. Repeat test demonstration until acceptable results are achieved. Except for issues that are determined to result from design errors or omissions, or other conditions beyond Contractor's responsibility, compensate Owner for direct costs incurred as the result of repeated test demonstrations to achieve acceptable results.

b. For each repeated test demonstration, submit a new test data form, marked "Retest."

8. Do not correct commissioning compliance issues during test demonstrations.

a. Exceptions will be allowed if the cause of the issue is obvious and resolution can be completed in less than five minutes. If corrections are made under this exception, note the deficient conditions on the test data form and issue a commissioning compliance issue report. A new test data form, marked "Retest," shall be initiated after the resolution has been completed.

3.6 COMMISSIONING MEETINGS

A. Commissioning Authority will schedule and conduct commissioning meetings. Comply with requirements in Section 013100 "Project Management and Coordination."

3.7 SEQUENCING

A. Sequencing of Commissioning Verification Activities: For a particular material, item of equipment, assembly, or system, perform the following in the order listed unless otherwise indicated:

1. Construction Checklists:

   a. Material checks.

   b. Installation checks.

   c. Start up, as appropriate. Some startup may depend on component performance. Such startup may follow component performance tests on which the startup depends.

   d. Performance Tests:

      1) Static tests, as appropriate.

      2) Component performance tests. Some component performance tests may depend on completion of startup. Such component performance tests may follow startup.

      3) Equipment and assembly performance tests.

      4) System performance tests.

      5) Intersystem performance tests.

2. Commissioning tests.

B. Before performing commissioning tests, verify that materials, equipment, assemblies, and systems are delivered, installed, started, and adjusted to perform according to construction checklists.

C. Verify readiness of materials, equipment, assemblies, and systems by performing tests prior to performing test demonstrations. Notify Architect if acceptable results cannot be achieved due to conditions beyond Contractor's control or responsibility.

D. Commence tests as soon as installation checks for materials, equipment, assemblies, or systems are satisfactorily completed. Tests of a particular system may proceed prior to completion of other systems, provided the incomplete work does not interfere with successful execution of test.

3.8 SCHEDULING

A. Commence commissioning as early in the construction period as possible.

B. Commissioning Schedule: Integrate commissioning into Contractor's construction schedule. See Section 01 32 00 "Construction Progress Documentation."

1. Include detailed commissioning activities in monthly updated Contractor's construction schedule and short interval schedule submittals.

2. Schedule the start date and duration for the following commissioning activities:

    a. Submittals.
    b. Preliminary operation and maintenance manual submittals.
    c. Installation checks.
    d. Startup, where required.
    e. Performance tests.
    f. Performance test demonstrations.
    g. Commissioning tests.
    h. Commissioning test demonstrations.

3. Schedule shall include a line item for each installation check, startup, and test activity specific to the equipment or systems involved.

4. Determine milestones and prerequisites for commissioning. Show commissioning milestones, prerequisites, and dependencies in monthly updated critical-path-method construction schedule and short interval schedule submittals.

C. Two-Week Look-Ahead Commissioning Schedule:

1. Two weeks prior to the beginning of tests, submit a detailed two-week look-ahead schedule. Thereafter, submit updated two-week look-ahead schedules weekly for the duration of commissioning.

2. Two-week look-ahead schedules shall identify the date, time, beginning location, Contractor personnel required, and anticipated duration for each startup or test activity.

3. Use two-week look-ahead schedules to notify and coordinate participation of Owner's witnesses.

D. Owner's Witness Coordination:

1. Coordinate Owner's witness participation via Architect.
2. Notify Architect of commissioning schedule changes at least two work days in advance for activities requiring the participation of Owner's witness.

3.9 COMMISSIONING REPORTS

A. Test Reports:

1. Pre-startup reports include observations of the conditions of installation, organized into the following sections:

    a. Equipment Model Verification: Compare contract requirements, approved submittals, and provided equipment. Note inconsistencies.

b. Preinstallation Physical Condition Checks: Observe physical condition of equipment prior to installation. Note conditions including, but not limited to, physical damage, corrosion, water damage, or other contamination or dirt.

c. Preinstallation Component Verification Checks: Verify components supplied with the equipment, preinstalled or field installed, are correctly installed and functional. Verify external components required for proper operation of equipment correctly installed and functional. Note missing, improperly configured, improperly installed, or nonfunctional components.

d. Summary of Installation Compliance Issues and Corrective Actions: Identify installation compliance issues and the corrective actions for each. Verify that issues noted have been corrected.

e. Evaluation of System Readiness for Startup: For each item of equipment for each system for which startup is anticipated, document in summary form acceptable to Owner completion of equipment model verification, preinstallation physical condition checks, preinstallation component verification checks, and completion of corrective actions for installation compliance issues.

2. Test data reports include the following:

a. "As-tested" system configuration. Complete record of conditions under which the test was performed, including, but not limited to, the status of equipment, systems, and assemblies; temporary adjustments and settings; and ambient conditions.

b. Data and observations, including, but not limited to, data trend logs, recorded during the tests.

c. Signatures of individuals performing and witnessing tests.

d. Data trend logs accumulated overnight from the previous day of testing.

3. Commissioning Compliance Issues Reports: Report as commissioning compliance issues results of tests and test demonstrations that do not comply with acceptance criteria. Report only one issue per commissioning compliance issue report. Use sequentially numbered facsimiles of commissioning compliance issue report form included in this Section, or other form approved by Owner. Distribute commissioning compliance issue reports to parties responsible for taking corrective action. Identify the following:

a. Commissioning compliance issue report number. Assign unique, sequential numbers to individual commissioning compliance issue reports when they are created, to be used for tracking.

b. Action distribution list.

c. Report date.

d. Test number and description.

e. Equipment identification and location.

f. Briefly describe observations about the performance associated with failure to achieve acceptable results. Identify the cause of failure if apparent.

g. Diagnostic procedure or plan to determine the cause (include in initial submittal).

h. Diagnosis of fundamental cause of issues as specified below (include in resubmittal).

i. Fundamental cause of unacceptable performance as determined by diagnostic tests and activities.

j. When issues have been resolved, update and resubmit the commissioning issue report forms by completing Part 2. Identify resolution taken and the dates and initials of the persons making the entries.

k. Schedule for retesting.

4. Weekly progress reports include information for tests conducted since the preceding report and the following:

   a. Completed data forms.
   b. Equipment or system tested, including test number, system or equipment tag number and location, and notation about the apparent acceptability of results.
   c. Activities scheduled but not conducted per schedule.
   d. Commissioning compliance issue report log.
   e. Schedule changes for remaining Commissioning-Process Work, if any.

5. Data trend logs shall be initiated and running prior to the time scheduled for the test demonstration.

   a. Trend log data format shall be multiple data series graphs. Where multiple data series are trend logged concurrently, present the data on a common horizontal time axis. Individual data series may be presented on a segmented vertical axis to avoid interference of one data series with another, and to accommodate different axis scale values. Graphs shall be sufficiently clear to interpret data within the accuracy required by the acceptance criteria.

   b. Attach to the data form printed trend log data collected during the test or test demonstration.

   c. Record, print out, and attach to the data form operator activity during the time the trend log is running. During the time the trend log is running, operator intervention not directed by the test procedure invalidates the test results.

6. System Alarm Logs: Record and print out a log of alarms that occurred since the last log was printed. Evaluate alarms to determine if the previous day's work resulted in any conditions that are not considered "normal operation."

a. Conditions that are not considered "normal operation" shall be reported on a commissioning issue report attached to the alarm log. Resolve as necessary. The intent of this requirement is to discover control system points or sequences left in manual or disabled conditions, equipment left disconnected, set points left with abnormal values, or similar conditions that may have resulted from failure to fully restore systems to normal, automatic control after test completion.

3.10 CERTIFICATE OF CONSTRUCTION PHASE COMMISSIONING COMPLETION

A. When Contractor considers that construction phase commissioning, or a portion thereof which Owner agrees to accept separately, is complete, Contractor shall prepare and submit to Owner and Commissioning Authority through Architect a comprehensive list of items to be completed or corrected. Failure to include an item on such list does not alter Contractor's responsibility to compete commissioning.

B. On receipt of Contractor's list, Commissioning Authority will make an inspection to determine whether the construction phase commissioning or designated portion thereof is complete. If Commissioning Authority's inspection discloses items, whether or not included on Contractor's list, which are not sufficiently complete as defined in "Construction Phase Commissioning Completion" Paragraph in the "Definitions" Article, Contractor shall, before issuance of the Certificate of Construction Phase Completion, complete or correct such items on notification by Commissioning Authority. In such case, Contractor shall then submit a request for another inspection by Commissioning Authority to determine construction phase commissioning completion.

C. Contractor shall promptly correct deficient conditions and issues discovered during commissioning. Costs of correcting such deficient conditions and issues, including additional testing and inspections, the cost of uncovering and replacement, and compensation for Architect's and Commissioning Authority's services and expenses made necessary thereby, shall be at Contractor's expense.

D. When construction phase commissioning or designated portion is complete, Commissioning Authority will prepare a Certificate of Construction Phase Commissioning that shall establish the date of completion of construction phase commissioning. Certificate of Construction Phase Commissioning Completion shall be submitted prior to requesting inspection for determining date of Substantial Completion.

END OF SECTION 01 08 00

SECTION 01 12 00 - MULTIPLE CONTRACT PROJECT SUMMARY-PROJECT SCHEDULE

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

A. Section includes:

1. Project information.
2. Work covered by Contract Documents.
3. Construction schedule.
4. Requirements and assignments for each Contract.
5. Owner-furnished products.
6. Access to site.
7. Coordination with occupants.
8. Work restrictions.

B. Section includes a summary of each contract, including responsibilities for coordination and temporary facilities and controls.

C. Each Contractor is responsible to review all Drawings and Specifications for every contract to gain a complete understanding and knowledge of the entire Project, to determine how the work of each contract is to interface with every other contract.

1.3 DEFINITIONS

A. Permanent Enclosure: As determined by Architect, the condition at which roofing is insulated and weathertight; exterior walls are insulated and weathertight; and all openings are closed with permanent construction; and all exterior joints are sealed.

1.4 PROJECT INFORMATION

A. Project Identification: Reconstruction to Waverly Jr./ Sr. High School Phase Two

1. Project Location: 1 Fredrick Street, Waverly, New York 14892

B. Owner: Waverly Central School District

1. Address: 15 Fredrick Street, Waverly, New York 14892

C. Architect: Tetra Tech Engineers, Architects & Landscape Architects, P.C., d/b/a Tetra Tech Architects & Engineers.

1. Address: Cornell Business & Technology Park, 10 Brown Road, Ithaca, New York 14850

D. Construction Manager: LeChase Construction Services, LLC

1. Address: 11849 East Corning Rd, Corning, New York 14830

2. Construction Manager has been engaged for this Project to serve as an advisor to Owner and to provide assistance in administering the Contract for Construction between Owner and each Contractor, according to a separate contract between Owner and Construction Manager.

E. Project Representative: Project Representative will be appointed by Owner.

1. Project Representative will provide assistance in administering the Contract for Construction between Owner and each Contractor, according to provisions of Division 01 Section "Project Management and Coordination."

F. Building Code in Effect for Project: New York State Uniform Fire Prevention and Building Code and the Energy Conservation Construction Code of New York State.

1. Comply with the following: Building standards of the New York State Education Department.

1.5 WORK COVERED BY CONTRACT DOCUMENTS

A. The Work of the Project is defined by the Contract Documents and consists of the following:

1. Interior and exterior building renovations.

B. Type of Contract:

1. Project will be constructed under coordinated, generally concurrent multiple contracts. Contracts for this Project include the following:

a. General Contract
b. Mechanical Contract
c. Electrical Contract
d. Plumbing Contract
e. Cooperative Purchase Wellness Center Specialties Contract
f. Cooperative Purchase Gymnasium Specialties Contract
g. Cooperative Purchase Gymnasium Digital Display Systems Contract
h. State Contract Building Automation Controls Contract
i. State Contract Communication and Security Systems Contract
j. State Contract Auditorium Projection Systems Contract

C. 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.

1.6 CONSTRUCTION SCHEDULE

A. The Work shall be conducted in accordance with the following schedule:

1. General Contract:

    a. Commencement of Construction (Off-Site Activities): Immediately following Contract Award.
    b. Commencement of Construction (On-Site Activities): January 29, 2024.
    c. Submittals: Provide all submittals within 30 days after contract award.
    d. Substantial Completion date: As Outlined in Project Phasing Drawing included at the end of the specifications section.
    e. Final completion date: March 28, 2025.
    f. Refer to the Project Milestone Schedule included at the end of this specification section.

2. Mechanical Contract:

    a. Commencement of Construction (Off-Site Activities): Immediately following Contract Award.
    b. Commencement of Construction (On-Site Activities): January 29, 2024.
    c. Submittals: Provide all submittals within 30 days after contract award.
    d. Substantial Completion date: As Outlined in Project Phasing Drawing included at the end of this specification section.
    e. Final completion date: March 28, 2025
    f. Refer to the Project Milestone Schedule included at the end of this specification section.

3. Electrical Contract:

    a. Commencement of Construction (Off-Site Activities): Immediately following Contract Award.
    b. Commencement of Construction (On-Site Activities): January 29, 2024.
    c. Submittals: Provide all submittals within 30 days after contract award.
    d. Substantial Completion date: As Outlined in Project Phasing Drawing included at the end of this specification section.
    e. Final completion date: March 28, 2025.
    f. Refer to the Project Milestone Schedule included at the end of this specification section.

4. Plumbing Contract:

    a. Commencement of Construction (Off-Site Activities): Immediately following Contract Award.
    b. Commencement of Construction (On-Site Activities): January 29, 2024.
    c. Submittals: Provide all submittals within 30 days after contract award.

d. Substantial Completion date: As Outlined in Project Phasing Drawing included at the end of this specification section.
e. Final completion date: May 2, 2025.
f. Refer to the milestone schedule included at the end of this specification section.

5. Cooperative Purchase Wellness Center Specialties Contract:

a. Commencement of Construction (Off-Site Activities): Immediately following Contract Award.
b. Commencement of Construction (On-Site Activities): January 29, 2024.
c. Submittals: Provide all submittals within 30 days after contract award.
d. Substantial Completion date: As Outlined in Project Phasing Drawing included at the end of this specification section.
e. Final completion date: March 28, 2025.
f. Refer to the Project Milestone Schedule included at the end of this specification section.

6. Cooperative Purchase Gymnasium Specialties Contract:

a. Commencement of Construction (Off-Site Activities): Immediately following Contract Award.
b. Commencement of Construction (On-Site Activities): January 29, 2024.
c. Submittals: Provide all submittals within 30 days after contract award.
d. Substantial Completion date: As Outlined in Project Phasing Drawing included at the end of this specification section.
e. Final completion date: March 28, 2025.
f. Refer to the Project Milestone Schedule included at the end of this specification section.

7. Cooperative Purchase Gymnasium Digital Display Systems Contract:

a. Commencement of Construction (Off-Site Activities): Immediately following Contract Award.
b. Commencement of Construction (On-Site Activities): January 29, 2024.
c. Submittals: Provide all submittals within 30 days after contract award.
d. Substantial Completion date: As Outlined in Project Phasing Drawing included at the end of this specification section.
e. Final completion date: March 28, 2025.
f. Refer to the Project Milestone Schedule included at the end of this specification section.

8. State Contract Building Automation Controls Contract:

a. Commencement of Construction (Off-Site Activities): Immediately following Contract Award.
b. Commencement of Construction (On-Site Activities): January 29, 2024.
c. Submittals: Provide all submittals within 30 days after contract award.
d. Substantial Completion date: As Outlined in Project Phasing Drawing included at the end of this specification section.

e. Final completion date: March 28, 2025.
f. Refer to the Project Milestone Schedule included at the end of this specification section.

9. State Contract Communication and Security Systems Contract:

a. Commencement of Construction (Off-Site Activities): Immediately following Contract Award.
b. Commencement of Construction (On-Site Activities): January 29, 2024.
c. Submittals: Provide all submittals within 30 days after contract award.
d. Substantial Completion date: As Outlined in Project Phasing Drawing included at the end of this specification section.
e. Final completion date: March 28, 2025.
f. Refer to the Project Milestone Schedule included at the end of this specification section.

10. State Contract Auditorium Projection Systems Contract:

a. Commencement of Construction (Off-Site Activities): Immediately following Contract Award.
b. Commencement of Construction (On-Site Activities): January 29, 2024.
c. Submittals: Provide all submittals within 30 days after contract award.
d. Substantial Completion date: As Outlined in Project Phasing Drawing included at the end of this specification section.
e. Final completion date: March 28, 2024.
f. Refer to the Project Milestone Schedule included at the end of this specification section.

1.7 REQUIREMENTS FOR EACH CONTRACT

A. Included in Each Contract:

1. In addition to specific responsibilities indicated in this Section, each contract is responsible to provide the following for its own work:

a. Construction layout.
b. Sleeves.
c. Anchor bolts.
d. Hangers and supports for piping, equipment, and systems.
e. Equipment pads.
f. Cutting and patching.
g. Through-penetration firestopping.

2. Provide materials and comply with installation requirements specified in Sections other than Contractor's own designated Specification Sections for above-listed items, as applicable.

B. Substitutions: Each contractor shall cooperate with other contractors involved to coordinate approved substitutions with remainder of the work.

C. Temporary Facilities and Controls: In addition to specific responsibilities for temporary facilities and controls indicated in this Section, each contractor is responsible for the following:

1. Installation, operation, maintenance, and removal of each temporary facility necessary for its own normal construction activity, and costs and use charges associated with each facility, except as otherwise provided for in this Section.

2. Temporary utilities, as follows:

   a. Drinking water for its own construction personnel.
   b. Provisions for dust, fume and odor control for its own activities.
   c. Supplemental heating, cooling, and ventilation necessary exclusively for its own activities.
   d. Plug-in electric power cords and extension cords, supplementary plug-in task lighting, and special lighting necessary exclusively for its own activities.

3. Support facilities, as follows:

   a. Its own field office, complete with necessary furniture, and telephone service.
   b. Its own storage sheds.
   c. Traffic controls for its own construction activities.
   d. Dewatering facilities and drains for its own construction activities.
   e. Waste disposal facilities for collection and legal disposal of its own hazardous waste materials.
   f. Shoring and bracing for its own construction activities.
   g. Staging and scaffolding for its own construction activities.
   h. Lifts and hoists for its own construction activities.

4. Security and protection facilities, as follows:

   a. Environmental protection for its own construction activities.
   b. Temporary erosion and sedimentation control for its own construction activities.
   c. Security enclosure and lockup of its own tools, materials, and equipment.
   d. Temporary enclosures for its own construction activities.
   e. Temporary fire protection for its own construction activities.

5. Moisture and mold control.

6. Construction aids and miscellaneous services and facilities necessary exclusively for its own construction activities.

D. Cleaning and Protection: Each contractor is responsible for the following:

1. Progress cleaning of work areas affected by its operations on a daily basis.
2. Protection of its own installed construction.
3. Final cleaning of its work and of work areas affected by its operations.

1.8 CONTRACT ASSIGNMENTS

A. Contract Assignments: In addition to specific responsibilities indicated in this Section, the contracts noted below are assigned certain responsibilities, as follows:

1. Excavation (including support and protection), shall be the work of the General Contract, except as outlined below.

    a. Environmental and erosion controls as required shall be the responsibility of the General Contract.
    b. Excavation for plumbing work within the building footprint and to a distance five feet outside the building footprint shall be the work of the plumbing contractor.

2. Saw Cutting as required for the work of each contract is the responsibility of the General Contractor.

3. Concrete Slab removal and replacement as required for the work of each contract is the responsibility of the General Contractor.

4. Blocking (including roof blocking) for the work of each contract shall be the work of the General Contract. Each contract is responsible for identifying blocking sizes and locations for its own work and advising of the General Contractor of such, in writing, in a timely manner.

5. Roofing Infills for the work of each contract shall be the work of the General Contract.

6. Openings in walls, floors and roofs:

    a. In new surfaces: Providing openings, including lintels and structural framing shall be the work of the General Contract. Each contract is responsible for identifying opening sizes and locations for its own work and advising the General Contractor of such, in writing, in a timely manner.

    b. In existing surfaces: Providing openings, including lintels and structural framing shall be the work of the General Contract. Each contract is responsible for identifying opening sizes and locations for its own work and advising the General Contractor of such, in writing, in a timely manner.

    c. Size lintels and structural framing for openings in accordance with the information on the Drawings.

    d. Provide openings by personnel experienced in work similar to that indicated for this Project, whose work has resulted in construction with a record of successful in-service performance.

7. Furnishing of access panels for the work of each contract shall be the work of each contract for its own work.

    a. In new and existing surfaces: Installing access panels shall be the work of the General Contract.

8. Furnishing roof-mounted equipment curbs for the work of each contract shall be the work of each contract for its own work.

    a. Installing roof-mounted equipment curbs (including flashing and sealing) shall be the work of the General Contract.

9. Furnishing and installing vandal-resistant roof vent caps and roof drain clamping ring, adjustable extensions and dome strainers, shall be the work of the Plumbing Contract.

10. Painting for the work of each contract shall be the work of the General Contract, except as follows:

    a. Identification painting (such as for piping and equipment) for the work of each contract shall be the work of each contract for its own work.

    b. Providing all room signage, including electrical display signage, shall be the work of the General Contractor.

        1) Providing wiring, devices and conduit to electrical signage shall be the work of the Electrical Contractor.

    c. Providing all the interconnection between exhaust/make-up air fans and the fire alarm system shall be the work of the Electrical Contractor.

    d. Furnishing of the emergency gas solenoid valve control and relay panels shall be the work of the Plumbing Contractor.

        1) Installing the emergency gas solenoid valve control and relay panels and providing the wiring shall be the work of the Electrical Contractor.

11. Providing linear grilles for casework shall be the work of the General Contract.

12. Radon Mitigation: Providing imported fill drainage course for concrete slabs-on-grade and vapor barrier/retarder system, including sealing of joints, penetrations and perimeters shall be the work of the General Contract.

    a. Providing radon mitigation piping and equipment shall be the work of the Plumbing Contract.

13. Furnishing mechanical louvers and grilles for exterior walls shall be the work of the Mechanical Contract.

    a. Installing louvers and grilles for exterior walls (including flashing and sealing) shall be the work of the General Contract.

14. Furnishing motor starters for the work of each contract shall be the work of each contract for its own work.

    a. Installing constant speed motor starters shall be the work of the Electrical Contract.
    b. Installing Variable Frequency Motor Controllers shall be the work of each contract for its own work.

15. Providing automatic door operators shall be the work of the General Contract, including installing control wiring from activation device (push-plate switch) to operator.

    a. Providing power to operator shall be the work of the Electrical Contract.

16. Contractors' Preliminary Construction Schedule: At the Preconstruction Conference, the General Contractor shall submit a preliminary horizontal bar-chart-type construction schedule in accordance with Division 01 Section “Construction Progress Documentation”. At the initial progress meeting, each contract, including cooperative purchase contracts and state contracts, shall submit a matching preliminary horizontal bar-chart schedule showing construction operations sequenced and coordinated with overall construction in accordance with Division 01 Section “Construction Progress Documentation”.

    a. The schedules shall be mutually coordinated by the contractors, and the General Contractor shall perform the administrative task of producing a composite master schedule and distributing to Architect, Construction Manager, Owner, separate contractors, testing and inspecting agencies, and other parties with a need-to-know schedule responsibility.

17. Contractors' Construction Schedules: At intervals provided in Division 01 Section “Construction Progress Documentation,” each contract, including cooperative purchase contracts and state contracts, shall update its schedule, from which the General Contractor shall produce a composite master schedule.

    a. The General Contractor shall distribute composite master schedules to Architect, Construction Manager, Owner, separate contractors, testing and inspecting agencies, and other parties with a need-to-know schedule responsibility.

18. Provide work specified in Sections other than Contractor’s own designated Specification Sections for above-listed items, as applicable.

19. Maintain existing Air Handler Units 7 and 8 serving occupied areas of the building throughout the course of construction.

    a. The General Contractor shall provide all necessary temporary structural support of existing units as required.
    b. The Mechanical Contractor shall provide all necessary temporary ducting as required.
    c. The electrical Contractor shall provide all necessary temporary power as required.
    d. The State Contract Building Automation Controls Contractor shall provide all necessary temporary control work to maintain the existing units.

20. Structural Shoring as required for the work of each contract is the responsibility of the general contractor.

B. Field Engineering and Surveying: The General Contract is responsible for field engineering and surveying.

C. Temporary HVAC: The Mechanical Contract is responsible for temporary HVAC before permanent enclosure of building is complete and all associated costs. The Mechanical Contract is responsible for temporary HVAC after permanent enclosure of building is complete, but Owner will pay utility-use charges.

1. Use of permanent systems for temporary HVAC is prohibited.

D. Temporary Ventilation: The Mechanical Contract is responsible for temporary ventilation before permanent enclosure of building is complete and all associated costs. The Mechanical Contract is responsible for temporary ventilation after permanent enclosure of building is complete, but Owner will pay utility-use charges.

1. Use of permanent systems for temporary ventilation is prohibited.

E. Waste Disposal and Recycling Facilities: For debris not classified as hazardous waste, the General Contract is responsible for providing waste-collection and recycling containers, including all costs for hauling, tipping fees, and placement on site.

1. Each contractor is responsible for daily collection of its own waste materials and disposal into the waste-collection containers that are provided by each prime contractor.

2. Each contractor is responsible for daily collection of its own recyclable waste and disposal into recycling containers or bins, as well as daily inspection of containers or bins for contamination and removal of contaminated materials.

F. Fire Stopping:

1. Each Contractor is responsible for fire stopping and joint sealing as required for their own work.

1.9 GENERAL CONTRACT REQUIREMENTS

A. Unless noted otherwise, Work in the General Contract includes, but is not limited to, that shown on the following Drawings, with the exception of work procured through cooperative purchase and/or New York state contract, as indicated elsewhere in this specification section:

1. Title Sheets.
2. Symbols and Abbreviations (G) Drawings.
3. Code Compliance (AG) Drawings.
4. Phasing (G) Drawings.
5. Hazardous Materials (AH) Drawings.
6. Survey/ Mapping (AV) Drawings.
7. Civil (AC) Drawings.
8. Architectural (AA) Drawings.
9. Structural (AS) Drawings.

B. Unless noted otherwise, Work in the General Contract includes, but is not limited to, that covered by the following Specifications, with the exception of work procured through cooperative purchase and/or New York state contract, as indicated elsewhere in this specification section:

1. Division 01 (General Requirements) Specification sections.

2. Division 02 (Existing Conditions) Specification sections and as follows.

3. Division 03 (Concrete) Specification sections.

4. Division 04 (Masonry) Specification sections.

5. Division 05 (Metals) Specification sections and as follows:

   a. Provide all necessary structural support as required for the installation of gymnasium equipment, including scoreboards, video boards, and sound equipment. Gymnasium equipment including basketball backstops, backboards and goals to be furnished and installed by Gymnasium Specialties Contractor. Gymnasium scoreboards, video board and sound system to be furnished and installed by Gymnasium Digital Display Systems Contractor.

6. Division 06 (Wood, Plastics, and Composites) Specification sections.

7. Division 07 (Thermal and Moisture Protection) Specification sections.

8. Division 08 (Openings) Specification sections and as follows:

   a. 08 71 00 Door Hardware

      1) General Contractor to furnish and install all electrified hardware. Communications and Security Systems Contractor to connect hardware to existing access control system and update programming.

9. Division 09 (Finishes) Specification sections and as follows:

   a. 09 65 66 Resilient Athletic Flooring

      1) Perform all work associated with preparing surface to receive new finishes as specified by manufacturer. Resilient Athletic Flooring interior finish to be furnished and installed by Wellness Center Specialties Contractor.

10. Division 10 (Specialties) Specification sections.

11. Division 11 (Equipment):

    a. 11 66 23 Gymnasium Equipment

       1) Install Floor Inserts Furnished by Gymnasium Specialties Contractor.

       2) Weight Room equipment to be furnished and installed by Wellness Center Specialties Contractor.

3) Perform all work associated with preparing surfaces to receive new safety pads. Safety pads to be furnished and installed by Wellness Center Specialties Contractor.

b. 11 66 53 Gymnasium Dividers

1) Provide structural steel framing as required for the installation of gymnasium dividers. Divider curtains to be furnished and installed by Wellness Center Specialties Contractor.

c. 11 68 33.43 Track and Field Equipment

1) Coordinate Installation of In Ground Pole Vault Box with Supplier.

12. Division 12 (Furnishings):

a. 12 24 13 Roller Window Shades
b. 12 32 13 Manufactured Wood-Veneer- Faced Casework
c. 12 32 16 Manufactured Plastic- Laminate- Faced Casework

13. Division 31 (Earthwork) Specification sections.

14. Division 32 (Exterior Improvements) Specification sections.

15. Division 33 (Utilities) Specification sections.

C. Temporary facilities and controls in the General Contract include, but are not limited to, the following:

1. Temporary utilities, as follows:

2. Support facilities, as follows:

a. Own Field office as required for the work of this contract.
b. Temporary roads and paved areas.
c. Snow and ice removal.
d. Project signs.
e. Temporary stairs.

3. Security and protection facilities, as follows:

a. Environmental protection.
b. Stormwater control.
c. Tree and plant protection.
d. Pest control.
e. Site enclosure fence.
f. Security enclosure and lockup.
g. Barricades, warning signs, and lights.
h. Temporary railings.
i. Temporary egress.
j. Covered walkways.

k. Temporary partitions.
l. Temporary fire-protection facilities.

4. Restoration of Owner's existing facilities used as temporary facilities.

1.10 MECHANICAL CONTRACT REQUIREMENTS

A. Unless noted otherwise, Work in the Mechanical Contract includes, but is not limited to, that shown on the following Drawings, with the exception of work procured through cooperative purchase and/or New York state contract, as indicated elsewhere in this specification section:

1. Title Sheets.
2. Symbols and Abbreviations (G) Drawings.
3. Code Compliance (AG) Drawings.
4. Phasing (G) Drawings.
5. Mechanical (AM) Drawings.

B. Unless noted otherwise, Work in the Mechanical Contract includes, but is not limited to, the following, with the exception of work procured through cooperative purchase and/or New York state contract, as indicated elsewhere in this specification section:

1. Division 01 (General Requirements) Specification sections.

2. Division 02 (Existing Conditions) Specification sections.

3. Division 03 (Concrete) Specification sections, as follows:

a. 03 30 53 Miscellaneous Cast-in-Place Concrete as required for the Work of this Contract.

4. Division 05 (Metals) Specification sections, as follows:

a. 05 50 00 Metal Fabrications, as required for the Work of this Contract.

5. Division 07 (Thermal and Moisture Protection) Specification sections, as follows:

a. 07 21 00 Thermal Insulation, as required for the Work of this Contract.
b. 07 84 13 Penetration Firestopping, as required for the Work of this Contract.
c. 07 92 00 Joint Sealants, as required for the Work of this Contract.

6. Division 08 (Openings) Specification sections, as follows:

a. 08 31 13 Access Doors and Frames, as required for the Work of this Contract.

7. Division 23 (Heating, Ventilating and Air Conditioning) Specification sections and as follows:

a. 23 08 00 Commissioning of HVAC, provide necessary labor and materials for completion of commissioning as indicated by Commissioning Agent.

b. 23 09 00 Instrumentation and Control for HVAC, Provide mechanical support as necessary for successful implementation of HVAC Instrumentation and Controls. The Energy Management and Control System including operator work stations, distributed controls and integrated electronic components shall be furnished and installed by the Building Automation Controls Contractor.

C. Temporary facilities and controls in the Mechanical Contract include, but are not limited to, the following:

a. Own Field office as required for the work of this contract.

1.11 ELECTRICAL CONTRACT REQUIREMENTS

A. Unless noted otherwise, Work in the Electrical Contract includes, but is not limited to, that shown on the following Drawings, with the exception of work procured through cooperative purchase and/or New York state contract, as indicated elsewhere in this specification section:

1. Title Sheets.
2. Symbols and Abbreviations (G) Drawings.
3. Code Compliance (AG) Drawings.
4. Phasing (G) Drawings.
5. Electrical (AE) Drawings.

B. Unless noted otherwise, Work in the Electrical Contract includes, but is not limited to, the following, with the exception of work procured through cooperative purchase and/or New York state contract, as indicated elsewhere in this specification section:

1. Division 01 (General Requirements) Specification sections.

2. Division 02 (Existing Conditions) Specification sections.

3. Division 03 (Concrete) Specification sections, as follows:

a. 03 30 53 Miscellaneous Cast-in-Place Concrete as required for the Work of this Contract.

4. Division 05 (Metals) Specification sections, as follows:

a. 05 50 00 Metal Fabrications, as required for the Work of this Contract.

5. Division 07 (Thermal and Moisture Protection) Specification sections, as follows:

a. 07 21 00 Thermal Insulation, as required for the Work of this Contract.
b. 07 84 13 Penetration Firestopping, as required for the Work of this Contract.
c. 07 92 00 Joint Sealants, as required for the Work of this Contract.

6. Division 08 (Openings) Specification sections, as follows:

a. 08 31 13 Access Doors and Frames, as required for the Work of this Contract.

7. Division 11 (Equipment) Specification Sections as follows:

   a. 11 66 23 Gymnasium Equipment

      1) Provide all required electrical connections, circuitry, pathways, and wiring for operable basketball backstops, backboards and goals. Operable basketball backstops, backboards and goals to be furnished and installed by Gymnasium Specialties Contractor.

   b. 11 66 53 Gymnasium Dividers

      1) Provide all required electrical connections, circuitry, pathways, and wiring for operable gymnasium divider curtain, including safe path sensor system. Operable gymnasium divider curtain to be furnished and installed by Wellness Center Specialties Contractor.

8. Division 12 (Furnishings) Specifications sections as follows:

   a. 12 66 00 Telescoping Stands

      1) Provide all required electrical connections, circuitry, pathways, and wiring for telescoping stands in the gymnasium. Gymnasium telescoping stands, and modifications to existing telescoping stands to be furnished and installed by the Gymnasium Specialties Contractor.

9. Division 23 (Heating, Ventilating and Air Conditioning) Specification sections, as follows.

   a. Provide all required electrical connections, circuitry, pathways, and wiring for all equipment and components of this division.

   b. 23 08 00 Commissioning of HVAC, provide necessary electrical support for completion of commissioning as indicated by Commissioning Agent.

   c. 23 09 00 Instrumentation and Control for HVAC, Provide electrical support as necessary for successful implementation of HVAC Instrumentation and Controls. The Energy Management and Control System including operator work stations, distributed controls and integrated electronic components shall be furnished and installed by the Building Automation Controls Contractor.

10. Division 26 (Electrical) Specification sections.

11. Division 27 (Communications) Specification sections.

12. Division 28 (Electronic Safety and Security) Specification sections.

C. Temporary facilities and controls in the Electrical Contract include, but are not limited to, the following:

   1. Own Field office as required for the work of this contract.

2. Temporary utilities, as follows:

   a. Electric power service and distribution as required for all trades.
   b. Lighting, including site lighting.

3. Electric Power Service from Permanent Existing System: Electric power from permanent existing system is available for use. Provide connections and extensions of services as required for construction operations.

   a. Field Office Use Charges: Electric power service use charges for electricity used by all entities for construction field offices to be paid by the owner.

      1) Maximum one 100 A, 240 V, single-phase connection per construction field office. Assume a diversified peak connected load factor of 12 kW.
      2) Maximum number of construction field offices: One per contract

4. Restoration of Owner's existing facilities used as temporary facilities.

1.12 PLUMBING CONTRACT REQUIREMENTS

A. Unless noted otherwise, Work in the Plumbing Contract includes, but is not limited to, that shown on the following Drawings, with the exception of work procured through cooperative purchase and/or New York state contract, as indicated elsewhere in this specification section:

   1. Title Sheets.
   2. Symbols and Abbreviations (G) Drawings.
   3. Code Compliance (AG) Drawings.
   4. Phasing (G) Drawings.
   5. Plumbing (AP) Drawings.

B. Unless noted otherwise, Work in the Plumbing Contract includes, but is not limited to, the following, with the exception of work procured through cooperative purchase and/or New York state contract, as indicated elsewhere in this specification section:

   1. Division 01 (General Requirements) Specification sections.

   2. Division 02 (Existing Conditions) Specification sections.

   3. Division 03 (Concrete) Specification sections, as follows:

      a. 03 30 53 Miscellaneous Cast-in-Place Concrete as required for the Work of this Contract.

   4. Division 05 (Metals) Specification sections, as follows:

      a. 05 50 00 Metal Fabrications, as required for the Work of this Contract.

   5. Division 07 (Thermal and Moisture Protection) Specification sections, as follows:

      a. 07 21 00 Thermal Insulation, as required for the Work of this Contract.

b. 07 84 13 Penetration Firestopping, as required for the Work of this Contract.
c. 07 92 00 Joint Sealants, as required for the Work of this Contract.

6. Division 08 (Openings) Specification sections, as follows:

a. 08 31 13 Access Doors and Frames, as required for the Work of this Contract.

7. Division 22 (Plumbing) Specification sections.

8. Division 23 (Heating, Ventilating and Air Conditioning) Specification sections, as follows.

a. 23 08 00 Commissioning of HVAC, provide necessary plumbing support for completion of commissioning as indicated by Commissioning Agent.

C. Temporary facilities and controls in the Plumbing Contract include, but are not limited to, the following:

1. Temporary utilities, as follows:

a. Water service.
b. Sanitary facilities.

2. Water Service from Existing System: Water from Owner's existing water system is available for use without metering and without payment of use charges. Provide connections and extensions of services as required for use by all entities for construction operations.

3. Restoration of Owner's existing facilities used as temporary facilities.

1.13 COOPERATIVE PURCHASE WELLNESS CENTER SPECIALTIES CONTRACT REQUIREMENTS

A. Work in the Cooperative Purchase Wellness Center Specialties Contract includes, but is not limited to the following:

1. Furnish and install operable divider curtain in Wellness Center 136.
2. Furnish and install safety pads in Auxiliary Gymnasium 118, Weight Room 195 and Wellness Center 136.
3. Furnish and install resilient athletic flooring in Weight Room 195, Passage 182.1 and Auxiliary Gymnasium 118.
4. Furnish and install indoor artificial turf surfacing in specified area of Weight Room 195.
5. Furnish and install weight room equipment in Weight Room 195.

B. Cooperative Purchase Wellness Center Specialties Contract also includes, but is not limited to, the following:

1. Division 01 (General Requirements) Specification sections.

2. Division 02 (Existing Conditions) Specification sections.

3. Division 03 (Concrete) Specification sections, as follows:

   a. 03 30 53 Miscellaneous Cast-in-Place Concrete as required for the Work of this Contract.

4. Division 05 (Metals) Specification sections, as follows:

   a. 05 50 00 Metal Fabrications, as required for the Work of this Contract.

5. Division 07 (Thermal and Moisture Protection) Specification sections, as follows:

   a. 07 21 00 Thermal Insulation, as required for the Work of this Contract.
   b. 07 84 13 Penetration Firestopping, as required for the Work of this Contract.
   c. 07 92 00 Joint Sealants, as required for the Work of this Contract.

6. Division 08 (Openings) Specification sections, as follows:

   a. 08 31 13 Access Doors and Frames, as required for the Work of this Contract.

7. Division 09 (Finishes) Specification sections, as follows:

   a. 09 65 66 Resilient Athletic Flooring

      1) Furnish and install all Resilient Athletic Flooring as shown in contract documents. Floor preparation by others.

   b. 11 66 23 Gymnasium Equipment

      1) Furnish and install safety pads as indicated.

   c. 11 66 53 Gymnasium Dividers

   d. 11 68 33.43 Track and Field Equipment

8. Restoration of Owner's existing facilities used as temporary facilities.

1.14 COOPERATIVE PURCHASE GYMNASIUM SPECIALTIES CONTRACT

A. Work in the Cooperative Purchase Gymnasium Specialties Contract includes but is not limited to the following:

   1. Furnish and install all Bleachers Work shown on Architectural (AA) Drawings, unless noted otherwise, and any Bleacher work shown on all other drawings and further defined below.

   2. Furnish and install all work associated with basketball backstops systems including electrically operable backstops, backboards and goals.

   3. Furnish and install all athletics equipment in Wellness Center 136.

B. The Cooperative Purchase Telescoping Bleacher Contract also includes, but is not limited to, the following:

1. Division 01 (General Requirements) Specification sections.

2. Division 02 (Existing Conditions) Specification sections.

3. Division 03 (Concrete) Specification sections, as follows:

   a. 03 30 53 Miscellaneous Cast-in-Place Concrete as required for the Work of this Contract.

4. Division 05 (Metals) Specification sections, as follows:

   a. 05 50 00 Metal Fabrications, as required for the Work of this Contract.

5. Division 07 (Thermal and Moisture Protection) Specification sections, as follows:

   a. 07 21 00 Thermal Insulation, as required for the Work of this Contract.
   b. 07 84 13 Penetration Firestopping, as required for the Work of this Contract.
   c. 07 92 00 Joint Sealants, as required for the Work of this Contract.

6. Division 08 (Openings) Specification sections, as follows:

   a. 08 31 13 Access Doors and Frames, as required for the Work of this Contract.

7. Division 11 (Equipment):

   a. 11 66 23 Gymnasium Equipment

8. Division 12 (Furnishings):

   a. 12 66 00 Telescoping Stands

9. Restoration of Owner's existing facilities used as temporary facilities.

C. Furnish and install all labor, material, supervision, equipment, scaffolding, layout, engineering, deliveries, trucking, hoisting, rigging, shop drawings, submittals, and all other items related and required to complete all Bleacher Work in accordance with the Contract Documents and all applicable codes having jurisdiction.

D. The Contractor represents they have expertise in the performance of Work for this trade and assures all items to be complete, functional and installed in accordance with the best practices consistent with premium quality workmanship.

E. Bleacher Co-Op contractor to provide all components for the entire Gymnasium Bleacher System, with the exception of required electrical connections. Coordinate with Electrical Contractor for Connections.

1.15 COOPERATIVE PURCHASE GYMNASIUM DIGITAL DISPLAY SYSTEMS CONTRACT REQUIREMENTS

A. Work in the Cooperative Purchase Gymnasium Digital Display Systems Contract includes, but is not limited to, the following:

1. Furnish and install all scoreboards in Wellness Center 136.
2. Furnish and install video display board in Wellness Center 136.
3. Furnish and install sound system in Wellness Center 136.

B. The Cooperative Purchase Gymnasium Digital Display Systems Contract also includes, but is not limited to, the following:

1. Division 01 (General Requirements) Specification sections.

2. Division 02 (Existing Conditions) Specification sections.

3. Division 03 (Concrete) Specification sections, as follows:

   a. 03 30 53 Miscellaneous Cast-in-Place Concrete as required for the Work of this Contract.

4. Division 05 (Metals) Specification sections, as follows:

   a. 05 50 00 Metal Fabrications, as required for the Work of this Contract.

5. Division 07 (Thermal and Moisture Protection) Specification sections, as follows:

   a. 07 21 00 Thermal Insulation, as required for the Work of this Contract.
   b. 07 84 13 Penetration Firestopping, as required for the Work of this Contract.
   c. 07 92 00 Joint Sealants, as required for the Work of this Contract.

6. Division 08 (Openings) Specification sections, as follows:

   a. 08 31 13 Access Doors and Frames, as required for the Work of this Contract.

7. All work associated with receiving, transporting, installing, final connections, commissioning, and owner training shall be the responsibility of the Cooperative purchase video display contract.

8. Coordinate fully with the work of other contracts as required.

1.16 STATE CONTRACT BUILDING AUTOMATION CONTROLS CONTRACT REQUIREMENTS

A. Work in the State Contract Building Automation Controls Contract includes, but is not limited to, the following:

1. Furnish and install the Energy Management and Control System including operator work stations, distributed controls and integrated electronic components.
2. Integrate new work with existing control system software.

B. The State Contract Purchase Building Automation Controls Contract also includes, but is not limited to, the following:

1. Division 01 (General Requirements) Specification sections.

2. Division 02 (Existing Conditions) Specification sections.

3. Division 03 (Concrete) Specification sections, as follows:

   a. 03 30 53 Miscellaneous Cast-in-Place Concrete as required for the Work of this Contract.

4. Division 05 (Metals) Specification sections, as follows:

   a. 05 50 00 Metal Fabrications, as required for the Work of this Contract.

5. Division 07 (Thermal and Moisture Protection) Specification sections, as follows:

   a. 07 21 00 Thermal Insulation, as required for the Work of this Contract.
   b. 07 84 13 Penetration Firestopping, as required for the Work of this Contract.
   c. 07 92 00 Joint Sealants, as required for the Work of this Contract.

6. Division 08 (Openings) Specification sections, as follows:

   a. 08 31 13 Access Doors and Frames, as required for the Work of this Contract.

7. Division 23 (Heating, Ventilation, and Air Conditioning):

   a. 23 08 00 Commissioning of HVAC
   b. 23 09 00 Instrumentation and Control for HVAC

8. Restoration of Owner's existing facilities used as temporary facilities.

1.17 STATE CONTRACT COMMUNICATIONS AND SECURITY SYSTEMS CONTRACT REQUIREMENTS

A. Work in the State Contract Communications and Security Systems Contract includes, but is not limited to, the following:

1. Furnish and install combination public address speaker/ clock units and integrate into the existing public address system.
2. Furnish and install security cameras and provide modifications to existing monitoring system as required to accommodate new work.
3. Integrate and modify existing access controls systems to accommodate new work.

B. The State Contract Communications and Security Systems Contract also includes, but is not limited to, the following:

1. Division 01 (General Requirements) Specification sections.

2. Division 02 (Existing Conditions) Specification sections.

3. Division 03 (Concrete) Specification sections, as follows:

   a. 03 30 53 Miscellaneous Cast-in-Place Concrete as required for the Work of this Contract.

4. Division 05 (Metals) Specification sections, as follows:

   a. 05 50 00 Metal Fabrications, as required for the Work of this Contract.

5. Division 07 (Thermal and Moisture Protection) Specification sections, as follows:

   a. 07 21 00 Thermal Insulation, as required for the Work of this Contract.
   b. 07 84 13 Penetration Firestopping, as required for the Work of this Contract.
   c. 07 92 00 Joint Sealants, as required for the Work of this Contract.

6. Division 08 (Openings) Specification sections, as follows:

   a. 08 31 13 Access Doors and Frames, as required for the Work of this Contract.

7. Division 23 (Heating, Ventilation, and Air Conditioning):
   a. 23 08 00 Commissioning of HVAC
   b. 23 09 00 Instrumentation and Control for HVAC

8. Restoration of Owner's existing facilities used as temporary facilities.

1.18 STATE CONTRACT AUDITORIUM PROJECTION SYSTEMS CONTRACT REQUIREMENTS

A. Work in the State Contract Auditorium Projection System Contract includes, but is not limited to, the following:

   1. Furnish and install auditorium projection systems including digital projector, control systems and user interface devices.

B. The State Contract Auditorium Projection System Contract also includes, but is not limited to, the following:

   1. Division 01 (General Requirements) Specification sections.

   2. Division 02 (Existing Conditions) Specification sections.

   3. Division 03 (Concrete) Specification sections, as follows:

      a. 03 30 53 Miscellaneous Cast-in-Place Concrete as required for the Work of this Contract.

4. Division 05 (Metals) Specification sections, as follows:

   a. 05 50 00 Metal Fabrications, as required for the Work of this Contract.

5. Division 07 (Thermal and Moisture Protection) Specification sections, as follows:

   a. 07 21 00 Thermal Insulation, as required for the Work of this Contract.
   b. 07 84 13 Penetration Firestopping, as required for the Work of this Contract.
   c. 07 92 00 Joint Sealants, as required for the Work of this Contract.

6. Division 08 (Openings) Specification sections, as follows:

   a. 08 31 13 Access Doors and Frames, as required for the Work of this Contract.

7. Division 23 (Heating, Ventilation, and Air Conditioning):
   a. 23 08 00 Commissioning of HVAC
   b. 23 09 00 Instrumentation and Control for HVAC

8. Restoration of Owner's existing facilities used as temporary facilities.

1.19 OWNER-FURNISHED PRODUCTS

A. Owner will furnish products indicated. The Work for the Contract identified includes receiving, unloading, handling, storing, protecting, and installing Owner-furnished products.

B. Owner-Furnished Products Procured under State Contract: Refer to cooperative purchase and state contract requirement summaries above.

1.20 ACCESS TO SITE

A. General: Contractor shall have limited use of Project site for construction operations as indicated on Drawings by the Contract limits and as indicated by requirements of this Section.

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, loading areas, 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.

D. Condition of Existing Grounds: Maintain portions of existing grounds, landscaping, and hardscaping affected by construction operations throughout construction period. Repair damage caused by construction operations.

1.21 COORDINATION WITH OCCUPANTS

A. Owner Occupancy: Owner will occupy site and building(s) 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 day-to-day 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 Construction Manager and approval of authorities having jurisdiction.

2. Maintain in operation all life safety provisions and devices (including, but not limited to, fire alarms, fire extinguishers, smoke detectors, heat sensors, emergency and exit lighting, defibrillators, and similar items).

3. Notify the Construction Manager not less than 72 hours in advance of activities that will affect Owner's operations.

B. Coordination with School Schedule:

1. Normal School Year: Owner intends to maintain a full educational program during the normal school year throughout duration of Project, and will make full use of the building and site, unless noted otherwise.

a. School and special activities may be conducted within building and on site outside regular school hours, including holidays and weekends.

b. Owner's personnel will perform normal custodial and maintenance services for the building areas and systems not involved in construction activities, unless noted otherwise.

2. Summer: Owner may schedule a summer school program or organized recreation activities at the building or site.

a. Owner will staff building, at a minimum, with administrative, custodial and maintenance personnel during summer period.

C. Identification: The Contractor shall require its personnel and those of its subcontractors, sub-subcontractors and suppliers to wear yellow safety vests and visible photo-identification badges acceptable to the Owner, at all times for identification and security purposes.

1.22 WORK RESTRICTIONS

A. Work Restrictions, General: Comply with restrictions on construction operations.

1. Comply with limitations on use of public streets and other requirements of authorities having jurisdiction.

B. On-Site Work Hours: Limit work to normal business working hours of 7 a.m. to 3:30 p.m., Monday through Friday, except as otherwise indicated. Movement of materials is not permitted in Owner-occupied areas during normal business working hours.

1. Other Weekday Hours: Consult with Construction Manager as needed.
2. Weekend Hours: Consult with Construction Manager as needed.
3. Hours for Noisy Activity (in excess of 60 dB): Consult with Construction Manager as needed.

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 Construction Manager not less than 72 hours in advance of proposed utility interruptions.
2. Obtain Construction Manager 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.

1. Notify Construction Manager not less than 72 hours in advance of proposed disruptive operations.
2. Obtain Construction Manager written permission before proceeding with disruptive operations.

E. Indoor Air Quality (IAQ): Protect indoor air quality, including control of emissions and moisture control during construction. Develop a construction IAQ management plan to be followed.

1. Control of Emissions: Provide measures and conduct operations to:

a. Protect HVAC systems.

b. Protect against emissions from such sources as environmental tobacco smoke, combustion contaminants, biological contaminants, volatile organic compounds (VOCs), formaldehyde, soil gases, pesticides, particles and fibers.

c. Provide low- and zero-VOC materials.

d. Protect against dust infiltration, especially during dust-producing activities.

e. Isolate work areas to prevent contamination of clean or occupied spaces.

f. Continuously maintain and regularly inspect areas and IAQ measures to prevent contamination of building areas.

g. Provide adequate ventilation, including, but not limited to:

1) Minimum 48- Hour pre-ventilation of packaged dry products which have odors or VOC emissions, prior to installation. Condition products without containers and packaging to maximize off-gassing of VOCs off- site.

2) Adequate ventilation during and after installation of interior wet products and interior final finishes, and

3) Appropriate air filtration, including filter replacement.

h. Schedule construction operations involving wet products prior to packaged dry products to the greatest extent possible.

i. Vacuum carpeted and soft surfaces with a high-efficiency particulate arrestor (HEPA) vacuum.

j. Flush out building for a minimum of 72 hours or longer if required to dissipate emissions, prior to occupancy.

2. Moisture Control: Provide measures and conduct operations to:

a. Provide proper housekeeping to keep materials dry.
b. Inspect areas and materials for dampness and mold growth.
c. Schedule construction operations so that absorptive materials are protected and weather-proof building as quickly as possible.
d. Test for moisture content, moisture penetration and microbial growth to maintain within permissible limits.

F. Comply with requirements in Division 01 Section “Governmental Safety Requirements.”

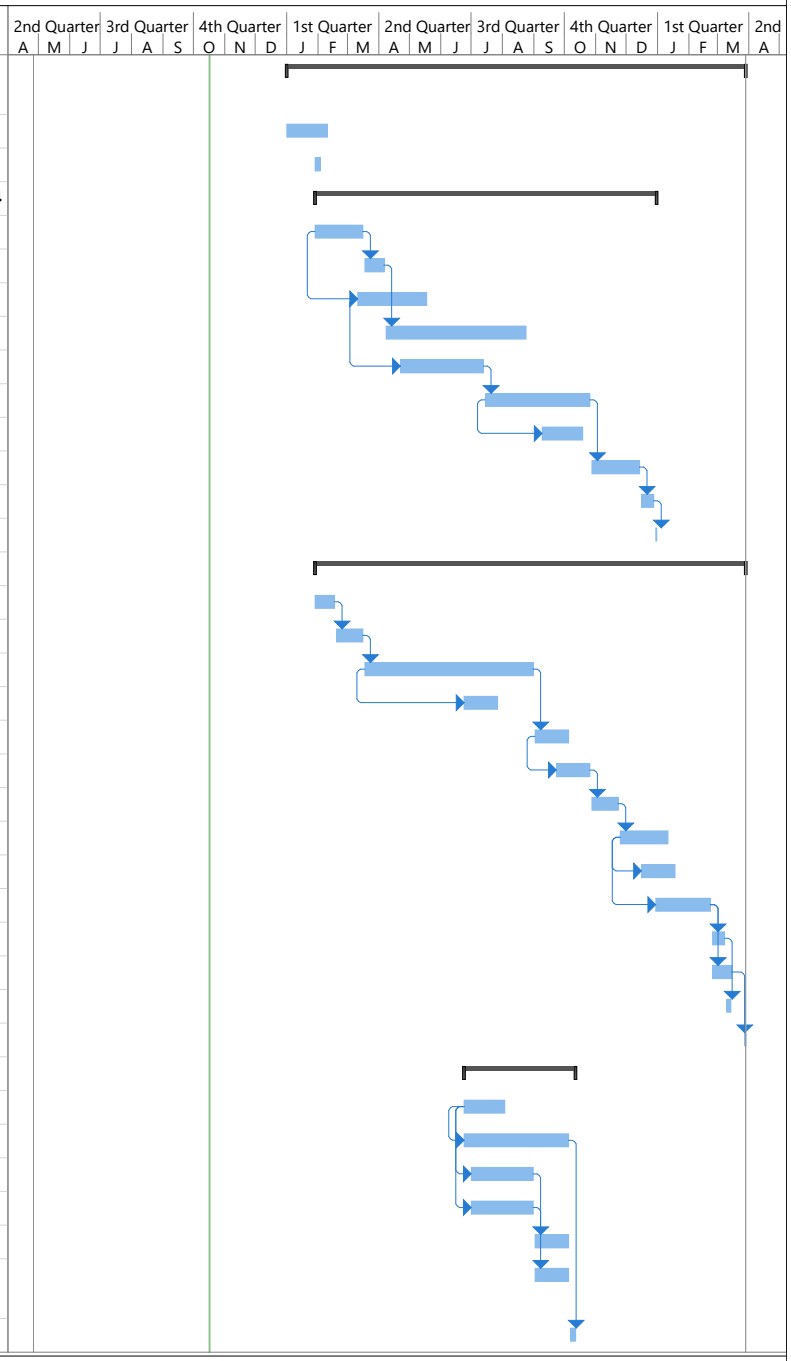
PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION (Not Used)

END OF SECTION 01 12 00

Waverly CSD Phase Two Reconstruction to Waverly Jr./ Sr. Highschool

ID	Task Name	Duration	Start	Finish
1	**Waverly CSD Phase Two Reconstruction to Waverly Jr./ Sr. High School**	**325 days**	**Mon 1/1/24**	**Fri 3/28/25**
2	Submittals	30 days	Mon 1/1/24	Fri 2/9/24
3	Mobilization	5 days	Mon 1/29/24	Fri 2/2/24
12	**Wellness Center Renovations (Areas B and C)**	**241 days**	**Mon 1/29/24**	**Mon 12/30/24**
13	Hazardous Material Demolition (Second Shift)	35 days	Mon 1/29/24	Fri 3/15/24
14	Non- Hazardous Material Demolition	15 days	Mon 3/18/24	Fri 4/5/24
15	Foundations and Structural Infrastructure	50 days	Mon 3/11/24	Fri 5/17/24
17	MEP Rough Ins	100 days	Mon 4/8/24	Fri 8/23/24
16	Roofing Construction	60 days	Mon 4/22/24	Fri 7/12/24
18	Interior Finishes	75 days	Mon 7/15/24	Fri 10/25/24
20	MEP Finishes	30 days	Mon 9/9/24	Fri 10/18/24
19	Gym Specialties	35 days	Mon 10/28/24	Fri 12/13/24
21	Punch List/ Substantial Completion/ Final Cleaning	10 days	Mon 12/16/24	Fri 12/27/24
22	Owner Occupancy	1 day	Mon 12/30/24	Mon 12/30/24
23	**STEM Area and Auxiliary Gymnasium Renovations (Area A)**	**305 days**	**Mon 1/29/24**	**Fri 3/28/25**
24	Hazardous Material Demolition and Abatement (Second Shift)	15 days	Mon 1/29/24	Fri 2/16/24
26	Non- Hazardous Material Demolition	20 days	Mon 2/19/24	Fri 3/15/24
25	Areas B and C Staging/ Overflow	120 days	Mon 3/18/24	Fri 8/30/24
27	Exterior Canopy Sitework/ Construction	25 days	Mon 6/24/24	Fri 7/26/24
28	Wall Framing and Construction	25 days	Mon 9/2/24	Fri 10/4/24
29	MEP Rough Ins	25 days	Mon 9/23/24	Fri 10/25/24
30	Sheet Rock and Tape	20 days	Mon 10/28/24	Fri 11/22/24
31	Flooring, Ceilings, Wall Tile, and Paint	35 days	Mon 11/25/24	Fri 1/10/25
32	MEP Finishes	25 days	Mon 12/16/24	Fri 1/17/25
33	Casework Installation	40 days	Mon 12/30/24	Fri 2/21/25
34	Final Cleaning	10 days	Mon 2/24/25	Fri 3/7/25
36	Punch List	15 days	Mon 2/24/25	Fri 3/14/25
35	FF&E Installation	4 days	Mon 3/10/25	Thu 3/13/25
37	Owner Occupancy	1 day	Fri 3/28/25	Fri 3/28/25
4	**Classroom Cooling Upgrades**	**80 days**	**Mon 6/24/24**	**Fri 10/11/24**
5	Demolition	30 days	Mon 6/24/24	Fri 8/2/24
10	Day Automation Controls	75 days	Mon 6/24/24	Fri 10/4/24
6	UV Installation	45 days	Mon 7/1/24	Fri 8/30/24
8	GC Casework Modifications and Installations	45 days	Mon 7/1/24	Fri 8/30/24
7	UV Installation (Second Shift Coordinated with Owner)	25 days	Mon 9/2/24	Fri 10/4/24
9	GC Casework Modifications and Installations (Second Shift Coordinated with Owner)	25 days	Mon 9/2/24	Fri 10/4/24
11	Final Commissioning and Equipment Start Up	5 days	Mon 10/7/24	Fri 10/11/24

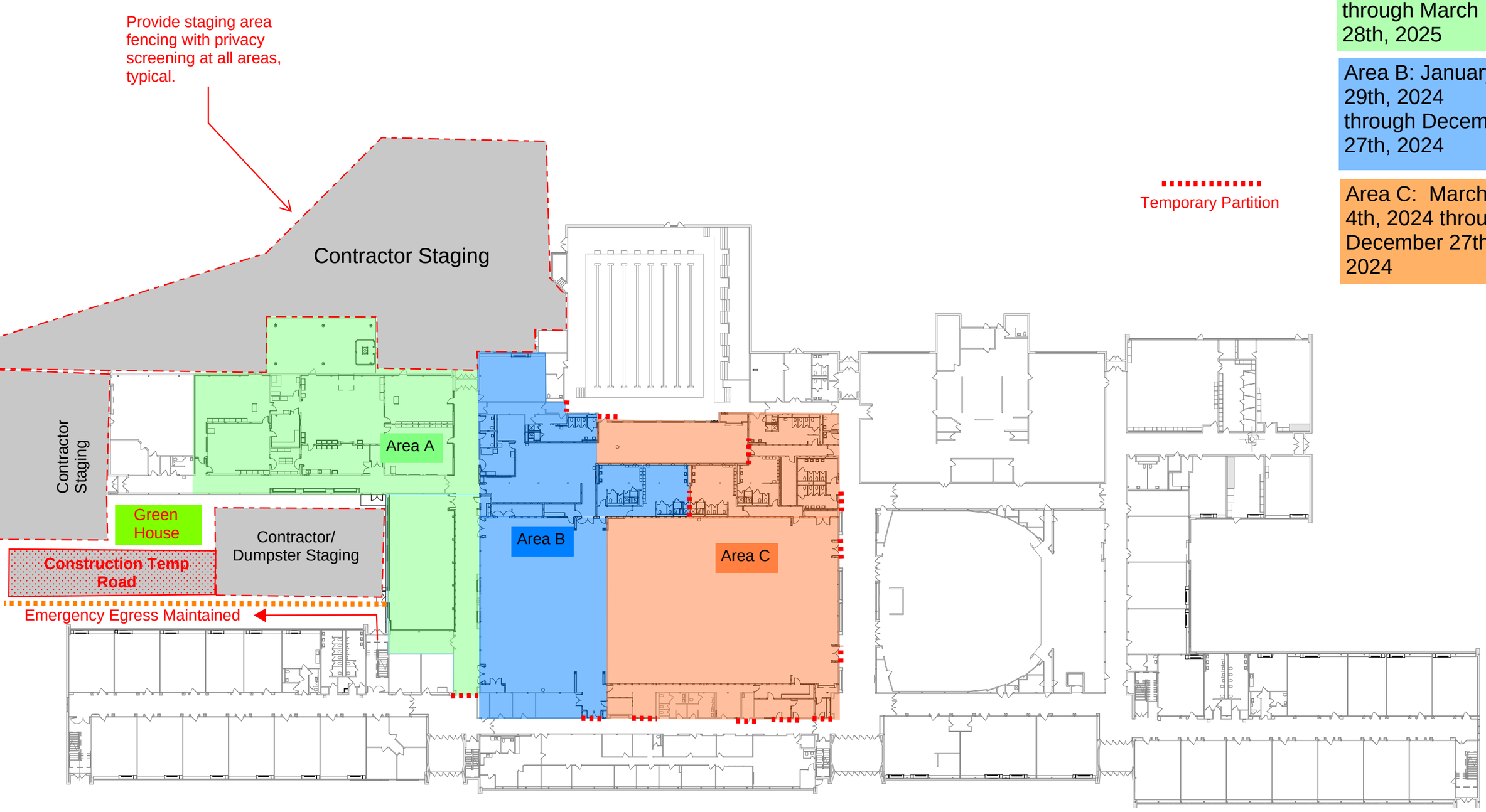


Waverly CSD Phase 2 Reconstruction to Jr/ Sr High School Phase Two Phasing Drawing

Area A: January 29th, 2024 through March 28th, 2025

Area B: January 29th, 2024 through December 27th, 2024

Area C: March 4th, 2024 through December 27th, 2024



SECTION 01 21 00 - ALLOWANCES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

A. Section includes administrative and procedural requirements governing allowances.

B. Types of allowances include the following:

1. Contingency allowances.

1.3 ACTION SUBMITTALS

A. Submit proposals for purchase of products or systems included in allowances.

1.4 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.

1.5 COORDINATION

A. Coordinate allowance items with other portions of the Work.

1.6 CONTINGENCY ALLOWANCES

A. Use the contingency allowance only as directed by Architect for Owner's purposes.

B. Allowance shall include cost to Contractor of specific products and materials under allowance and shall include taxes, freight, and delivery to Project site. Contractor's costs for receiving and handling at Project site, labor, installation, and similar costs related to products and materials under allowance shall be included as part of the allowance.

C. Overhead and profit related to the allowance shall be included as part of the Contract Sum and not part of the allowance.

1.7 ALLOWANCE PROCEDURES

A. Authorization for use of allowances is documented through Allowance Access Authorization form provided in the Project Manual, accompanied by substantiating data.
B. At Project closeout, unused amounts remaining in the allowances will be credited to Owner by Change Order.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION

3.1 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.

3.2 SCHEDULE OF ALLOWANCES – GENERAL CONTRACT

A. Allowance No. GC-1: Contingency Allowance: Include the sum of **$475,000** for use according to Owner's instructions.
B. Allowance No. GC-2: Abatement Allowance: Include the sum of **$100,000** for use according to Owner's instructions.

3.3 SCHEDULE OF ALLOWANCES – PLUMBING CONTRACT

A. Allowance No. PC-1: Contingency Allowance: Include the sum of **$40,000** for use according to Owner's instructions.

3.4 SCHEDULE OF ALLOWANCES – MECHANICAL CONTRACT

A. Allowance No. MC-1: Contingency Allowance: Include the sum of **$210,000** for use according to Owner's instructions.

3.5 SCHEDULE OF ALLOWANCES – ELECTRICAL CONTRACT

A. Allowance No. EC-1: Contingency Allowance: Include the sum of **$150,000** for use according to Owner's instructions.

Attachment: Allowance Access Authorization

END OF SECTION 01 21 00

ALLOWANCE ACCESS AUTHORIZATION:

Project: Waverly CSD – Additions and Alterations to Waverly Jr/Sr High School

Architect: Tetra Tech Architects & Engineers **Project No. 339070-22003**

Contractor:

AAA No.: **Initiation Date:**

The Allowance is allocated as follows:

Total original Contract Allowance was:	$
Amount of Contract Allowance Access previously authorized:	$
Adjusted Contract Allowance prior to this authorization is:	$
The amount of available Allowance will Decrease by this Access Authorization:	$
The remaining Contract Allowance, after this Access Authorization will be:	$

Recommended by:
Architect

By (Signature): _____

Date: _____

Recommended by:
Construction Manager [if applicable]

By (Signature): _____

Date: _____

Accepted by:
Contractor

By (Signature): _____

Date: _____

Approved by:
Owner

By (Signature): _____

Date: _____

SECTION 01 25 00 - SUBSTITUTION PROCEDURES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

A. Section includes administrative and procedural requirements 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.
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 Owner.

1.4 ACTION SUBMITTALS

A. Substitution Requests: 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 the "Request for Substitution" form attached to this Specification Section. Complete all sections of the form.

2. Documentation: Show compliance with requirements for substitutions and the following, as applicable:

a. Information to support identification of the proposed substitution as "for Cause" or "for Convenience".

b. Statement indicating why specified product or fabrication or installation cannot be provided, if applicable.

c. Coordination information, including a list of changes or revisions needed to other parts of the Work and to construction performed by Owner and separate contractors, that will be necessary to accommodate proposed substitution.

d. 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.

e. Product Data, including drawings and descriptions of products and fabrication and installation procedures.

f. Samples, where applicable or requested.

g. Certificates and qualification data, where applicable or requested.

h. List of similar installations for completed projects with project names and addresses and names and addresses of architects and owners.

i. Material test reports from a qualified testing agency indicating and interpreting test results for compliance with requirements indicated.

j. Evidence of compliance with building code in effect for Project.

k. 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.

l. Cost information, including a proposal of change, if any, in the Contract Sum.

m. 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.

n. 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. Such additional information or documentation may include detailed side-by-side comparison charts of the specified product and the proposed substitution, and other data. Only one substitution request for each product will be considered. Architect will make final determination as to whether the substitution is “for Cause” or “for Convenience”.

a. Architect will notify Contractor through Construction Manager of acceptance or rejection of proposed substitution.
b. Forms of Acceptance: Change Order, Construction Change Directive, or Architect's Supplemental Instructions for minor changes in the Work.

1.5 QUALITY ASSURANCE

A. Compatibility of Substitutions: Investigate and document compatibility of proposed substitution with related products and materials.

1.6 PROCEDURES

A. Coordination: Revise 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 on discovery of need for change.

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 is compatible with other portions of the Work.

e. Requested substitution has been coordinated with other portions of the Work.

f. Requested substitution provides specified warranty.

g. 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.

B. Substitutions for Convenience: Architect will consider requests for substitution if received within 15 days after 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 is compatible with other portions of the Work.

g. Requested substitution has been coordinated with other portions of the Work.

h. Requested substitution provides specified warranty.

i. 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.

PART 3 - EXECUTION (Not Used)

Attachment: Request for Substitution Form

END OF SECTION 01 25 00

TETRA TECH
ARCHITECTS & ENGINEERS

Request for Substitution

This form must be completely filled in with all relevant data by the Prime Contractor and submitted to the Architect in accordance with Project Manual Requirements for consideration before any request to change the drawing or specification requirements will be considered.

REFERENCE DATA

Project name:_____ Date of Request:_____

Location:_____ Architect's Project No:_____

Request by Contractor:_____

Address:_____

Contact person:_____ Phone:_____ Email: _____

SUBSTITUTION REQUEST DATA

(Provide statement indicating why specified product, fabrication or installation cannot be provided.)

SUBSTITUTION REQUESTED IS FOR: Reason for request:_____

☐ Named product. _____

☐ Product type, material, finish or formulation. _____

☐ Fabrication or installation methods. _____

Note whether substitution is for cause or convenience:_____

PRODUCT / MATERIAL / METHOD FOR WHICH SUBSTITUTION IS REQUESTED IS SHOWN ON THE FOLLOWING DOCUMENTS:

Specification: Section No:_____ Page(s):_____ Paragraph/Item No.:_____

Drawings: (List No's of all Drawings affected):_____

DETAILED COMPARISON

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.

COST/BENEFIT ANALYSIS

Describe in detail any alteration to any other part of the Works required by use of the requested substitution, including work by other Prime Contractors:

If applicable total net cost of any such other project required alterations, including overhead and profit: $ _____
(Indicate if cost is an "Add" or "Deduct" to contract sum.

Benefits to Owner other than financial: _____

Schedule impact (Note any impact on project schedule by proposed substitution):_____

ADDITIONAL INFORMATION REQUIRED

PRIME CONTRACTOR TO PROVIDE ADDITIONAL INFORMATION AS NECESSARY AND ATTACH THE FOLLOWING INFORMATION:

1. Manufacturer's technical data sheets on proposed products, including test results as applicable.
2. Manufacturer's standard form of warranty.
3. Letter on manufacturer's letterhead stating that manufacturer will warrant products as specified, if specification requires specific warranties not included in manufacturer's standard form of warranty.
4. Letter(s) from other Prime Contractor(s) responsible for works affected by proposed substitution which state the total cost(s) of all such work, if any alteration of other work is required. Prime Contractor submitting this Request for Substitution will be responsible to fully reimburse the Owner for all such additional costs; processed via a deduct Change Order.

CONTRACTOR'S CERTIFICATION

1. BY SUBMISSION OF THIS SUBSTITUTION REQUEST AND PER SIGNATURE BELOW, CONTRACTOR CERTIFIES THIS SUBSTITUTION REQUEST HAS BEEN REVIEWED AND APPROVED BY THE CONTRACTOR IN ACCORDANCE WITH THE PROJECT MANUAL REQUIREMENTS.
2. BY SUBMISSION OF THIS SUBSTITUTION REQUEST AND PER SIGNATURE BELOW CONTRACTOR CERTIFIES THE PROPOSED SUBSTITUTION COMPLIES WITH ALL APPLICABLE REQUIREMENTS OF THE CONTRACT DOCUMENTS AND REFERENCED CODES AND STANDARDS.
3. BY SUBMISSION OF THIS SUBSTITUTION REQUEST AND PER SIGNATURE BELOW CONTRACTOR HEREBY WAIVES ALL RIGHTS TO ADDITIONAL COMPENSATION OR TIME THAT MAY SUBSEQUENTLY BECOME NECESSARY BECAUSE OF FAILURE OF PROPOSED MATERIAL TO PRODUCE THE INDICATED AND REQUIRED RESULTS.

Name of Authorized Contractor Representative: _____

Signature of Authorized Contractor Representative: _____

Name of Contractor_____

Date_____

SECTION 01 26 00 - CONTRACT MODIFICATION PROCEDURES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General 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.

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, via the electronic form procedures outlined in Division 01 Section "Project Management and Coordination" and during the preconstruction conference.

1.4 PROPOSAL REQUESTS

A. Owner-Initiated Proposal Requests: Architect will issue a description of proposed changes in the Work that may require adjustment to the Contract Sum or the Contract Time, via the electronic form procedures outlined in Division 01 Section "Project Management and Coordination" and during preconstruction conference. If necessary, the description will include supplemental or revised Drawings and Specifications.

1. Proposal Requests issued by Architect are not instructions either to stop work in progress or to execute the proposed change.

2. Unless otherwise noted, within 14 days after receipt of Proposal Request, submit a quotation listing 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 submit a request for a change to the Architect through Construction Manager.

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 Division 01 Section "Substitution Procedures" if the proposed change requires substitution of one product or system for product or system specified.

7. Proposal Request Form: Use form acceptable to Architect.

1.5 ADMINISTRATIVE CHANGE ORDERS

A. Allowance Adjustment: See Division 01 Section "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 Proposal Request response, Architect will issue a Change Order for signatures of Owner, Architect, Construction Manager and Contractor .

1.7 CONSTRUCTION CHANGE DIRECTIVE

A. Construction Change Directive: Architect may issue a Construction Change Directive. 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 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 01 26 00

SECTION 01 29 00 - PAYMENT PROCEDURES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

A. Section includes 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.

B. AIA Document: Current, authorized editions of standard forms issued by the American Institute of Architects (AIA).

1. Where AIA Documents are identified in this Section, the use of facsimiles of AIA documents or non-AIA documents is prohibited.

1.4 SCHEDULE OF VALUES

A. Submit the schedule of values to Architect through Construction Manager at earliest possible date, but no later than fourteen days before the date scheduled for submittal of initial Applications for Payment.

B. Format and Content:

1. Use AIA Document G703 as form for schedule of values, with entries typewritten.

2. Identification: Include the following Project identification on the schedule of values:

a. Project name and location.
b. Architect's project number.
c. Contractor's name and address.
d. Date of submittal.

3. Use the Project Manual table of contents as a guide to establish line items for the schedule of values. Provide line item(s) for each Specification Section.

4. Arrange the schedule of values to indicate the following for each item listed, completing columns A, B and C of AIA Document G703:

   a. Column A: Indicate Specification Section number.
   b. Column B: Indicate Specification Section title, and provide separate line items for labor and materials.
   c. Column C: Provide separate line item dollar values for labor and materials. Round amounts to nearest whole dollar.

5. Provide a breakdown of the Contract Sum in enough detail to facilitate continued evaluation of Applications for Payment. In addition to line items for each applicable specification section, include the following:

   a. Project Startup:

      1) Include separate line items for project startup requirements, including the following separate line items:

         a) Insurance, based on actual invoice amount.
         b) Performance and payment bonds, based on actual invoice amount.
         c) Mobilization.
         d) Temporary facilities and controls.

   d. Submittals: Include a minimum of One percent of Contract Sum.

   e. Supervision: Include a minimum of Three percent of Contract Sum.

   f. Safety and Field Reports: Include a minimum of One percent of Contract Sum.

   g. Meetings: Provide a separate line item in the schedule of values for Contractor attendance at meetings. Include a minimum of One percentage of Contract Sum.

   h. Testing and Balancing (TAB): Include a minimum of Four percent of the Contract Sum percent as separate line items for testing and balancing requirements, as follows:

      1) Pre-TAB activities (20 percent of TAB).
      2) TAB activities (40 percent of TAB).
      3) Final TAB reports. (40 percent of TAB).

   i. Punch List: One percent of Contract Sum.

   j. Project Closeout:

      1) Include separate line items for project closeout requirements, as follows:

         a) Demobilization.
         b) Warranties.
         c) Final cleaning.
         d) Operation and maintenance manuals.

e) Project record documents.
f) Demonstration and training.

6. Each item in the schedule of values shall be complete. Include total cost and proportionate share of general overhead and profit for each item.

1.5 APPLICATIONS FOR PAYMENT

A. Each Application for Payment following the initial Application for Payment shall be consistent with previous applications as certified by Architect and Construction Manager.

B. Payment Application Times: The date for each progress payment is indicated in the Agreement between Owner and Contractor. The period of construction work covered by each Application for Payment is the period indicated in the Agreement.

1. Submit draft copy of Application for Payment seven days prior to due date for review by Construction Manager.

C. Application for Payment Forms: Use AIA Document G732 and AIA Document G703 as form for Applications for Payment.

D. Application Preparation: Complete every entry on form. Notarize and execute by a person authorized to sign legal documents on behalf of Contractor. Construction Manager will return incomplete applications without action.

1. Entries shall match data on the schedule of values.
2. Include amounts for work completed following previous Application for Payment, whether or not payment has been received.

E. Stored Materials: Include in Application for Payment amounts applied for materials or equipment purchased or fabricated and stored, but not yet installed. Differentiate between items stored on-site and items stored off-site.

1. Enter in column F (Materials Presently Stored) of AIA Document G703 the value of materials presently stored for which payment is sought. Recalculate the total of the column at the end of each pay period. This value covers both materials newly stored for which payment is sought and materials previously stored which are not yet incorporated into the Project. Payment by the Owner for stored materials does not result in a deduction from this column. Only as materials are incorporated into the Project is their value deducted from this column and incorporated into column E (Work Completed--This Period.).

2. Provide certificate of insurance, evidence of transfer of title to Owner, and consent of surety to payment, for stored materials.

3. Provide supporting documentation that verifies amount requested, such as paid invoices. Match amount requested with amounts indicated on documentation; do not include overhead and profit on stored materials.

F. Transmittal: Submit three signed and notarized original copies of each Application for Payment to Construction Manager.

G. Initial Application for Payment: Administrative actions and submittals that must precede or coincide with submittal of first Application for Payment include the following:

1. List of subcontractors.
2. Schedule of values.
3. Contractor's construction schedule.
4. Certificates of insurance and insurance policies.
5. Performance and payment bonds.

H. Final Payment Application: Submit final Application for Payment with releases and supporting documentation not previously submitted and accepted, including, but not limited to, two originals and two copies each of the following:

1. AIA Document G706, "Contractor's Affidavit of Payment of Debts and Claims."
2. AIA Document G706A, "Contractor's Affidavit of Release of Liens."
3. AIA Document G707, "Consent of Surety to Final Payment."

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION (Not Used)

Attachment: Stored Materials Invoicing Documentation form

END OF SECTION 01 29 00

TETRA TECH
ARCHITECTS & ENGINEERS

Stored Materials Invoicing Documentation

Project: _____

Project No.: _____ **Contract Type:** _____

Contractor: _____ **Subcontractor:** _____

Reason for Request:

_____

_____

Application for Payment No.: _____ **Date:** _____

1. **Material Identification**

Description: Quantity:

_____ _____

_____ _____

_____ _____

_____ _____

_____ _____

Provide Specific Location of Materials Stored:

_____

_____

_____

_____

_____

2. **Material Value** $ _____

☐ Attach an Invoice or Quantified Statement of Value.

3. **Certificate of Insurance**

☐ Attach a Certificate of Insurance for the above specified materials. Certificate shall name _____ (Name of District) as a loss payee with respect to the specified materials.

4. **Transfer of Title**

The Contractor hereby agrees to transfer complete ownership of all listed materials to _____ (Name of District) at the time payment is made to Contractor for the above referenced Application for Payment. The Contractor remains responsible for all contractual requirements for the above listed materials including complete installation and providing all warranties.

Signed Date

_____ _____

SECTION 01 31 00 - PROJECT MANAGEMENT AND COORDINATION

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General 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. Digital data files.
3. Owner's Project Representative activities.
4. Electronic form procedures.
5. Requests for Information (RFIs).
6. Project meetings.

1.3 COORDINATION PROCEDURES

A. Coordination: Coordinate construction operations included in different Sections of the Specifications to ensure efficient and orderly installation of each part of the Work. Coordinate construction operations, included in different Sections, which 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.
2. Coordinate installation of different components to ensure maximum performance and accessibility for required maintenance, service, and repair.
3. Make adequate provisions to accommodate items scheduled for later installation.

B. Administrative Procedures: Coordinate scheduling and timing of required administrative procedures with other construction activities 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. Installation and removal of temporary facilities and controls.
3. Project meetings.
4. Project closeout activities.

C. 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.

1.4 DIGITAL DATA FILES

A. Architect's Digital Data Files: Upon request, and at Architect's sole discretion, electronic copies of the Contract Drawings may be provided by Architect for Contractor's use in preparing submittals.

1. Architect may furnish Contractor digital data drawing files of the Contract Drawings for use in preparing Shop Drawings.

a. Architect makes no representations as to the accuracy or completeness of digital data drawing files as they relate to the Contract Drawings.

b. Format: The Contract Drawings may be available in AutoCAD and .pdf formats.

1) Architect's charge for drawings in AutoCAD format: $50 per drawing.
2) Architect's charge for drawings in .pdf format: $50 per request.

c. Contractor shall fill out and submit a Request for Electronic Drawing Files form included in Project Manual for any drawing files.

d. Contractor shall also execute a Terms of Electronic File Transfer (TOFT) included in Project Manual for any drawing files furnished in AutoCAD format.

e. The following drawings may be furnished for the appropriate discipline:

1) Floor plans.
2) Reflected ceiling plans.

1.5 OWNER'S PROJECT REPRESENTATIVE ACTIVITIES

A. Project Representative shall:

1. Serve as liaison between Architect, Contractor and Owner.

2. Perform on-site observations of the progress and quality of the Work as may be reasonably necessary to assist the Architect determine, in general, if the Work is being performed in a manner indicating that the Work when completed will be in conformance with the Contract Documents. Notify the Architect if, in the Project Representative's opinion, Work does not conform to the Contract Documents or requires special inspection or testing.

3. Monitor the Contractor's construction schedules on an ongoing basis and alert the Architect to conditions that may lead to delays in completion of the Work.

4. Coordinate shared access to work areas.

5. Coordinate and issue written approvals for acceptable interruptions of utilities and potentially disruptive activities.

6. Receive and review suggestions proposed by the Contractor, and submit them, together with recommendations, to the Architect.

7. Attend all meetings and report to the Architect on the proceedings.

8. Notify Architect when tests required by the Contract Documents and inspections by authorities having jurisdiction will be performed. Observe tests required by the Contract Documents and inspections by authorities having jurisdiction. Record and report to the Architect on test procedures, inspections, and results. Verify testing is performed in accordance with specified requirements and at appropriate times.

9. Maintain records at the construction site in an orderly manner, including correspondence, Contract Documents, Change Orders, Construction Change Directives, reports of meetings, Shop Drawings, Product Data and similar submittals; supplementary drawings, color schedules and requests for payment; and names, addresses telephone numbers, and email addresses of the Contractors, Subcontractors and principal material suppliers.

10. Maintain a daily log of activities at the site, including weather conditions, nature and location of Work being performed, verbal instructions and interpretations given to the Contractor, and specific observations. Record any occurrence or Work that might result in a claim for a change in Contract Sum or Contract Time. Maintain a list of visitors, their titles, and time and purpose of their visit.

11. Notify the Architect if any portion of the Work requiring Shop Drawings, Product Data or Samples is commenced before such submittals have been approved by the Architect. Receive and log Samples required at the site, notify the Architect when they are ready for examination, record the Architect’s action and maintain custody of approved Samples.

12. Review the Contractor's record copy of the Drawings, Specifications, Addenda, Change Orders and other Modifications at intervals appropriate to the stage of construction and notify the Architect of any apparent failure by the Contractor to maintain up-to-date records.

13. Review Applications for Payment and forward to the Architect with recommendations for disposition.

14. Assist the Architect in conducting inspections to determine the date or dates of Substantial Completion and the date of final completion.

15. Assist the Architect in receipt and transmittal to the Owner of documentation required of the Contractor at completion of the Work.

B. Project Representative shall not:

1. Authorize deviations from the Contract Documents.

2. Approve submittals or substitute materials or equipment.

3. Personally conduct or participate in tests or third party inspections.

4. Assume any of the responsibilities of the Contractor's superintendent or of Subcontractors.

5. Expedite the Work for the Contractor.

6. Have control over or charge of or be responsible for construction means, methods, techniques, sequences or procedures, or for safety precautions and programs in connection with the Work.

7. Authorize or suggest that the Owner occupy the Project in whole or in part.

1.6 ELECTRONIC FORM PROCEDURES

A. Use Architect's electronic form procedures for the following functions:

1. Request for Information (RFI) forms and logs.
2. Architect's Supplemental Instruction (ASI) forms and logs. Refer to Division 01 Section "Contract Modification Procedures".
3. Proposal Request (PR) forms and logs. Refer to Division 01 Section "Contract Modification Procedures".

B. Contractor and other parties granted access by the Architect to Project electronic form procedures shall follow instructions issued by the Architect during the preconstruction conference.

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, via the electronic form procedures outlined.

1. Coordinate and submit RFIs in a prompt manner so as to avoid delays in Contractor's work or work of others.

B. Content of the RFI: Include a detailed description of item needing information or interpretation and the following:

1. Project number.

2. RFI number.

3. Contract number and title.

4. Name of Contractor.

5. Name of Contractor's contact person.

6. Email address of Contractor's contact person.

7. RFI subject.

8. Question: Fully describe question or information requested. Include:

a. Specification Section number and title and related paragraphs, as appropriate.
b. Drawing number and detail references, as appropriate.

c. Field dimensions and conditions, as appropriate.
d. Contractor's suggested resolution. If Contractor's solution impacts the Contract Time or the Contract Sum, Contractor shall state impact in the RFI.

9. 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. Architect's Action: Architect will review each RFI, determine action required, and respond. Allow reasonable time for Architect's response for each RFI.

1. The following RFIs will be returned without action:

a. Requests for approval of submittals.
b. Requests for approval of substitutions.
c. Requests for coordination information already indicated in the Contract Documents.
d. Requests for adjustments in the Contract Time or the Contract Sum.
e. Requests for interpretation of Architect's actions on submittals.
f. Incomplete RFIs or inaccurately prepared RFIs.

2. Architect's action may include a request for 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 Division 01 Section "Contract Modification Procedures."

a. If Contractor believes the RFI response warrants change in the Contract Time or the Contract Sum, notify Architect and Construction Manager in writing within seven days of receipt of the RFI response.

D. On receipt of Architect's action, immediately distribute the RFI response to affected parties. Review response and notify Architect and Construction Manager within seven days if Contractor disagrees with response.

E. Electronic RFI Log: Architect will maintain a tabular log of RFIs organized by RFI number.

1.8 PROJECT MEETINGS

A. Site Preconstruction Conference: Construction Manager will schedule and conduct a site preconstruction conference, at a time convenient to Owner, Construction Manager and Architect.

1. Attendees: Authorized representatives of Owner, Owner's testing agency, Construction Manager, Architect, and their consultants; Geotechnical Engineer of Record; Contractor and its superintendent; 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.

2. Agenda: Discuss items of significance, including the following:

    a. Designation of key personnel and their duties.
    b. Lines of communication.
    c. Electronic form procedures (RFIs, ASIs, PRs).
    d. Submittal procedures.
    e. Subcontracts.
    f. Construction schedule.
    g. Temporary facilities and controls.
    h. Use of premises.
    i. Permits.
    j. Soil erosion and sediment control.
    k. Tree protection.
    l. Procedures for testing and inspecting.
    m. Roles and responsibilities of each party.
    n. Topsoil.
    o. Seeding/sodding.
    p. Planting.
    q. Concrete.
    r. Retaining walls.
    s. Planting islands.
    t. Railings.
    u. Staging removal.
    v. Track/synthetic turf.

3. Report: Construction Manager will prepare and distribute meeting report.

B. Progress Meetings: Construction Manager will conduct progress meetings at regular intervals, unless otherwise necessitated.

1. Attendees: In addition to representatives of Owner , Construction Manager, 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.

2. Agenda: Review report of previous progress meeting. Review other items of significance that could affect progress. Include topics for discussion as appropriate to status of Project.

    a. Review present and future needs of each entity present, including the following:

        1) Report of progress since previous meeting.

2) Architect/Engineer discussion items.

3) Status of ASIs, PRs, Change Orders.

4) Status of submittals.

5) 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.

a) 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) Review schedule for next period.

6) Date of Substantial Completion.

7) Status of RFIs.

8) Owner discussion items.

9) Discussion items for Contract.

10) General and administrative items, including such items as:

a) Project documentation.
b) Prohibitions.
c) Identification cards.
d) Separation.
e) Egress.
f) Conservation.

3. Report: Construction Manager will prepare and distribute the meeting report to each party present and to parties requiring information.

C. Health and Safety Committee Meetings: Owner will conduct health and safety committee meetings as needed, in accordance with requirements of Regulations of the Commissioner of Education, Part 155 (8 NYCRR 155), Section 155.5(c)(2).

1. Attendees: In addition to representatives of the Owner and Construction Manager, each contractor 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.

2. Agenda: Discuss items of significance, including the following:

a. Health and safety matters related to the construction project.

3. Report: Owner will prepare and distribute meeting report to each party present and to parties requiring information.

D. Project Closeout Conference: Construction Manager will schedule and conduct a project closeout conference, at a time convenient to Owner, Construction Manager and Architect, but no later than 90 days prior to final scheduled date of Substantial Completion.

1. Attendees: Authorized representatives of Owner, Construction Manager, Architect, and their consultants; Contractor and its superintendent; and other concerned parties shall attend the meeting. Participants at the meeting shall be familiar with Project and authorized to conclude matters relating to the Work.

2. Agenda: Discuss items of significance that could affect or delay Project closeout, including the following:

   a. Preparation of record documents.
   b. Procedures required prior to inspection for Substantial Completion and for final inspection for acceptance.
   c. Submittal of written warranties.
   d. Requirements for preparing operations and maintenance data.
   e. Requirements for delivery of material samples, attic stock, and spare parts.
   f. Requirements for demonstration and training.
   g. Owner's occupancy requirements.
   h. Responsibility for removing temporary facilities and controls.

3. Report: Construction Manager will prepare and distribute meeting report.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION (Not Used)

Attachment: Request for Electronic Drawing Files
Terms of Electronic File Transfer (TOFT)

END OF SECTION 01 31 00

TETRA TECH
ARCHITECTS & ENGINEERS

Cornell Business + Technology Park
10 Brown Road
Ithaca, New York 14850
Tel. (607) 277-7100
Fax (607) 277-1410

Request for Electronic Drawing Files – Business Office

Prime Contractor Name:

Prime Contractor Address:

Contact to Receive Invoice:

Project Name:

Project Number:

Project Manager:

Drawing Type: Some drawings may be only available as a PDF file and may NOT be available as an AutoCAD file.

☐ PDF Files ($50 per request) ☐ AutoCAD type files ($50 per file)

For PDF files:

List each Drawing # Requested – If requesting entire set note "All".

For AutoCAD files:

Number of drawing files

List each Drawing # Requested

Contractor Signature _____

TETRA TECH
ARCHITECTS & ENGINEERS

Cornell Business + Technology Park
10 Brown Road
Ithaca, New York 14850
Tel. (607) 277-7100
Fax (607) 277-1410

Terms of Electronic File Transfer (TOFT)

The purpose of this document is to establish the terms of use and liability related to the electronic transfer of files from Tetra Tech Engineers, Architects & Landscape Architects, P.C. d/b/a Tetra Tech Architects & Engineers (hereinafter "Tetra Tech") to the Recipient (designated below). This Agreement covers all electronic files transmitted to the Recipient, associated with the Project(s) listed below, that are not otherwise covered by a contractual agreement to provide such files.

Project(s) & Project #s: _____

_____

Recipient of Electronic Files:

Company Name: _____

Company Address: _____

_____

Terms of Electronic File Transfer:

1. The electronic files (Files) furnished by Tetra Tech to the person or entity receiving the Files (Recipient) are provided only for the convenience of the Recipient, and only for its sole use. RECIPIENT AGREES THAT, BY OPENING THE PACKAGE CONTAINING THE FILES, RECIPIENT SHALL BE BOUND BY AND SUBJECT TO THE TERMS OF THIS DISCLAIMER.

2. Recipient recognizes that the Files may not be adequate or appropriate for Recipient's needs. In the case of any defects in the Files or any discrepancies between the Files and the hardcopy of the Files bearing the seal of Tetra Tech's professional registrant (if applicable), the sealed hardcopy shall govern. Recipient accepts the Files on an "as-is" basis, with any and all faults. There are no express warranties made by Tetra Tech with respect to the Files, and any implied warranties are excluded.

3. WITHOUT LIMITING THE GENERALITY OF THE FOREGOING, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE ARE EXCLUDED. Tetra Tech assumes no responsibility for the accuracy or completeness of the Files, and any use or reuse of such electronic data for any purpose shall be at the Recipient's sole risk.

4. Furthermore, in consideration of the use of the electronic data and the Files, Recipient agrees, to the fullest extent permitted by law, to defend (by legal counsel selected by Tetra Tech), indemnify, and hold Tetra Tech harmless from any and all claims, damages, losses, costs, and expenses, including attorney's fees and court costs (including the costs of any appeals) arising out of or resulting from Recipient's use, reuse, or use by others, regardless of whether such claims, damages, losses, costs, and expenses are caused in whole or in part by Tetra Tech. The duty to defend, indemnify, and hold Tetra Tech harmless shall apply regardless of whether such claims, damages, losses, costs, and expenses arise out of causes of action for tort, including negligence, contract, warranty, or strict liability.

5. The Recipient agrees to the following use restrictions of the electronic files:

a. The use of these files is limited only to the operation and maintenance of the above referenced project(s).

6. By signing below, the Recipient accepts full responsibility for the use of all electronic files received from and/or produced by Tetra Tech for the Project(s) listed above and any documents, instructions, or otherwise produced there from by the Recipient along with all Terms of Electronic Transfer indicated herein. A copy of this Agreement, executed by Tetra Tech, will be provided before or with the first electronic file transmittal.

Signature	Type or Print Name	Title	Date

SECTION 01 32 00 - CONSTRUCTION PROGRESS DOCUMENTATION

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General 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. Reports.

1.3 INFORMATIONAL SUBMITTALS

A. Contractor's Construction Schedule: Initial schedule, of size required to display entire schedule for entire construction period. Follow format outlined in attachment at end of this Section.
B. Site Condition Reports: Submit at time of discovery of differing conditions.
C. Special Reports: Submit at time of unusual event.

1.4 COORDINATION

A. Secure time commitments for performing critical elements of the Work from entities involved.
B. Coordinate each construction activity in the network with other activities and schedule them in proper sequence.

1.5 CONTRACTOR’S CONSTRUCTION SCHEDULE, GENERAL

A. Time Frame: Extend schedule from date established for commencement of the Work to date of final completion.
B. Contract completion date shall not be changed by submission of a schedule that shows an early completion date, unless specifically authorized by Change Order.

1.6 CONTRACTOR’S CONSTRUCTION SCHEDULE (GANTT CHART)

A. Gantt-Chart Schedule: Submit a comprehensive, horizontal, Gantt-chart-type, Contractor's construction schedule per requirements of Division 01 Section “Multiple Contract Project Summary – Project Schedule”.

1. Format: Refer to accompanying “Format for Construction Schedule”.

B. Preparation: Indicate each significant construction activity separately, by Specification Section, coordinated with the schedule of values. Provide line item(s) for each Specification Section.

C. Schedule Updating: At monthly intervals, update schedule to reflect actual construction progress and activities.

D. Distribution: Distribute copies of approved schedule to Architect, Construction Manager, Owner, separate contractors, testing and inspecting agencies, and other parties with a need-to-know schedule responsibility.

1. When revisions are made, distribute updated schedules to the same parties.

1.7 REPORTS

A. Site Condition Reports: Immediately on discovery of a difference between site conditions and the Contract Documents, prepare and submit a detailed report. Include a detailed description of the differing conditions, together with recommendations for changing the Contract Documents.

B. Special Reports: When an event of an unusual and significant nature occurs at Project site, whether or not related directly to the Work, prepare and submit a special report. List chain of events, persons participating, response by Contractor's personnel, evaluation of results or effects, and similar pertinent information.

PART 2 - PRODUCTS (Not Used)

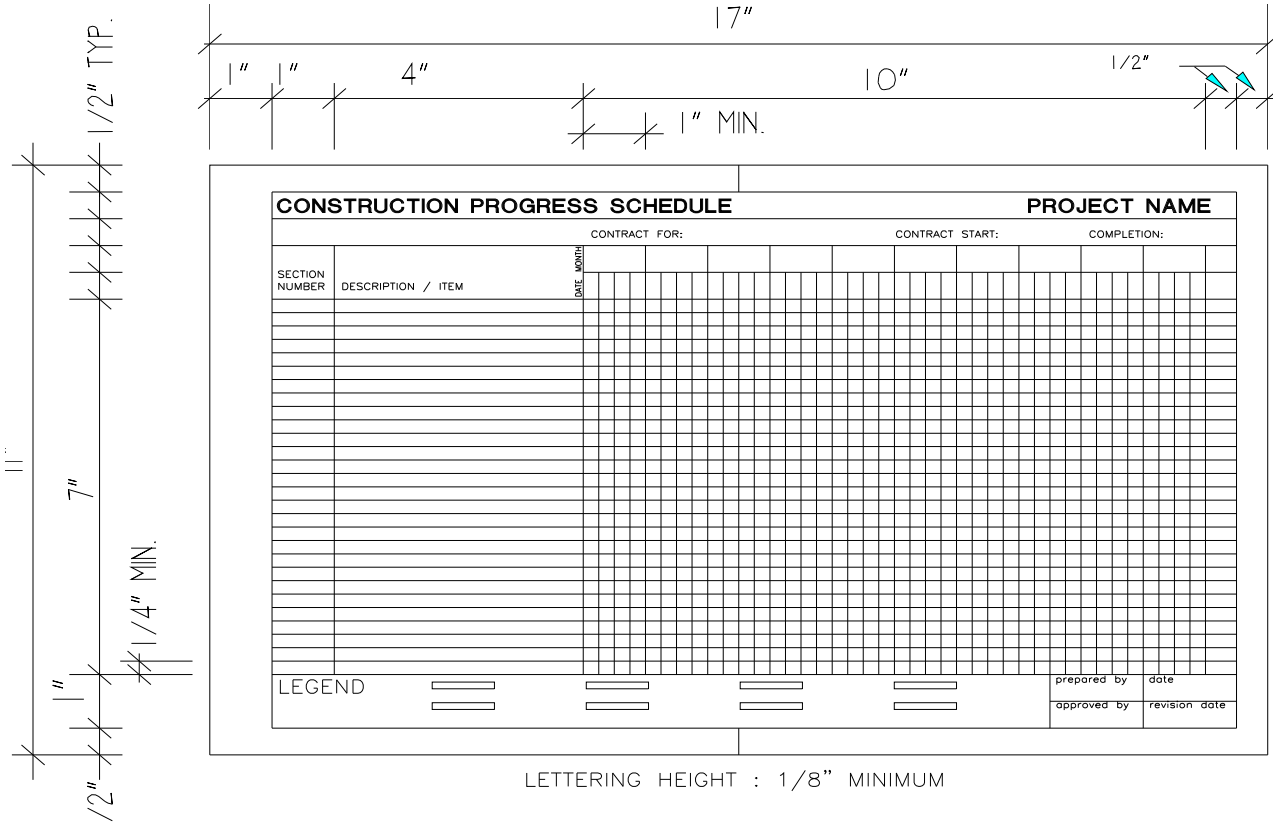
PART 3 - EXECUTION (Not Used)

Attachment: Format for Construction Schedule

END OF SECTION 01 32 00

SECTION 01 32 00 - PROJECT SCHEDULE - Attachment #1

FORMAT FOR
CONSTRUCTION SCHEDULE



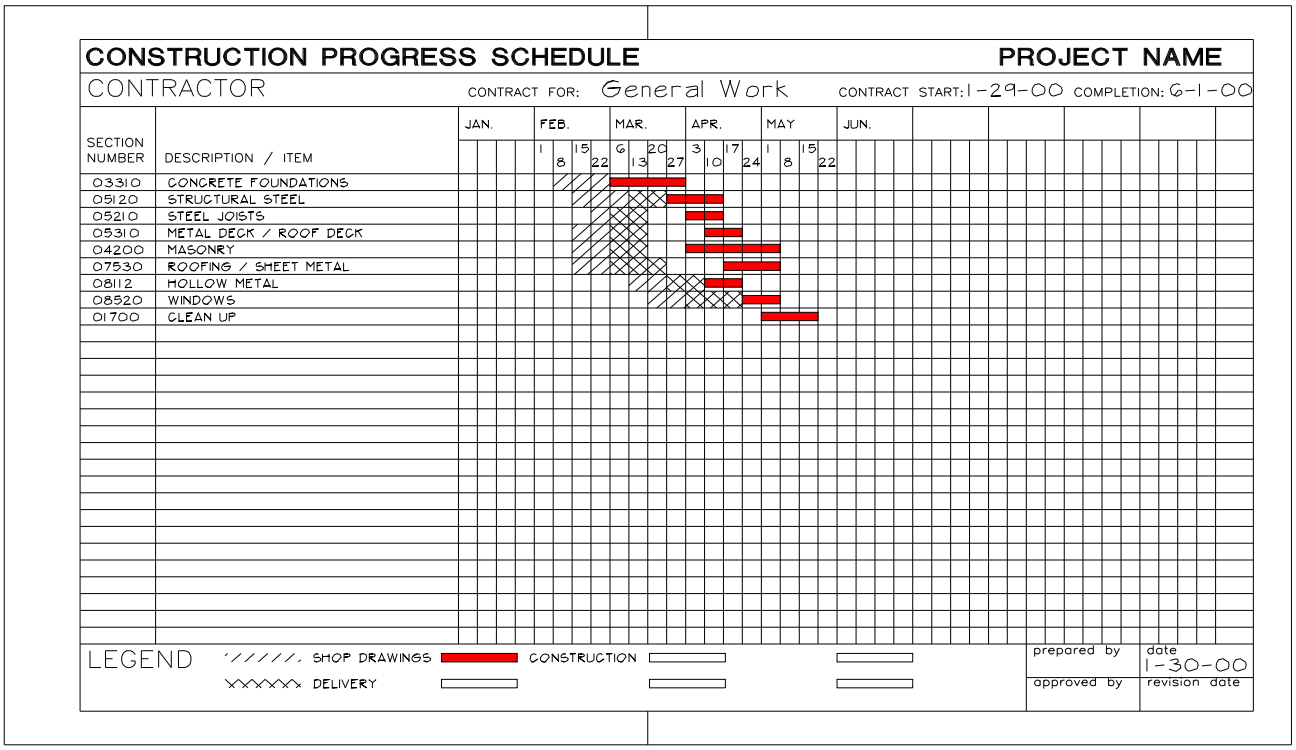
Format

Provide separate bar for each item in sequential order from beginning of Project to completion with the following information included for each item:

Related Technical Specification number.
Distinct graphic delineation, indicating area of building where schedule item in located.
Shop drawing submittal date and required acceptance date.
Product procurement date and anticipated delivery date.
Projected start and completion dates for each item.

SECTION 01 32 00 - PROJECT SCHEDULE - Attachment #1

FORMAT FOR
CONSTRUCTION SCHEDULE



Sample

Provide separate bar for each item in sequential order from beginning of Project to completion with the following information included for each item:

Related Technical Specification number.
Distinct graphic delineation, indicating area of building where schedule item in located.
Shop drawing submittal date and required acceptance date.
Product procurement date and anticipated delivery date.
Projected start and completion dates for each item.

SECTION 01 33 00 - SUBMITTAL PROCEDURES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

A. Section includes requirements for the administrative and procedural requirements for submitting Shop Drawings, Product Data, Samples, and other submittals.

1. Process designated submittals for the Project electronically through designated Electronic Submittal System. PDF files must be opened, viewed, modified and printed using Adobe Acrobat PDF software to view reviewer comments/stamps.

1.3 DEFINITIONS

A. Action Submittals: Written and graphic information and physical samples that require Architect's and Construction Manager's responsive action. Action submittals are those submittals indicated in individual Specification Sections as "action submittals."

B. As-Specified Products: Products to be incorporated into Project as specified by manufacturer name and product designation and including all options in Part 2 of technical specifications, intended to be installed as specified in Part 3 of technical specifications, and from a product category specifically identified as eligible to be considered as an "as-specified product" in the Action Submittals Article in Part 1 of technical specifications.

C. Informational Submittals: Written and graphic information and physical samples that do not require Architect's and Construction Manager'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."

D. 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.

E. Electronic Submittal System: A method to transmit certain electronic submittals between the Contractor, Construction Manager, Architect, and Owner, using Submittal Exchange website service.

1. For consistency, the standard file format will be PDF. Convert paper originals and other file formats to PDF prior to submission.

2. In the event of system malfunction, process submittals in accordance with the Architect's instructions, until the system malfunction has been corrected.

3. For this Project, process the following submittal types through the designated electronic submittal system:

   a. Product Data.
   b. Sustainable Design Submittals.
   c. Shop Drawings.
   d. Product Schedules.
   e. Qualification Data.
   f. Certificates (Welding, Installer, Manufacturer, Product, and Material, as applicable).
   g. Test Reports (Material, Product, Preconstruction, Compatibility, and Field, as applicable).
   h. Research Reports.
   i. Warranty (sample).
   j. Design Data, including calculations.
   k. Coordination Drawings.
   l. Delegated-Design Services Certifications.

4. For Samples, provide electronic submittal of Sample cover sheet, identifying location and actual delivery date of Samples. Deliver Samples to location (Architect's office, Project site, etc.) as directed by the Architect.

1.4 COLOR SCHEDULE

A. Color Schedule: Within 30 days after date of Notice of Award, submit a complete list of proposed manufacturers and complete product designations (i.e. model, grade, series, product line, etc.) for each item requiring color selection by Architect.

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. Where indicated, submit all submittal items required for each Specification Section concurrently.

   3. 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 and Construction Manager reserve the right to withhold action on a submittal requiring coordination with other submittals until related submittals are received.

B. Processing Time: Allow sufficient time for submittal review, including time for resubmittals. 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.

C. Electronic Submittals: Identify and incorporate information in each electronic submittal file as follows:

1. Include a cover sheet on each submittal item for identification. Do not combine different submittals under same cover sheet; only one submittal is to be provided per email.

   a. Cover Sheet Form: Use PDF version of sample form included in Project Manual. Complete each item on form, sign and date. Architect will furnish PDF version of sample form.

2. Name submittal file as directed by Architect.

3. Transmit each submittal via Electronic Submittal System.

4. Transmit each submittal to Architect using the Submittal Exchange website www.submittalexchange.com.

D. Resubmittals: Make resubmittals in same form and, for non-electronic submittals, in the same number of copies as initial submittal.

1. Note date and content of revision in label or title block and clearly indicate extent of revision.

2. Resubmit submittals until they are marked with approval notation from Architect and Construction Manager.

3. Refer to the General Conditions for provisions allowing Owner to obtain reimbursement from the Contractor for amounts paid to the Architect for evaluation of certain resubmittals.

E. Distribution: Furnish copies of final submittals to manufacturers, subcontractors, suppliers, fabricators, installers, authorities having jurisdiction, and others as necessary for performance of construction activities.

F. Use for Construction: Retain complete electronic copies of submittals on Project site during Construction. Also maintain one complete set of hard paper copies of all approved submittals on Project site during Construction. Use only final action submittals that are marked with approval notation from Architect and Construction Manager.

G. Use of As-Specified Verification Form: The As-Specified Verification Form is intended to reduce certain action submittal paperwork for select products to be incorporated into the Work. If product to be incorporated into Project is specified by name and product designation in Part 2 of the Technical Specification Section and is from a product category specifically identified as eligible to be considered as an “as-specified product” in the Action Submittals Article in Part 1 of technical specifications, submit “As-Specified Verification Form” attached to this Specification Section.

1.6 ENVIRONMENTAL REQUIREMENTS

A. All products provided for use in construction of this Project are to be free of asbestos. Refer to Division 01 Section "Closeout Procedures" for certification required to be provided. The Owner may provide random testing of installed products/ construction for asbestos content. Any Contractor-installed product found to contain asbestos shall be classified as defective work. Defective work shall be corrected by the Contractor as specified in the General Conditions.

1.7 SUBMITTAL PROCEDURES, GENERAL

A. General Submittal Procedure Requirements: Prepare and submit submittals required by individual Specification Sections. Types of submittals are indicated in individual Specification Sections.

1.8 ELECTRONIC SUBMITTAL REQUIREMENTS

A. Use the designated electronic submittal system for submittals in this Article.

1. Review and apply electronic stamp certifying that the submittal complies with the requirements of the Contract Documents including verification of manufacturer / product, dimensions and coordination of information with other parts of the work.

2. Transmit each submittal to Construction Manager and Architect using the Submittal Exchange website, www.submittalexchange.com.

3. For Action Submittals, Architect / Engineer and Construction Manager review comments will be made available on the Submittal Exchange website for downloading. Contractor will receive email notice of completed review.

4. Distribution of reviewed submittals to subcontractors and suppliers is the responsibility of the Contractor.

5. After award of contract, training will be provided by Submittal Exchange regarding use of website and PDF submittals. Contact Submittal Exchange at 1-800-714-0024.

6. Internet Service and Equipment Requirements:

   a. Email address and Internet access at Contractor's main office.
   b. Adobe Acrobat (www.adobe.com), for applying electronic stamps and comments.

7. Contractor shall bear the cost of the Submittal Exchange project subscription.

8. Retain one electronic copy of all approved submittals, as part of the project records required at Project Closeout.

9. Tetra Tech Architects and Engineers will be the Submittal Exchange Project Leader and Subscriber.

B. Product Data: Collect information into a single submittal for each element of construction and type of product or equipment.

1. Mark submittal to show which products and options are applicable.

2. Include the following information, as applicable:

   a. Manufacturer's catalog cuts.
   b. Statement of compliance with specified referenced standards.
   c. Testing by recognized testing agency.

3. For equipment, include the following in addition to the above, as applicable:

   a. Printed performance curves.
   b. Clearances required to other construction, if not indicated on accompanying Shop Drawings.

C. As-Specified Submittals: Complete the "As-Specified Verification Form".

1. Refer to the Action Submittals Article of technical specification sections. If the product to be incorporated into the Project is an "as-specified product" as defined in this Section, then submit "As-Specified Verification Form" in lieu of Product Data, otherwise submit full Product Data.

2. Do not use "As-Specified Verification Form" unless specifically indicated in technical specification.

3. The "As-Specified Verification Form" alone serves as the submittal for the specific product and no additional action submittal data is due at the time of the submittal. The full specific product technical data, however, is required to be included in the Operation and Maintenance Manual. Comply with requirements specified in Division 01 Section "Operation and Maintenance Data".

D. 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 dimensions established by field measurement.
   e. Relationship and attachment to adjoining construction clearly indicated.
   f. Seal and signature of professional engineer if specified.

E. Product Schedule: As required in individual Specification Sections, prepare a written summary indicating types of products required for the Work and their intended location. Include the following information in tabular form:

1. Type of product. Include unique identifier for each product indicated in the Contract Documents or assigned by Contractor if none is indicated.
2. Manufacturer and product name, and model number if applicable.
3. Number and name of room or space.

F. 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.

G. Certificates:

1. 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 or ASME forms as applicable. Include names of firms and personnel certified.

2. Installer Certificates: Submit written statements on manufacturer's letterhead certifying that Installer complies with requirements in the Contract Documents and, where required, is authorized by manufacturer for this specific Project.

3. Manufacturer Certificates: Submit written statements on manufacturer's letterhead certifying that manufacturer complies with requirements in the Contract Documents. Include evidence of manufacturing experience where required.

4. Product Certificates: Submit written statements on manufacturer's letterhead certifying that product complies with requirements in the Contract Documents.

5. Material Certificates: Submit written statements on manufacturer's letterhead certifying that material complies with requirements in the Contract Documents.

H. Test Reports:

1. 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.

2. 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.

3. 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.

4. 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.

5. 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.

I. 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.

J. Warranty: Submit sample warranties as required in individual Specification Sections.

K. 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.

L. Coordination Drawing Submittals: Comply with requirements specified in Division 01 Section "Project Management and Coordination."

M. Delegated-Design Services Certification: Submit certificate, signed and sealed by the responsible design professional, 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.

1.9 SUBMITTAL REQUIREMENTS FOR COMMISSIONING

A. Provide the Commissioning Authority with a copy of all submittals for equipment to be commissioned.

1. The Commissioning Authority will review and approve Contractor submittals applicable to systems being commissioned for compliance with commissioning needs, concurrent with the Architect's review.

B. Data for Commissioning:

1. Refer to the technical Division Commissioning Section for listing of systems to be commissioned. Provide specific information needed about each piece of commissioned equipment or system in submittal as required to facilitate commissioning. Typically this will include detailed manufacturer installation and start-up, operating, troubleshooting and maintenance procedures, full details of any Ownerr-contracted tests, fan and pump curves, full factory testing reports, if any, and full warranty information, including all responsibilities of the Owner to keep the warranty in force clearly identified. In addition, the installation and checkout materials that are actually shipped inside the equipment and the actual field checkout sheet forms to be used by the factory or field technicians for pre-functional testing shall be submitted to the Commissioning Authority.

2. The Commissioning Authority may request further documentation necessary for the commissioning process. This data request may be made prior to submittals, during review, or subsequently as additional requirements become evident.

3. Much of this information is contained in the regular Operation and Maintenance (O&M) manual submittals normally submitted in the Project. For commissioned projects, this information is typically required prior to the regular formal O&M manual submittals and will be duplicated therein, facilitating the later creation of the O&M manual.

C. Contractor's responsibility for deviations in submittals from requirements of the Contract Documents is not relieved by the Commissioning Authority's review .

1.10 NON-ELECTRONIC SUBMITTAL REQUIREMENTS

A. 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.

3. 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.

4. 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 two full sets of available choices where color, pattern, texture, or similar characteristics are required to be selected from manufacturer's product line. Deliver one set to Architect's office, deliver the other set to the construction trailer at the job site.

5. Samples for Verification: 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 two sets of Samples. Deliver one set to Architect's office, deliver the other set to the construction trailer at the job site.

1) 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.

B. 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, telephone number, and email address of entity performing subcontract or supplying products.

2. Number and title of related Specification Section(s) covered by subcontract.

3. Submit subcontract list in the following format:

a. Number of Copies: Four paper copies of subcontractor list, unless otherwise indicated. Architect will return one copy.

C. List of Key Personnel Names: No later than 15 days after date of Notice of Award, submit a list of key personnel assignments, including superintendent and other personnel in attendance at Project site.

1. Identify individuals and their duties and responsibilities; list addresses and telephone numbers, including emergency, office, and cellular telephone numbers and email addresses.

a. Number of Copies: Four paper copies of key personnel list, unless otherwise indicated.

1.11 MISCELLANEOUS SUBMITTAL REQUIREMENTS

A. Closeout Submittals and Maintenance Material Submittals: Comply with requirements specified in Division 01 Section "Closeout Procedures."

B. Maintenance Data: Comply with requirements specified in Division 01 Section "Operation and Maintenance Data."

1.12 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.

1.13 CONTRACTOR'S REVIEW

A. Action Submittals 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. Identify any deviations from Contract Document requirements. Mark cover sheet with approval before submitting to Architect and Construction Manager.

1. Sign and date statement certifying that submittal has been reviewed, checked, and approved for compliance with the Contract Documents.
2. If using Adobe Acrobat to electronically sign the Submittal Cover Sheet do not use the Certify Sign, Time Stamp feature as this will lock the document for further editing.

1.14 ARCHITECT'S AND CONSTRUCTION MANAGER'S ACTION

A. General: Architect and Construction Manager will not review submittals that do not bear Contractor's approval and will return them without action.

B. Action Submittals: Architect and Construction Manager will review each submittal, make marks to indicate corrections or revisions required, and return it. Architect and Construction Manager will mark submittal appropriately to indicate action, as follows:

1. Final Unrestricted Release: Where the submittal is marked "Approved," the Work covered by the submittal may proceed provided it complies with the Contract Documents. Final acceptance will depend on that compliance.

2. Final-but-Restricted Release: Where the submittal is marked "Approved As Noted," the Work covered by the submittal may proceed provided it complies both with Architect's notations and corrections on the submittal and the Contract Documents. Final acceptance will depend on that compliance.

3. Rejected: Where the submittal is marked "Rejected," do not proceed with the Work covered by the submittal. Prepare a new submittal for a product that complies with the Contract Documents.

4. Incomplete - Resubmit: Where the submittal is marked "Incomplete, Submit Additional Information," do not proceed with the Work covered by the submittal. Prepare additional information requested, or required by the Contract Documents, that indicates compliance with requirements, and resubmit.

C. Informational Submittals: Architect and Construction Manager will review each submittal and will not return it, or will return it if it does not comply with requirements.

D. Incomplete submittals are unacceptable, will be considered nonresponsive, and will be returned for resubmittal without review.

E. Limit information submitted to specific products indicated. Do not submit extraneous matter. Submittals containing excessive extraneous matter will be returned for resubmittal without review.

F. Submittals not required by the Contract Documents may be returned by the Architect without action.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION

Attachments: Tt Cover Sheet
As-Specified Verification Form
Tt Cover Sheet for Closeout Submittals (Sections 01 78 23 and 01 78 39)
Delegated Design Submittal Form

END OF SECTION 01 33 00

CONTRACTOR: _____ **SUBMITTAL DATE** ____/____ /____

_____ Check following as applicable:

☐ First Submission

☐ Re-Submission No. ____

ARCHITECT: Tetra Tech Architects & Engineers

PROJECT IDENTIFICATION

Architect's Project No.: 339070-22003

Proj. Name: Additions and Alterations to Waverly Jr/Sr High School

Location: Waverly CSD

PRODUCT IDENTIFICATION

Specification Section No. _____

Name of Product: _____

_____

Name of Manufacturer: _____

SUBCONTRACTOR

_____

SUPPLIER

_____

RELATIONSHIP TO STRUCTURE

Building Name _____

_____
(Room #) *(Room Name)*

Contract Drawing No.: _____

RESERVED FOR USE BY TETRA TECH

ACTION SUBMITTAL:

☐ Approved

☐ Approved As Noted

☐ Rejected

☐ Incomplete, Submit Additional Information

INFORMATIONAL SUBMITTAL:

☐ No Action Taken

☐ Returned for Resubmittal

Reviewed By: _____

Date: _____

Reviewed only for the limited purpose of checking for conformance with information given and the design concept expressed in the Contract Documents. Review not conducted for the purpose of determining the accuracy and completeness of other details such as dimensions and quantities, or for substantiating instructions for installation or performance of equipment or systems, all of which remain the responsibility of the Contractor as required by the Contract Documents. Review shall not constitute approval of safety precautions or of any construction means, methods, techniques, sequences or procedures.

DEVIATION FROM CONTRACT DOCUMENTS: _____

_____

CONTRACTOR COMMENTS: _____

_____

ARCHITECT'S COMMENTS: _____

_____

CONTRACTOR'S STAMP

CONTRACTOR'S CERTIFICATION

I CERTIFY THAT THIS SUBMITTAL HAS BEEN REVIEWED AND APPROVED BY THE CONTRACTOR IN ACCORDANCE WITH THE GENERAL CONDITIONS. PRODUCTS/MATERIALS ARE FREE OF ASBESTOS AS REQUIRED BY THE CONTRACT DOCUMENTS.

BY _____

CONSTRUCTION MANAGER'S CERTIFICATION

I CERTIFY THAT THIS SUBMITTAL HAS BEEN REVIEWED AND APPROVED BY THE CONSTRUCTION MANAGER IN ACCORDANCE WITH THE GENERAL CONDITIONS.

BY _____

CM Submittal No. _____

TETRA TECH
ARCHITECTS & ENGINEERS

As-Specified Verification Form

Project Number: 339070-22003

Project Title: Additions and Alterations to Waverly Jr/Sr High School

Technical Specification Section: _____
(Include Section Number and Title as shown in Project Manual)

Specified Product: _____
(Include manufacturer's name and product designation)

The undersigned, hereinafter called the Contractor, hereby warrants that the Specified Product listed above will be incorporated into the Project in accordance with requirements specified in the Technical Specification Section identified above without modification or alteration.

By acceptance of this form, Tetra Tech Architects & Engineers (hereinafter called Tetra Tech), agrees that limited submittals identified in the Technical Specification Section identified above are not required, unless otherwise stated in the Submittals article in the Technical Specification Section.

The Contractor is advised that use of this As-Specified Verification Form does not relieve the Contractor from providing remaining submittal documentation required in Technical Specification sections and all information required in Division 1 Closeout section of the Project Manual or from complying with requirements of the General Conditions.

Products/Materials are free of asbestos as required by the Contract Documents.

_____
(Name of Contractor)

_____
(Authorized Signature)

_____
(Title of Signatory)

_____
(Date)

RESERVED FOR USE BY TETRA TECH

ACTION SUBMITTAL:

☐ Approved / Approved As Noted

☐ Rejected

Reviewed By: _____

Date: _____

Reviewed only for the limited purpose of checking for conformance with information given and the design concept expressed in the Contract Documents. Review not conducted for the purpose of determining the accuracy and completeness of other details such as dimensions and quantities, or for substantiating instructions for installation or performance of equipment or systems, all of which remain the responsibility of the Contractor as required by the Contract Documents. Review shall not constitute approval of safety precautions or of any construction means, methods, techniques, sequences or procedures.

ARCHITECT'S COMMENTS: _____

CONTRACTOR: _____

_____

SUBMITTAL DATE ____/____ /____

Check following as applicable:

☐ First Submission ____

☐ Re-Submission No. ____

ARCHITECT: Tetra Tech Architects & Engineers

PROJECT IDENTIFICATION

Architect's
Project No.: 339070-22003

Proj. Name: Additions and Alterations to Waverly Jr/Sr High School

Location: Waverly CSD

PRODUCT IDENTIFICATION

Specification Section No. 01 78 23 OR 01 78 39 (circle correct one)

Name of Product: _____

_____

Name of Manufacturer: _____

SUBCONTRACTOR: _____

SUPPLIER: _____

RESERVED FOR USE BY TETRA TECH

INFORMATIONAL SUBMITTAL:

☐ No Action Taken

☐ Returned for Resubmittal

Reviewed By: _____

Date: _____

Reviewed only for the limited purpose of checking for conformance with information given and the design concept expressed in the Contract Documents. Review not conducted for the purpose of determining the accuracy and completeness of other details such as dimensions and quantities, or for substantiating instructions for installation or performance of equipment or systems, all of which remain the responsibility of the Contractor as required by the Contract Documents. Review shall not constitute approval of safety precautions or of any construction means, methods, techniques, sequences or procedures.

DEVIATION FROM CONTRACT DOCUMENTS: _____

_____

CONTRACTOR COMMENTS: _____

_____

CONSTRUCTION MANAGER'S COMMENTS: _____

_____

ARCHITECT'S COMMENTS: _____

_____

CONTRACTOR'S STAMP

CONTRACTOR'S CERTIFICATION

I CERTIFY THAT THIS SUBMITTAL HAS BEEN REVIEWED AND APPROVED BY THE CONTRACTOR IN ACCORDANCE WITH THE GENERAL CONDITIONS. PRODUCTS/MATERIALS ARE FREE OF ASBESTOS AS REQUIRED BY THE CONTRACT DOCUMENTS.

BY _____

CONSTRUCTION MANAGER'S CERTIFICATION

I CERTIFY THAT THIS SUBMITTAL HAS BEEN REVIEWED BY THE CONSTRUCTION MANAGER IN ACCORDANCE WITH THE GENERAL CONDITIONS. AND IN ACCORDANCE WITH THE CONSTRUCTION MANAGER'S CONTRACTUAL OBLIGATIONS WITH THE OWNER.

Approved _____ Rejected_____

BY _____

CM Submittal No. _____

DELEGATED DESIGN SUBMITTAL

CONTRACTOR: _____ **SUBMITTAL DATE** ____/____ /____

DESIGN PROFESSIONAL: _____

Check following as applicable:

☐ First Submission

☐ Re-Submission No. ___

ARCHITECT: Tetra Tech Architects & Engineers

PROJECT IDENTIFICATION

Architect's Project No.: 339070-22003

Proj. Name: Additions and Alterations to Waverly Jr/Sr High School

Location: Waverly CSD

PRODUCT IDENTIFICATION

Specification Section No. _____

Name of Product: _____

_____

Name of Manufacturer: _____

SUBCONTRACTOR

_____

SUPPLIER

_____

RELATIONSHIP TO STRUCTURE

Building Name _____

_____

(Room #) *(Room Name)*

Contract Drawing No.: _____

DEVIATION FROM CONTRACT DOCUMENTS:

_____

_____

RESERVED FOR USE BY TETRA TECH

ACTION SUBMITTAL:

☐ Approved

☐ Approved As Noted

☐ Rejected

☐ Incomplete, Submit Additional Information

INFORMATIONAL SUBMITTAL:

☐ No Action Taken

☐ Returned for Resubmittal

Reviewed By: _____

Date: _____

Reviewed only for the limited purpose of checking for conformance with information given and the design concept expressed in the Contract Documents. Review not conducted for the purpose of determining the accuracy and completeness of other details such as dimensions and quantities, or for substantiating instructions for installation or performance of equipment or systems, all of which remain the responsibility of the Contractor as required by the Contract Documents. Review shall not constitute approval of safety precautions or of any construction means, methods, techniques, sequences or procedures.

DESIGN PROFESSIONAL'S COMMENTS: _____

CONTRACTOR COMMENTS: _____

ARCHITECT'S COMMENTS: _____

CONSTRUCTION MANAGER'S CERTIFICATION

I certify that this submittal has been reviewed and approved by the Construction Manager in accordance with the General Conditions.

BY

CM Submittal No. _____

CONTRACTOR'S STAMP

DESIGN PROFESSIONAL'S CERTIFICATION

I certify that I am a design professional currently licensed in New York State and confirm my responsibility for work included in this submittal in accordance with the General Conditions. Further, I certify that to the best of my knowledge, information and belief, the plans and specifications are in accordance with applicable requirements of the New York State Uniform Fire Prevention and Building Code, the State Energy Conservation Construction Code and construction standards of the Education Department.

BY

CONTRACTOR'S CERTIFICATION

I certify that this submittal has been reviewed and approved by the Contractor in accordance with the General Conditions. Products/Materials Are free of asbestos as required by the Contract Documents.

BY _____

SECTION 01 35 26 – GOVERNMENTAL SAFETY REQUIREMENTS

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. Safety requirements included in 8 NYCRR 155.5 Uniform Safety Standards for School Construction and Maintenance Projects.

1.3 PERFORMANCE REQUIREMENTS

A. General Performance: Provide all measures, including (but not limited to) materials, equipment, and procedures, required to comply with following requirements of 8 NYCRR 155.5 Uniform Safety Standards for School Construction and Maintenance Projects.

B. Certificate of Occupancy:

1. 8 NYCRR 155.5 (a): "The occupied portion of any school building shall always comply with the minimum requirements necessary to maintain a certificate of occupancy."

C. General Safety and Security Standards for Construction Projects:

1. 8 NYCRR 155.5 (e)(1): "All construction materials shall be stored in a safe and secure manner."

2. 8 NYCRR 155.5 (e)(2): "Fences around construction supplies or debris shall be maintained."

3. 8 NYCRR 155.5 (e)(3): "Gates shall always be locked unless a worker is in attendance to prevent unauthorized entry."

4. 8 NYCRR 155.5 (e)(4): "During exterior renovation work, overhead protection shall be provided for any sidewalks or areas immediately beneath the work site or such areas shall be fenced off and provided with warning signs to prevent entry."

5. 8 NYCRR 155.5 (e)(5): "Workers shall be required to wear photo identification badges at all times for identification and security purposes while working at occupied sites."

D. Separation of Construction Areas from Occupied Spaces:

1. 8 NYCRR 155.5 (f): "Construction areas which are under the control of a contractor and therefore not occupied by district staff or students shall be separated from occupied areas. Provisions shall be made to prevent the passage of dust and contaminants into occupied parts of the building. Periodic inspection and repairs of the containment barriers must be made to prevent exposure to dust or contaminants. Gypsum board must be used in exit ways or other areas that require fire rated separation. Heavy duty plastic sheeting may be used only for a vapor, fine dust or air infiltration barrier, and shall not be used to separate occupied spaces from construction areas."

2. 8 NYCRR 155.5 (f)(1): "A specific stairwell and/or elevator should be assigned for construction worker use during work hours. In general, workers may not use corridors, stairs or elevators designated for students or school staff."

E. Cleaning Occupied Areas:

1. 8 NYCRR 155.5 (f)(2): "Large amounts of debris must be removed by using enclosed chutes or a similar sealed system. There shall be no movement of debris through halls of occupied spaces of the building. No material shall be dropped or thrown outside the walls of the building."

2. 8 NYCRR 155.5 (f)(3): "All occupied parts of the building affected by renovation activity shall be cleaned at the close of each workday. School buildings occupied during a construction project shall maintain required health, safety and educational capabilities at all times that classes are in session."

F. Exiting and Ventilation:

1. 8 NYCRR 155.5(g): Maintain exiting and ventilation during school construction projects.
2. 8 NYCRR 155.5(g)(1): "Required exits, temporary stairs, ramps, exit signs, and door hardware shall be provided at all times."
3. 8 NYCRR 155.5(g)(2): "Required ventilation to occupied spaces affected by construction will be maintained during the project."

G. Noise Control:

1. 8 NYCRR 155.5 (i): "Construction and maintenance operations shall not produce noise in excess of 60 dba in occupied spaces or shall be scheduled for times when the building or affected building spaces are not occupied or acoustical abatement measures shall be taken."

H. Control of Fumes, Gases and Contaminants:

1. 8 NYCRR 155.5 (j): The contractor shall be responsible for the control of chemical fumes, gases, and other contaminants produced by welding, gasoline or diesel engines, roofing, paving, painting, and other fumes to ensure they do not enter occupied portions of the building or air intakes.

I. “Off-Gassing” of Volatile Organic Compounds:

1. 8 NYCRR 155.5 (j)(1): The contractor shall be responsible to ensure that activities and materials which result in "off-gassing" of volatile organic compounds such as glues, paint, furniture, carpeting, wall coverings, drapery, etc. are scheduled, cured or ventilated in accordance with manufacturer’s recommendations before a space can be occupied.

J. Asbestos Isolation:

1. 8 NYCRR 155.5 (k): “Large and small asbestos abatement projects as defined by 12 NYCRR 56 shall not be performed while the building is occupied.” Note, it is NYSED’s interpretation that the term "building", as referenced in this section of 8 NYCRR 155.5, 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 exits that do not pass through the occupied portion and ventilation systems must be physically separated and sealed at the isolation barrier.

2. Exterior work such as roofing, flashing, siding, or soffit work may be performed on occupied buildings provided proper variances are in place as required, and complete isolation of ventilation systems and at windows is provided. Care must be taken to schedule work so that classes are not disrupted by noise or visual distraction.

K. Lead and Asbestos Testing:

1. 8 NYCRR 155.5 (c)(1): “All school areas to be disturbed during renovation or demolition shall be tested for lead and asbestos.”

a. Asbestos and Asbestos-Containing Materials:

1) Be advised that asbestos and asbestos-containing materials are required to be abated as part of this Project. Refer to Division 02 Section “Asbestos Abatement”.

a) The extent of asbestos to be abated as part of the Project is indicated on Drawings included in the Contract Documents.

b) Prior to beginning Work, review Owner’s “Asbestos Management Plan” to ensure asbestos or asbestos-containing materials identified in that document are not disturbed.

2) Be advised that if materials suspected to be asbestos, or to contain asbestos, that are not included in the Project and not identified in the Contract Documents are encountered during construction, immediately notify Owner and take precautions as required to avoid disturbing materials until directed by Owner.

3) Transmission Electron Microscopy (TEM): All asbestos abatement work that requires clearance air sampling in accordance with New York State Industrial Code Rule 56 shall have clearance air samples collected and analyzed using Transmission Electron Microscopy as per the Asbestos Hazard Emergency Response Act (40 CFR 763). Refer to Division 02 Section "Asbestos Abatement".

b. Lead and Lead-Containing Materials:

1) Be advised that a lead inspection has been performed as required by New York State Education Department and a copy of the lead inspection report is available at the Owner's offices.

L. Code Rule 56:

1. 8 NYCRR 155.5(k): "All asbestos abatement projects shall comply with all applicable Federal and State laws including but not limited to the New York State Department of Labor industrial code rule 56 (12 NYCRR 56), and the Federal Asbestos Hazard Emergency Response Act (AHERA), 40 CFR part 763 (Code of Federal Regulations, 1998 Edition, Superintendent of Public Documents, U.S. Government Printing Office, Washington, DC 20402; 1998; available at the Office of Facilities Planning, Education Building Annex, Room 360, State Education Department, Albany, NY 12234."

M. Lead:

1. 8 NYCRR 155.5 (l): Surfaces that will be disturbed by reconstruction must have a determination made as to the presence of lead. Projects which disturb surfaces that contain lead shall have in the specifications a plan prepared by a certified Lead Risk Assessor or Supervisor which details provisions for occupant protection, worksite preparation, work methods, cleaning and clearance testing which are in general accordance with the HUD Guidelines.

a. Be advised that lead and lead-containing materials are required to be disturbed or removed as part of this Project. Refer to Division 02 Section "Lead-Safe Work Practices".

1) The extent of lead to be disturbed or removed as part of the project is indicated on Drawings included in the Contract Documents.

b. Contractor is responsible for complying with requirements of all applicable federal, state and local regulations, including (but not limited to) OSHA Lead in Construction Standard 29 CFR 1926.62, when construction activities involve disturbance of materials containing 1.0 mg/sq cm or 0.5 percent of lead or less, including (but not limited to) lead-based paint, ceramic tile, and similar materials.

c. If materials suspected to contain lead above 1.0 mg/sq cm or above 0.5 percent that are not included in Project or identified in Contract Documents are encountered during construction, immediately notify Owner and take applicable precautions to avoid disturbing materials until directed by Owner.

N. Disposal of Lead Abatement Waste:

1. Test all debris from lead abatement activities to determine whether it is hazardous or non-hazardous waste.

2. Transport and dispose of debris determined to be hazardous waste in accordance with applicable regulations.

3. Package, label, and mark all hazardous waste materials in accordance with applicable requirements of 49 CFR 173, 178 and 179.

4. Maintain hazardous waste manifest from date of transport until date of disposal, destruction or recycling.

5. Return fully executed hazardous waste manifests to Owner within 60 days after date waste accepted by initial transporter.

6. Dispose of material determined to be Construction and Demolition Debris in accordance with 6 NYCRR 360 and 364. Provide trip tickets or other documentation clearly identifying generating site, Owner, transporter, disposal site and amount of material removed from site, transported to and disposed of at disposal site.

7. Refer to Division 02 Section "Lead-Safe Work Practices" for additional requirements.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION (Not Used)

END OF SECTION 01 35 26

SECTION 01 40 00 - QUALITY REQUIREMENTS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General 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 inspection 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 quality-control requirements for individual work results are specified in their respective Specification Sections. Requirements in individual Sections may also cover production of standard products.

2. Specified tests, inspections, and related actions do not limit Contractor's other quality-assurance and quality-control procedures that facilitate compliance with the Contract Document requirements.

3. Requirements for Contractor to provide quality-assurance and quality-control services required by Architect, Owner, Construction Manager, or authorities having jurisdiction are not limited by provisions of this Section.

1.3 DEFINITIONS

A. Experienced: When used with an entity or individual, "experienced," unless otherwise further described, means having successfully completed a minimum of five 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.

B. 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, assembly, and similar operations.

C. Mockups: Physical assemblies of portions of the Work constructed to establish the standard by which the Work will be judged. Mockups are not Samples.

1. Mockups are used for one or more of the following:

a. Verify selections made under Sample submittals.
b. Demonstrate aesthetic effects.

c. Demonstrate the qualities of products and workmanship.
d. Demonstrate successful installation of interfaces between components and systems.
e. Perform preconstruction testing to determine system performance.

D. Testing Agency: An entity engaged to perform specific tests, inspections, or both. The term "testing laboratory" has the same meaning as the term "testing agency."

E. 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.

F. 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. Contractor's quality-control services do not include contract administration activities performed by Architect or Construction Manager.

1.4 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.

1.5 CONFLICTING REQUIREMENTS

A. Conflicting Standards and Other Requirements: If compliance with two or more standards or requirements is specified and the standards or requirements establish different or conflicting requirements for minimum quantities or quality levels, inform the Architect regarding the conflict and obtain clarification prior to proceeding with the Work. Refer conflicting requirements that are different, but apparently equal, to Architect for clarification before proceeding.

B. Minimum Quantity or Quality Levels: The quantity or quality level shown or specified is 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 ACTION SUBMITTALS

A. Delegated Design Services Statement: Submit a statement signed and sealed by the responsible design professional, for each product and system specifically assigned to Contractor to be designed or certified by a design professional, indicating that the products and systems are in compliance with performance and design criteria indicated. Include list of codes, loads, and other factors used in performing these services.

1.7 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.

B. Schedule of Tests and Inspections: Prepare in tabular form and include the following:

1. Specification Section number and title.
2. Entity responsible for performing tests and inspections.
3. Description of test and inspection.
4. Identification of applicable standards.
5. Identification of test and inspection methods.
6. Number of tests and inspections required.
7. Time schedule or time span for tests and inspections.

C. Reports: Prepare and submit certified written reports and documents as specified.

D. Permits, Licenses, and Certificates: For Owner's record, 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 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, telephone number, and email address of testing 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 method.
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 inspection.
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, telephone number, and email address 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 of 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, telephone number, and email address 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 of whether conditions, products, and installation will affect warranty.
5. Other required items indicated in individual Specification Sections.

1.9 QUALITY ASSURANCE

A. 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. As applicable, procure products from manufacturers able to meet qualification requirements, warranty requirements, and technical or factory-authorized service representative requirements.

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, applying, 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 an appropriately licensed design professional legally qualified to practice in New York State 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 product that is similar in material, design, and extent to those indicated for this Project.

F. Testing and Inspecting Agency Qualifications: An NRTL, an NVLAP, or an independent agency with the experience and capability to conduct testing and inspection indicated, as documented in accordance with ASTM E329, and with additional qualifications specified in individual Sections; and, where required by authorities having jurisdiction, that is acceptable to authorities.

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, demonstrate, correct, and perform service on installations of manufacturer's products that are similar in material, design, and extent to those indicated for this Project.

I. 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 of size indicated.
2. Build mockups in location indicated or, if not indicated, as directed by Architect or Construction Manager.
3. Notify Architect and Construction Manager seven days in advance of dates and times when mockups will be constructed.
4. Employ supervisory personnel who will oversee mockup construction. Employ workers who will be employed to perform same tasks during the construction at Project.
5. Demonstrate the proposed range of aesthetic effects and workmanship.
6. Obtain Architect's and Construction Manager's approval of mockups before starting corresponding Work, fabrication, or construction.
7. Promptly correct unsatisfactory conditions noted by Architect's preliminary review, to the satisfaction of the Architect, before completion of final mockup.
8. Approval of mockups by the Architect does not constitute approval of deviations from the Contract Documents contained in mockups unless Architect specifically approves such deviations in writing.
9. Maintain mockups during construction in an undisturbed condition as a standard for judging the completed Work.
10. Demolish and remove mockups when directed unless otherwise indicated.

1.10 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 inspection 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.

B. Contractor Responsibilities: Tests and inspections not explicitly assigned to Owner are Contractor's responsibility. Perform additional quality-control activities, whether specified or not, to verify and document that the Work complies with requirements.

1. Unless otherwise indicated, provide quality-control services specified and those required by authorities having jurisdiction. Perform quality-control services required of Contractor by authorities having jurisdiction, whether specified or not.

2. Engage a qualified testing agency to perform quality-control services.

a. Contractor will not employ same entity engaged by Owner, unless agreed to in writing by Owner.

3. Notify testing agencies at least 24 hours in advance of time when Work that requires testing or inspection will be performed.

a. For testing or inspecting services indicated as Owner’s responsibility, notify Owner and testing agency at least 3 business days 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 duplicate, of each quality-control service.

5. Testing and inspection requested by Contractor and not required by the Contract Documents are Contractor's responsibility.

6. Submit additional copies of each written report directly to authorities having jurisdiction, when they so direct.

C. 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.

D. Testing Agency Responsibilities: Cooperate with Architect, Construction Manager, and Contractor in performance of duties. Provide qualified personnel to perform required tests and inspections.

1. Notify Architect, Construction Manager, and Contractor promptly of irregularities or deficiencies observed in the Work during performance of its services.
2. Determine the locations from which test samples will be taken and in which in-situ tests are conducted.
3. Conduct and interpret tests and inspections, and state in each report whether tested and inspected Work complies with or deviates from requirements.
4. Submit a certified written report, in duplicate, of each test, inspection, and similar quality-control service through Contractor.

5. Do not release, revoke, alter, or increase the Contract Document requirements or approve or accept any portion of the Work.
6. Do not perform duties of Contractor.

E. 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."

F. 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 preinstallation conferences, examination of substrates and conditions, verification of materials, observation of Installer activities, inspection of completed portions of the Work, and submittal of written reports.

G. Contractor's Associated Requirements and Services: Cooperate with agencies and representatives 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. Access to the Work.
2. Incidental labor and facilities necessary to facilitate tests and inspections.
3. Adequate quantities of representative samples of materials that require testing and inspection. Assist agency in obtaining samples.
4. Facilities for storage and field curing of test samples.
5. Preliminary design mix proposed for use for material mixes that require control by testing agency.
6. Security and protection for samples and for testing and inspection equipment at Project site.

H. Coordination: Coordinate sequence of activities to accommodate required quality-assurance and quality-control services with a minimum of delay and to avoid necessity of removing and replacing construction to accommodate testing and inspection.

1. Schedule times for tests, inspections, obtaining samples, and similar activities.

I. Schedule of Tests and Inspections: Prepare a schedule of tests, inspections, and similar quality-control services required by the Contract Documents. Coordinate and submit concurrently with Contractor's Construction Schedule. Update as the Work progresses.

1. Schedule Contents: Include tests, inspections, and quality-control services, including Contractor- and Owner-retained services, commissioning activities, and other Project-required services paid for by other entities.

2. Distribution: Distribute schedule to Owner, Architect, Construction Manager, testing agencies, and each party involved in performance of portions of the Work where tests and inspections are required.

1.11 SPECIAL TESTS AND INSPECTIONS

A. Special Tests and Inspections: Owner will engage a qualified testing agency to conduct special tests and inspections required by authorities having jurisdiction as the responsibility of Owner, as indicated in the Statement of Special Inspections attached to this Section, and as follows:

1. Verifying that manufacturer maintains detailed fabrication and quality-control procedures, and reviewing the completeness and adequacy of those procedures to perform the Work.

2. Notifying Architect, Construction Manager, and Contractor promptly of irregularities and deficiencies observed in the Work during performance of its services.

3. Submitting a certified written report of each test, inspection, and similar quality-control service to Architect, through Construction Manager, with copy to Contractor and to authorities having jurisdiction.

4. Submitting a final report of special tests and inspections at Substantial Completion, which includes a list of unresolved deficiencies.

5. Interpreting tests and inspections, and stating in each report whether tested and inspected Work complies with or deviates from the Contract Documents.

6. Retesting and reinspecting corrected Work.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION

3.1 TEST AND INSPECTION LOG

A. Test and Inspection Log: Prepare a record of tests and inspections. Include the following:

1. Date test or inspection was conducted.
2. Description of the Work tested or inspected.
3. Date test or inspection results were transmitted to Architect.
4. Identification of testing agency or special inspector conducting test or inspection.

B. Maintain log at Project site. Post changes and revisions as they occur. Provide access to test and inspection log for Architect's and Construction Manager's reference during normal working hours.

3.2 CORRECTION AND PROTECTION

A. General: On completion of testing, inspection, sample-taking, and similar services, correct 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. Correction and protection are Contractor's responsibility, regardless of the assignment of responsibility for quality-control services.

Attachment: Statement of Special Inspections

END OF SECTION 01 40 00

TETRA TECH ARCHITECTS & ENGINEERS	**STATEMENT OF SPECIAL INSPECTIONS**

Project: *Additions and Alterations to Waverly Jr. Sr. High School*

Location: *Waverly, NY*

Owner: *Waverly Central School District*

This *Statement of Special Inspections* is submitted as a condition for permit issuance in accordance with the Special Inspection and Structural Testing requirements of the Building Code of New York State. It includes a schedule of Special Inspection services applicable to this project. *Refer to individual technical specification sections for additional testing requirements*.

This document includes the following parts:

Qualifications of Inspectors and Testing Technicians

Schedule of Special Inspection Services

Qualifications of Inspectors and Testing Technicians

The qualifications of all personnel performing Special Inspection and testing activities are subject to the approval of the Building Official. The credentials of all Inspectors and testing technicians shall be provided if requested.

Key for Minimum Qualifications of Inspection Agents:

When the Registered Design Professional in Responsible Charge deems it appropriate that the individual performing a stipulated test or inspection have a specific certification or license as indicated below, such designation shall appear below the *Qualifications* on the Schedule.

PE	Structural Engineer – a licensed PE specializing in the design of building structures.
PE/GE	Geotechnical Engineer – a licensed PE specializing in soil mechanics and foundations.
EIT	Engineer-In-Training – a graduate engineer who has passed the Fundamentals of Engineering examination.

American Concrete Institute (ACI) Certification

ACI-CFTT	Concrete Field Testing Technician – Grade 1
ACI-CCI	Concrete Construction Inspector
ACI-LTT	Laboratory Testing Technician – Grade 1&2
ACI-STT	Strength Testing Technician

American Welding Society (AWS) Certification

AWS-CWI	Certified Welding Inspector
AWS/AISC-SSI	Certified Structural Steel Inspector

American Society of Non-Destructive Testing (ASNT) Certification

ASNT	Non-Destructive Testing Technician – Level II or III.

International Code Council (ICC) Certification

ICC-SMSI	Structural Masonry Special Inspector
ICC-SWSI	Structural Steel and Welding Special Inspector
ICC-SFSI	Spray-Applied Fireproofing Special Inspector
ICC-PCSI	Prestressed Concrete Special Inspector
ICC-RCSI	Reinforced Concrete Special Inspector

National Institute for Certification in Engineering Technologies (NICET)

NICET-CT	Concrete Technician – Levels I, II, III & IV
NICET-ST	Soils Technician - Levels I, II, III & IV
NICET-GET	Geotechnical Engineering Technician - Levels I, II, III & IV

Association of the Wall and Ceilings Industries International (AWCI)

AWCI 12-B	Standard Practice for the Testing and Inspection of Field Applied Thin-Film Intumescent Fire-Resistive Materials; an Annotated Guide.

Schedule of Special Inspection Services

INSPECTION AND TESTING *("Continuous" & "Periodic" defined by the Code; refer to applicable Technical Specification Section for specific frequency requirements)*	**REQUIRED** (*Required if checked; Not Applicable if not* checked)	**TECHNICAL SPECIFICATION SECTION** (*Refer to for additional information*)	**CONTINUOUS**	**PERIODIC**
Cast-in-Place Concrete (1705.3)				
1. Inspection of reinforcing steel and verify placement	☒	03 30 00	☐	☒
2. Inspection of reinforcing steel welding:				
a. Verification of ASTM A706 material	☐	03 30 00	☐	☒
b. Inspect single-pass fillet welds, maximum 5/16"	☒	03 30 00	☐	☒
c. Inspect all other welds	☐	03 30 00	☒	☐
3. Inspection of anchors to be installed in concrete prior to and during placement	☒	03 30 00	☒	☐
4. Inspect anchors post-installed in hardened concrete				
a. Adhesive anchors installed in horizontally or upwardly inclined orientations to resist sustained tension loads.	☐	03 30 00	☒	☐
b. Mechanical anchors and adhesive anchors not defined in 4a.	☒	03 30 00	☐	☒
5. Verify use of required design mix	☒	03 30 00	☐	☒
6. Sampling fresh concrete for fabricating specimens for strength testing, perform slump and air content tests, and measure temperature of concrete	☒	03 30 00	☒	☐
7. Inspection of concrete and shotcrete placement for proper application techniques	☒	03 30 00	☒	☐
8. Verify maintenance of specified curing temperature and techniques	☒	03 30 00	☐	☒
9. Verification of 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	☒	03 30 00	☐	☒
10. Inspection of formwork for shape, location and dimensions of the concrete member being formed	☒	03 30 00	☐	☒
11. Inspection of post-tensioning operations	☐	03 38 16	☒	☐

Precast Concrete (1705.3)				
1. Inspection of reinforcing steel	☐	03 41 00	☐	☒
2. Verify use of required design mix	☐	03 41 00	☐	☒
3. Inspection of prestressed operations				
a. Application of prestressing forces	☐	03 41 00	☒	☐
b. Grouting of bonded prestressing tendons in the seismic-force-resisting system	☐	03 41 00	☒	☐
4. Sampling fresh concrete; slump, air content, temperature, strength test specimens	☐	03 41 00	☒	☐
5. Inspection of formwork for shape, location and dimensions of the concrete member being formed	☐	03 41 00	☐	☒
6. Inspection of concrete placement for proper application techniques	☐	03 41 00	☒	☐
7. Inspection for maintenance of specified curing temperature and techniques	☐	03 41 00	☐	☒
8. Erection of precast concrete members	☐	03 41 00, 03 48 10	☐	☒

Fabricated Items (1704.2.5 and 1705.10)				
1. Inspection of structural, load-bearing or lateral load-resisting members or assemblies as noted on Contract Documents that are fabricated in a fabricator's shop	☐	?? ?? ??	☐	☐
Exceptions: a. The fabricator has been approved to perform work without special inspections per NYSBC 1704.2.5.1. b. The members or assemblies are to be fabricated on site. Then refer to the respective material categories for inspections.				

Masonry (1705.4)				
Level 1	☐	04 20 00		
1. Prior to construction, verify certificates of compliance used in masonry construction	☐	04 20 00	☐	☐
Level 2 Level 3	☐ Level 2 ☒ Level 3	04 20 00		
1. Prior to construction, verify compliance with the approved submittals.	☒	04 20 00	☐	☐
2. Prior to construction, verify *f'm*, except where specifically exempted by the Code	☒	04 20 00	☐	☐
3. During construction, verify Slump flow and Visual Stability Index (VSI) when self-consolidating grout is delivered to the project site	☒	04 20 00	☐	☐
4. During construction, verify *f'm* for every 5,000 sqft	☒	04 20 00	☐	☐
5. During construction, verify proportions of materials in premixed or preblended mortar, and grout other than self-consolidating grout, as delivered to the project site.	☒	04 20 00	☐	☐
6. At start of masonry construction, verify to ensure compliance:				
a. Proportions of site prepared mortar.	☒	04 20 00	☐	☒
b. Grade, type and size of reinforcement, connectors, and anchor bolts.	☒	04 20 00	☐	☒
c. Sample panel construction.	☒	04 20 00	☐	☒
7. Prior to grouting, verify that the following are in compliance:				
a. Grout space	☒	04 20 00	☐	☒
b. Placement of reinforcement, connectors, and anchor bolts	☒	04 20 00	☐	☒
c. Proportions of site-prepared grout	☒	04 20 00	☐	☒
8. During construction, verify compliance of the following:				
a. Materials and procedures with the approved submittals.	☒	04 20 00	☐	☒
b. Placement of masonry units and mortar joint construction.	☒	04 20 00	☐	☒
c. Size and location of structural members.	☒	04 20 00	☐	☒
d. Type, size and location of anchors including anchorage of masonry to structural members, frames or other construction	☒	04 20 00	☐	☒
e. Welding of reinforcing bars	☒	04 20 00	☒	☐
f. Preparation, construction and protection of masonry during cold or hot weather	☒	04 20 00	☐	☒
g. Placement of grout.	☒	04 20 00	☒	☐
9. Observe preparation of grout specimens, mortar specimens and/or prisms	☒	04 20 00	☐	☒

Structural Steel (1705.2.1)				
1. Minimum inspections prior to welding per AISC 360 (including but not limited to material verification, welder qualification and fit-up of joints).	☒	05 12 00	☒	☐
2. Minimum inspections during welding per AISC 360	☒	05 12 00	☒	☐
a. Placement and installation of steel headed stud anchors	☐	05 12 00	☒	☐
b. Verification of ASTM A 706 material	☒	05 12 00	☐	☒
c. Testing of resisting flexural and axial forces in intermediate and special moment frames, and boundary elements of special reinforced concrete shear walls and shear reinforcement.	☐	05 12 00	☒	☐
3. Minimum inspections after welding per AISC 360 (including but not limited to size, length and location of welds; welds meet visual acceptance criteria; and repair activities)	☒	05 12 00	☒	☐
4. Inspection of welding via UT for CJP groove welds subject to transversely applied tension loading in butt, T-, and Corner joints				
a. Risk Category III or IV structures	☒	05 12 00	☒	☐
b. Risk Category II structures	☐	05 12 00	☐	☒
5. Minimum inspections prior to high-strength bolting (except for snug-tight joints) per AISC 360 (including but not limited to material verification of high-strength bolts, nuts, and washers; and bolting procedures)	☒	05 12 00	☒	☐
6. Minimum inspections during high-strength bolting (except for snug-tight joints) per AISC 360 (included but not limited to assemblies and positioning)	☒	05 12 00		
a. For pretension/slip-critical connections using turn-of-nut with match marking method, direct-tension-indicator method, or twist-off-type tension control bolt method.	☒	05 12 00	☐	☒
b. For pretension/slip-critical connections using calibrated wrench method or turn-of-nut method without matchmarking	☒	05 12 00	☒	☐
7. Minimum inspections after high-strength bolting per AISC 360	☒	05 12 00	☐	☒
8. Inspection of fabricated and/or erected steel to verify compliance with the construction drawings.	☒	05 12 00	☐	☒
a. Details such as bracing and stiffeners	☒	05 12 00	☐	☒
b. Member locations	☒	05 12 00	☐	☒
c. Joint details	☒	05 12 00	☐	☒
9. Inspection during placement of anchor rods and other embedded items supporting structural steel for compliance with construction drawings.	☒	05 12 00	☒	☐
8. Material verification of structural steel: Identification markings to conform to ASTM standards specified in the approved construction documents	☒	05 12 00	☐	☐

Open-Web Steel Joists and Joist Girders (1705.2.3)				
1. Installation of open-web steel joists and joist girders				
a. End connections – welded or bolted per SJI	☒	05 21 00	☐	☒
b. Bridging – horizontal or diagonal				
1. Standard bridging per SJI	☒	05 21 00	☐	☒
2. Bridging that differs from SJI specification	☒	05 21 00	☐	☒

Cold-Formed Steel Deck (1705.2.2)				
1. Inspection or Execution Tasks Prior to Deck Placement per SDI QA/QC (including but not limited to compliance of materials with construction documents)	☒	05 31 00	☐	☒
2. Inspection or Execution Tasks After to Deck Placement per SDI QA/QC (including but not limited to compliance of installation with construction documents)	☒	05 31 00	☐	☒
3. Inspection or Execution Tasks Prior to Welding per SDI QA/QC (including but not limited to verification of procedures and certifications)	☒	05 31 00	☐	☒
4. Inspection or Execution Tasks During Welding per SDI QA/QC	☒	05 31 00	☒	☐
5. Inspection or Execution Tasks After Welding per SDI QA/QC (including but not limited to size, length and location of welds; welds meet visual acceptance criteria; and repair activities)	☒	05 31 00	☐	☒
6. Inspection or Execution Tasks Prior to Mechanical Fastening per SDI QA/QC (including but not limited to material verification)	☒	05 31 00	☐	☒
7. Inspection or Execution Tasks During Mechanical Fastening per SDI QA/QC (including but not limited to verification of positioning and installation)	☒	05 31 00	☒	☐
8. Inspection or Execution Tasks After Mechanical Fastening per SDI QA/QC (including but not limited to verification of spacing, type and location; repair activities)	☒	05 31 00	☐	☒

Cold-Formed Steel Trusses (1705.2.4)				
1. For trusses spanning 60 feet or greater:				
a. Verify the temporary installation restraint/bracing is installed per the approved truss submittal package.	☐	05 40 00	☐	☒
b. Verify the permanent individual truss member restraint/bracing is installed per the approved truss submittal package.	☐	05 40 00	☐	☒

Wood Construction (170505)				
1. For Metal-plate connected wood trusses spanning 60 feet or greater:				
a. Verify the temporary installation restraint/bracing is installed per the approved truss submittal package.	☐	06 10 00, 06 16 00, 06 17 53	☐	☒
b. Verify the permanent individual truss member restraint/bracing is installed per the approved truss submittal package.	☐	06 10 00, 06 16 00, 06 17 53	☐	☒
2. Inspect High-load diaphragms for grade and thickness of sheathing material; nominal size of framing members; fastener diameter and length; fastener layout and spacing	☐	06 10 00	☐	☒

Exterior Insulation and Finish Systems (EIFS) (1705.16)				
Not required if water-resistive barrier is installed with a means of draining moisture to the exterior. Also not required for EIFS applications over masonry or concrete walls. 1. Inspection of water-resistive batter coating when installed over a sheathing substrate.	☐	07 24 13	☐	☐

Sprayed Fire-resistant Materials (1705.14)				
1. Verify surface preparation in accordance with manufacturer's written instructions.	☐	07 81 00	☐	☐
2. Verify temperature and area ventilation before and after application in accordance with manufacturer's written instructions.	☐	07 81 00	☐	☐
3. Verify thickness of sprayed fire-resistant materials				
a. Minimum of 4 measurements per 1,000 sq ft of floor, roof and wall assembly areas, or part thereof at each story.	☐	07 81 00	☐	☐
b. Minimum of 25% of structural members at each story.	☐	07 81 00	☐	☐
4. Verify density of sprayed fire-resistant materials.				
a. Minimum of one sample per 2,500 sq ft of floor, roof and wall assembly areas, or part thereof at each story.	☐	07 81 00	☐	☐
b. Minimum of one sample from each type of structural framing member per 2,500 sq ft of floor area or part thereof at each story.				
5. Verify cohesive/adhesive bond strength of sprayed fire-resistant materials.				
a. Minimum of one sample per 2,500 sq ft of floor, roof and wall assembly areas or part thereof at each story.	☐	07 81 00	☐	☐
b. Minimum of one sample from each type of structural framing member per 2,500 sq ft of floor area or part thereof at each story	☐	07 81 00	☐	☐
c. Bond tests to qualify a primer, paint, or encapsulant when acceptable bond strength performance between those coatings and the fire-resistant material has not been determined.	☐	07 81 00	☐	☐

Mastic and Intumescent Fire-resistant Coatings (1705.15)				
1. Verify surface preparation, application, and thickness when applied to structural elements and decks in accordance with AWCI 12-B	☐	07 81 23	☐	☐

Fire-Resistant Penetrations and Joints (1705.17)				
1. Inspection of through-penetrations and membrane penetration firestops in buildings in Risk Category III or IV per ASTM E2174	☒	07 84 13	☐	☐
2. Inspections of fire-resistant joint systems and perimeter fire barrier systems in buildings in Risk Category III or IV per ASTM E2393	☐	07 84 43, 07 95 13.13	☐	☐

Soils (1705.6)				
1. Verify materials below shallow foundations are adequate to achieve the design bearing capacity	☒	31 20 00	☐	☒
2. Verify excavations are extended to proper depth and have reached proper material	☒	31 20 00	☐	☒
3. Perform classification and testing of compacted fill materials	☒	31 20 00	☐	☒
4. Verify use of proper materials, densities and lift thicknesses during placement and compaction of compacted fill	☒	31 20 00	☒	☐
5. Prior to placement of compacted fill, inspect subgrade and verify that site has been prepared properly	☒	31 20 00	☐	☒

Driven Deep Foundations (1705.7)				
1. Verify element materials, sizes and lengths comply with the requirements	☐	31 62 13, 31 62 16, 31 62 19, 31 22 23	☒	☐
2. Determine capacities of test elements and conduct additional load tests, as required	☐	31 62 13, 31 62 16, 31 62 19, 31 22 23	☒	☐
3. Inspect driving operations and maintain complete and accurate records for each element	☐	31 62 13, 31 62 16, 31 62 19, 31 22 23	☒	☐
4. Verify placement locations and plumbness, confirm type and size of hammer, record number of blows per foot of penetration, determine required penetrations to achieve design capacity, record tip and butt elevations and document any damage to foundation element	☐	31 62 13, 31 62 16, 31 62 19, 31 22 23	☒	☐
5. For steel elements, perform additional special inspections in accordance with 1705.2	☐	31 62 13, 31 62 16, 31 62 19, 31 22 23	☐	☐
6. For concrete elements and concrete-filled elements, perform additional special inspections in accordance with Section 1705.3	☐	31 62 13, 31 62 16, 31 62 19, 31 22 23	☐	☐
7. For specialty elements, perform additional inspections	☐	31 62 13, 31 62 16, 31 62 19, 31 22 23	☐	☐

Cast-In-Place Deep Foundations (1705.8)				
1. Inspect drilling operations and maintain complete and accurate records for each element	☐	31 63 16, 31 63 29	☒	☐
2. Verify placement locations and plumbness, confirm element diameters, bell diameters (if applicable), lengths, embedment into bedrock (if applicable), and adequate end bearing strata capacity. Record concrete or grout volumes.	☐	31 63 16, 31 63 29	☒	☐
3. For concrete elements, perform tests and additional special inspections in accordance with Section 1705.3	☐	31 63 16, 31 63 29	☐	☐

Helical Pile Foundations (1705.9)				
1. Inspect installation operations and maintain complete and accurate records for each pier	☐	??	☒	☐
2. Verify and record installation equipment used, pile dimensions, tip elevations, final depth, final installation torque other data as required	☐	??	☒	☐

Wind Resistance Inspections (1705.11)				
1. Structural wood – of elements in main windforce-resisting system				
a. Inspection of gluing operations.	☐	06 10 00, 06 16 00, 06 17 53	☒	☐
b. Inspection of nailing, bolting, anchoring and other fastening	☐	06 10 00, 06 16 00, 06 17 53	☐	☒
2. Cold-formed steel light-frame construction – of elements in main windforce-resisting systems.				
a. Inspection of welding operations	☐	05 40 00	☐	☒
b. Inspection of screw attachment, bolting, anchoring and other fastening	☐	05 40 00	☐	☒
3. Wind-resisting components:				
a. Inspection of roof covering, roof deck and roof framing connections	☐	05 12 00, 05 21 00, 05 31 00, 07 53 23	☐	☒
b. Inspection of exterior wall covering and wall connections to roof and floor diaphragms and framing	☐	04 20 00, 07 24 13, 08 41 13, 08 44 13	☐	☒

Seismic Resistance Inspections (1705.12)				
1. Structural steel:				
SDC B, C, D, E, or F – refer to 1705.12.1.1 for exceptions a. Seismic force-resisting systems – inspection in accordance with AISC 341	☐	05 12 00	☒	☐
SDC B (R>3), C (R>3), D, E, or F b. Structural steel elements - inspection in accordance with AISC 341	☐	05 12 00	☒	☐
SDC C, D, E, or F, refer to 1705.12.2 for exceptions 2. Structural wood, seismic-force-resisting systems:				
a. Inspection of field gluing operations.	☐	06 10 00, 06 17 00, 06 17 53	☒	☐
b. Inspection of nailing, bolting, anchoring and other fastening	☐	06 10 00, 06 17 00, 06 17 53	☐	☒
SDC C, D, E, or F, refer to 1705.12.3 for exceptions 3. Cold-formed steel framing - of elements in seismic-force-resisting systems				
a. Inspection of welding operations of seismic-force-resisting systems	☐	05 40 00	☐	☒
b. Inspection of screw attachment, bolting, anchoring and other fastening	☐	05 40 00	☐	☒
SDC C, D, E or F; coord with 13.2.2 of ASCE 7 4. Designated seismic systems – Inspection systems requiring Seismic Qualification per ASCE 7. Verify label, anchorage and mounting conforms to certificate of compliance	☐	??	☐	☒
5. Architectural components				
a. Inspection of erection and fastening of exterior cladding	☐		☐	☒
b. Inspection of erection and fastening of interior and exterior nonbearing walls	☐		☐	☒
c. Inspection of erection and fastening of interior and exterior veneer	☐		☐	☒
d. Access floors – inspection of anchorage	☐		☐	☒
6. Mechanical and electrical components:				
SDC C, D, E or F a. Inspection of anchorage of electrical equipment for emergency power systems	☐		☐	☒
SDC E or F b. Inspection of anchorage installation or other electrical equipment	☐		☐	☒
SDC C, D, E or F c. Inspection of installation and anchorage of piping systems and associated mechanical units designed to carry hazardous materials	☐		☐	☒
SDC C, D, E, or F d. Inspection of installation and anchorage of ductwork designed to carry hazardous materials	☐		☐	☒
SDC, C, D, E, or F e. Inspection of installation and anchorage of vibration isolation systems	☐		☐	☒
SDC, C, D, E, or F f. Inspection of installation of mechanical and electrical equipment where automatic fire sprinkler systems are installed to verify clearances	☐		☐	☒

SDC B, C, D, E or F 7. Seismic isolation system: Inspection during fabrication and installation of isolator units and energy dissipation devices that are part of the seismic isolation system	☐		☐	☒
SDC D, E or F 8. Cold-formed steel special bolted moment frames: Inspection during installation of frames part of the seismic isolation system	☐		☐	☒

Seismic Resistance Structural Testing				
1. Structural steel:				
SDC B, C, D, E, or F a. Seismic force-resisting systems: Non-destructive testing in accordance with quality assurance requirements of AISC 341	☐	05 12 00	☐	☐
b. Structural steel elements: nondestructive testing in accordance with the quality assurance requirements of AISC 341	☐	05 12 00	☐	☐
SDC B, C, D, E, or F 2. Nonstructural Components: Confirm certification of compliance of seismic qualification for supports and attachments has been submitted by manufacturer for specified systems	☐		☐	☐
SDC C, D, E or F 3. Designated seismic systems: Confirm certification of compliance of seismic qualification has been submitted for designated seismic systems	☐	??	☐	☐
SDC B, C, D, E, or F 4. Seismic isolation systems: Testing per ASCE 7, Section 17.8	☐		☐	☐

Structural Observations				
One or more of: RC IV; high-rise building; special structures as determined by RDP; required by building official 1. Structural observations for structures	☐			
SDC D, E, or F where RC III or IV or SDC E where RC I or II and > 2 stories above grade plane 2. Structural observations for seismic resistance	☐			
V = 130 mph or greater and RC III or IV 3. Structural observations for wind resistance	☐			

SECTION 01 42 00 - REFERENCES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 DEFINITIONS

A. "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.

B. "Directed": A command or instruction by Architect. Other terms including "requested," "authorized," "selected," "required," and "permitted" have the same meaning as "directed."

C. "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."

D. "Furnish": Supply and deliver to Project site, ready for unloading, unpacking, assembly, installation, and similar operations.

E. "Install": Unload, temporarily store, unpack, assemble, erect, place, anchor, apply, work to dimension, finish, cure, protect, clean, and similar operations at Project Site.

F. "Provide": Furnish and install, complete and ready for the intended use.

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.

1. When the building code in effect for the Project cites a different edition, comply with the building code-cited edition.

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.

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 in the following list. This information is subject to change and is believed to be accurate as of the date of the Contract Documents.

1. AA - Aluminum Association (The); www.aluminum.org.
2. AABC - Associated Air Balance Council; www.aabc.com.
3. AAMA - American Architectural Manufacturers Association; www.aamanet.org.
4. AAPFCO - Association of American Plant Food Control Officials; www.aapfco.org.
5. AASHTO - American Association of State Highway and Transportation Officials; www.transportation.org.
6. AATCC - American Association of Textile Chemists and Colorists; www.aatcc.org.
7. ABBA - Air Barrier Association of America; www.airbarrier.org.
8. ABMA - American Bearing Manufacturers Association; www.americanbearings.org.
9. ACI - American Concrete Institute; (Formerly: ACI International); www.concrete.org.
10. ACPA - American Concrete Pipe Association; www.concrete-pipe.org.
11. AEIC - Association of Edison Illuminating Companies, Inc. (The); www.aeic.org.
12. AF&PA - American Forest & Paper Association; www.afandpa.org.
13. AGA - American Gas Association; www.aga.org.
14. AHAM - Association of Home Appliance Manufacturers; www.aham.org.
15. AHRI - Air-Conditioning, Heating, and Refrigeration Institute (The); www.ahrinet.org.
16. AI - Asphalt Institute; www.asphaltinstitute.org.
17. AIA - American Institute of Architects (The); www.aia.org.
18. AISC - American Institute of Steel Construction; www.aisc.org.
19. AISI - American Iron and Steel Institute; www.steel.org.
20. AITC - American Institute of Timber Construction; www.aitc-glulam.org.
21. ALSC - American Lumber Standard Committee, Incorporated; www.alsc.org.
22. AMCA - Air Movement and Control Association International, Inc.; www.amca.org.
23. ANSI - American National Standards Institute; www.ansi.org.
24. AOSA - Association of Official Seed Analysts, Inc.; www.aosaseed.com.
25. APA - APA - The Engineered Wood Association; www.apawood.org.
26. APA - Architectural Precast Association; www.archprecast.org.
27. API - American Petroleum Institute; www.api.org.
28. ARI - Air-Conditioning & Refrigeration Institute; (See AHRI).
29. ARI - American Refrigeration Institute; (See AHRI).
30. ARMA - Asphalt Roofing Manufacturers Association; www.asphaltroofing.org.
31. ASCE - American Society of Civil Engineers; www.asce.org.
32. ASCE/SEI - American Society of Civil Engineers/Structural Engineering Institute; (See ASCE).
33. ASHRAE - American Society of Heating, Refrigerating and Air-Conditioning Engineers; www.ashrae.org.
34. ASME - ASME International; (American Society of Mechanical Engineers); www.asme.org.
35. ASNT - American Society for Nondestructive Testing (The); www.asnt.org
36. ASSE - American Society of Safety Engineers (The); www.asse.org.
37. ASSE - American Society of Sanitary Engineering; www.asse-plumbing.org.
38. ASTM - ASTM International; www.astm.org.
39. ATIS - Alliance for Telecommunications Industry Solutions; www.atis.org.
40. AWCI - Association of the Wall and Ceiling Industry; www.awci.org.

41. AWEA - American Wind Energy Association; www.awea.org.
42. AWI - Architectural Woodwork Institute; www.awinet.org.
43. AWMAC - Architectural Woodwork Manufacturers Association of Canada; www.awmac.com.
44. AWPA - American Wood Protection Association; www.awpa.com.
45. AWS - American Welding Society; www.aws.org.
46. AWWA - American Water Works Association; www.awwa.org.
47. BHMA - Builders Hardware Manufacturers Association; www.buildershardware.com.
48. BIA - Brick Industry Association (The); www.gobrick.com.
49. BICSI - BICSI, Inc.; www.bicsi.org.
50. BIFMA - BIFMA International; (Business and Institutional Furniture Manufacturer's Association); www.bifma.com.
51. BISSC - Baking Industry Sanitation Standards Committee; www.bissc.org.
52. BWF - Badminton World Federation; (Formerly: International Badminton Federation); www.bwfbadminton.org.
53. CDA - Copper Development Association; www.copper.org.
54. CE – Conformite Europeenne; http://ec.europa.eu/growth/single-market/ce-marking/.
55. CEA - Canadian Electricity Association; www.electricity.ca.
56. CEA - Consumer Electronics Association; www.ce.org.
57. CFFA - Chemical Fabrics & Film Association, Inc.; www.chemicalfabricsandfilm.com.
58. CFSEI - Cold-Formed Steel Engineers Institute; www.cfsei.org.
59. CGA - Compressed Gas Association; www.cganet.com.
60. CIMA - Cellulose Insulation Manufacturers Association; www.cellulose.org.
61. CISCA - Ceilings & Interior Systems Construction Association; www.cisca.org.
62. CISPI - Cast Iron Soil Pipe Institute; www.cispi.org.
63. CLFMI - Chain Link Fence Manufacturers Institute; www.chainlinkinfo.org.
64. CPA - Composite Panel Association; www.pbmdf.com.
65. CPPA – (Formerly: Corrugated Polyethylene Pipe Association; a Division of the Plastic Pipe Institute); www.plasticpipe.org/drainage/.
66. CRI - Carpet and Rug Institute (The); www.carpet-rug.org.
67. CRRC - Cool Roof Rating Council; www.coolroofs.org.
68. CRSI - Concrete Reinforcing Steel Institute; www.crsi.org.
69. CSA - Canadian Standards Association; www.csa.ca.
70. CSA - CSA International; (Formerly: IAS - International Approval Services); www.csa-international.org.
71. CSI - Construction Specifications Institute (The); www.csinet.org.
72. CSSB - Cedar Shake & Shingle Bureau; www.cedarbureau.org.
73. CTI - Cooling Technology Institute; (Formerly: Cooling Tower Institute); www.cti.org.
74. CWC - Composite Wood Council; (See CPA).
75. DASMA - Door and Access Systems Manufacturers Association; www.dasma.com.
76. DHI - Door and Hardware Institute; www.dhi.org.
77. ECA - Electronic Components Association;(See ECIA).
78. ECAMA - Electronic Components Assemblies & Materials Association; (See ECIA).
79. ECIA – Electronic Components Industry Association; www.eciaonline.org.
80. EIA - Electronic Industries Alliance; (See TIA).
81. EIMA - EIFS Industry Members Association; www.eima.com.
82. EJMA - Expansion Joint Manufacturers Association, Inc.; www.ejma.org.
83. ESD - ESD Association; (Electrostatic Discharge Association); www.esda.org.
84. ESTA - Entertainment Services and Technology Association; (See PLASA).
85. ETL - Intertek (See Intertek); www.intertek.com.
86. EVO - Efficiency Valuation Organization; www.evo-world.org.

87. FIBA - Federation Internationale de Basketball; (The International Basketball Federation); www.fiba.com.
88. FIVB - Federation Internationale de Volleyball; (The International Volleyball Federation); www.fivb.org.
89. FM Approvals - FM Approvals LLC; www.fmglobal.com.
90. FM Global - FM Global; (Formerly: FMG - FM Global); www.fmglobal.com.
91. FRSA - Florida Roofing, Sheet Metal & Air Conditioning Contractors Association, Inc.; www.floridaroof.com.
92. FSA - Fluid Sealing Association; www.fluidsealing.com.
93. FSC - Forest Stewardship Council U.S.; www.fscus.org.
94. FSEC - Florida Solar Energy Center; www.fsec.ucf.edu.
95. GA - Gypsum Association; www.gypsum.org.
96. GANA - Glass Association of North America; www.glasswebsite.com.
97. GS - Green Seal; www.greenseal.org.
98. HI - Hydraulic Institute; www.pumps.org.
99. HI/GAMA - Hydronics Institute/Gas Appliance Manufacturers Association; (See AHRI).
100. HMMA - Hollow Metal Manufacturers Association; (See NAAMM).
101. HPVA - Hardwood Plywood & Veneer Association; www.hpva.org.
102. HPW - H. P. White Laboratory, Inc.; www.hpwhite.com.
103. IAPSC - International Association of Professional Security Consultants; www.iapsc.org.
104. IAS – International Accreditation Service; www.iasonline.org.
105. IAS - International Approval Services; (See CSA).
106. ICBO - International Conference of Building Officials; (See ICC).
107. ICC - International Code Council; www.iccsafe.org.
108. ICEA - Insulated Cable Engineers Association, Inc.; www.icea.net.
109. ICPA - International Cast Polymer Alliance; www.icpa-hq.org.
110. ICRI - International Concrete Repair Institute, Inc.; www.icri.org.
111. IEC - International Electrotechnical Commission; www.iec.ch.
112. IEEE - Institute of Electrical and Electronics Engineers, Inc. (The); www.ieee.org.
113. IES - Illuminating Engineering Society; (Formerly: Illuminating Engineering Society of North America); www.ies.org.
114. IESNA - Illuminating Engineering Society of North America; (See IES).
115. IEST - Institute of Environmental Sciences and Technology; www.iest.org.
116. IGCC - Insulating Glass Certification Council; www.igcc.org.
117. IGMA - Insulating Glass Manufacturers Alliance; www.igmaonline.org.
118. IGSHPA - International Ground Source Heat Pump Association; www.igshpa.okstate.edu.
119. ILI - Indiana Limestone Institute of America, Inc.; www.iliai.com.
120. Intertek - Intertek Group; (Formerly: ETL SEMCO; Intertek Testing Service NA); www.intertek.com.
121. ISA - International Society of Automation (The); (Formerly: Instrumentation, Systems, and Automation Society); www.isa.org.
122. ISAS - Instrumentation, Systems, and Automation Society (The); (See ISA).
123. ISFA - International Surface Fabricators Association; (Formerly: International Solid Surface Fabricators Association); www.isfanow.org.
124. ISO - International Organization for Standardization; www.iso.org.
125. ISSFA - International Solid Surface Fabricators Association; (See ISFA).
126. ITU - International Telecommunication Union; www.itu.int/home.
127. KCMA - Kitchen Cabinet Manufacturers Association; www.kcma.org.
128. LMA - Laminating Materials Association; (See CPA).
129. LPI - Lightning Protection Institute; www.lightning.org.

130. MBMA - Metal Building Manufacturers Association; www.mbma.com.
131. MCA - Metal Construction Association; www.metalconstruction.org.
132. MFMA - Maple Flooring Manufacturers Association, Inc.; www.maplefloor.org.
133. MFMA - Metal Framing Manufacturers Association, Inc.; www.metalframingmfg.org.
134. MHIA - Material Handling Industry of America; www.mhia.org.
135. MIA - Marble Institute of America; www.marble-institute.com.
136. MMPA - Moulding & Millwork Producers Association; (Formerly: Wood Moulding & Millwork Producers Association); www.wmmpa.com.
137. MPI - Master Painters Institute; www.paintinfo.com.
138. MSS - Manufacturers Standardization Society of The Valve and Fittings Industry Inc.; www.mss-hq.org.
139. NAAMM - National Association of Architectural Metal Manufacturers; www.naamm.org.
140. NACE - NACE International; (National Association of Corrosion Engineers International); www.nace.org.
141. NADCA - National Air Duct Cleaners Association; www.nadca.com.
142. NAIMA - North American Insulation Manufacturers Association; www.naima.org.
143. NALP – National Association of Landscape Professionals (Formerly Professional Landcare Network); www.landscapeprofessionals.org.
144. NBGQA - National Building Granite Quarries Association, Inc.; www.nbgqa.com.
145. NBI – New Buildings Institute; www.newbuildings.org.
146. NCAA - National Collegiate Athletic Association (The); www.ncaa.org.
147. NCMA - National Concrete Masonry Association; www.ncma.org.
148. NEBB - National Environmental Balancing Bureau; www.nebb.org.
149. NECA - National Electrical Contractors Association; www.necanet.org.
150. NeLMA - Northeastern Lumber Manufacturers Association; www.nelma.org.
151. NEMA - National Electrical Manufacturers Association; www.nema.org.
152. NETA - InterNational Electrical Testing Association; www.netaworld.org.
153. NFHS - National Federation of State High School Associations; www.nfhs.org.
154. NFPA - National Fire Protection Association; www.nfpa.org.
155. NFPA - NFPA International; (See NFPA).
156. NFRC - National Fenestration Rating Council; www.nfrc.org.
157. NHLA - National Hardwood Lumber Association; www.nhla.com.
158. NICET - National Institute for Certification in Engineering Technologies; www.nicet.org.
159. NLGA - National Lumber Grades Authority; www.nlga.org.
160. NOFMA - National Oak Flooring Manufacturers Association; (See NWFA).
161. NOMMA - National Ornamental & Miscellaneous Metals Association; www.nomma.org.
162. NRCA - National Roofing Contractors Association; www.nrca.net.
163. NRMCA - National Ready Mixed Concrete Association; www.nrmca.org.
164. NSF - NSF International; www.nsf.org.
165. NSPE - National Society of Professional Engineers; www.nspe.org.
166. NSSGA - National Stone, Sand & Gravel Association; www.nssga.org.
167. NTMA - National Terrazzo & Mosaic Association, Inc. (The); www.ntma.com.
168. NWFA - National Wood Flooring Association; www.nwfa.org.
169. PCI - Precast/Prestressed Concrete Institute; www.pci.org.
170. PDI - Plumbing & Drainage Institute; www.pdionline.org.
171. PLANET - Professional Landcare Network; (See NALP).
172. PLASA - PLASA; (Formerly: ESTA - Entertainment Services and Technology Association); www.plasa.org.
173. PTI - Post-Tensioning Institute; www.post-tensioning.org.
174. RCSC - Research Council on Structural Connections; www.boltcouncil.org.

175. RFCI - Resilient Floor Covering Institute; www.rfci.com.
176. RIS - Redwood Inspection Service; www.redwoodinspection.com.
177. SAE - SAE International; www.sae.org.
178. SCTE - Society of Cable Telecommunications Engineers; www.scte.org.
179. SDI - Steel Deck Institute; www.sdi.org.
180. SDI - Steel Door Institute; www.steeldoor.org.
181. SEFA - Scientific Equipment and Furniture Association; www.sefalabs.com.
182. SEI/ASCE - Structural Engineering Institute/American Society of Civil Engineers; (See ASCE).
183. SGCC - Safety Glazing Certification Council; www.sgcc.org.
184. SIA - Security Industry Association; www.siaonline.org.
185. SJI - Steel Joist Institute; www.steeljoist.org.
186. SMA - Screen Manufacturers Association; www.smainfo.org.
187. SMACNA - Sheet Metal and Air Conditioning Contractors' National Association; www.smacna.org.
188. SMPTE - Society of Motion Picture and Television Engineers; www.smpte.org.
189. SPFA - Spray Polyurethane Foam Alliance; www.sprayfoam.org.
190. SPIB - Southern Pine Inspection Bureau; www.spib.org.
191. SPRI - Single Ply Roofing Industry; www.spri.org.
192. SRCC - Solar Rating and Certification Corporation; www.solar-rating.org.
193. SSINA - Specialty Steel Industry of North America; www.ssina.com.
194. SSPC - SSPC: The Society for Protective Coatings; www.sspc.org.
195. STI - Steel Tank Institute; www.steeltank.com.
196. SWI - Steel Window Institute; www.steelwindows.com.
197. SWPA - Submersible Wastewater Pump Association; www.swpa.org.
198. TABB - Testing, Adjusting and Balancing Bureau; www.tabbcertified.org.
199. TCA - Tilt-Up Concrete Association; www.tilt-up.org.
200. TCNA - Tile Council of North America, Inc.; www.tileusa.com.
201. TEMA - Tubular Exchanger Manufacturers Association, Inc.; www.tema.org.
202. TIA - Telecommunications Industry Association; (Formerly: TIA/EIA - Telecommunications Industry Association/Electronic Industries Alliance); www.tiaonline.org.
203. TIA/EIA - Telecommunications Industry Association/Electronic Industries Alliance; (See TIA).
204. TMS - The Masonry Society; www.masonrysociety.org.
205. TPI - Truss Plate Institute; www.tpinst.org.
206. TPI - Turfgrass Producers International; www.turfgrasssod.org.
207. TRI - Tile Roofing Institute; www.tileroofing.org.
208. UFAC - Upholstered Furniture Action Council; www.ufac.org.
209. UL - Underwriters Laboratories Inc.; www.ul.com.
210. ULC - Underwriters Laboratories of Canada; www.ulc.ca.
211. UNI - Uni-Bell PVC Pipe Association; www.uni-bell.org.
212. USAV - USA Volleyball; www.usavolleyball.org.
213. USBA - United States Badminton Association; www.usabadminton.org.
214. USGBC - U.S. Green Building Council; www.usgbc.org.
215. USITT - United States Institute for Theatre Technology, Inc.; www.usitt.org.
216. WA – Wallcoverings Association; www.wallcoverings.org.
217. WASTEC - Waste Equipment Technology Association; www.wastec.org.
218. WCLIB - West Coast Lumber Inspection Bureau; www.wclib.org.
219. WCMA - Window Covering Manufacturers Association; www.wcmanet.org.
220. WDMA - Window & Door Manufacturers Association; www.wdma.com.

221. WI - Woodwork Institute; (Formerly: WIC - Woodwork Institute of California); www.wicnet.org.
222. WMMPA - Wood Moulding & Millwork Producers Association; (See MMPA).
223. WSRCA - Western States Roofing Contractors Association; www.wsrca.com.
224. WWPA - Western Wood Products Association; www.wwpa.org.

B. Code Agencies: Where abbreviations and acronyms are used in Specifications or other Contract Documents, they shall mean the recognized name of the entities in the following list. This information is believed to be accurate as of the date of the Contract Documents.

1. IAPMO - International Association of Plumbing and Mechanical Officials; www.iapmo.org.
2. ICC - International Code Council; www.iccsafe.org.
3. ICC-ES - ICC Evaluation Service, LLC; www.icc-es.org.

C. Federal Government Agencies: Where abbreviations and acronyms are used in Specifications or other Contract Documents, they shall mean the recognized name of the entities in the following list. Information is subject to change and is believed to be accurate as of the date of the Contract Documents.

1. COE - Army Corps of Engineers; www.usace.army.mil.
2. CPSC - Consumer Product Safety Commission; www.cpsc.gov.
3. DOC - Department of Commerce; National Institute of Standards and Technology; www.nist.gov.
4. DOD - Department of Defense; http://quicksearch.dla.mil.
5. DOE - Department of Energy; www.energy.gov.
6. EPA - Environmental Protection Agency; www.epa.gov.
7. FAA - Federal Aviation Administration; www.faa.gov.
8. FCC - Federal Communications Commission; www.fcc.gov.
9. FG - Federal Government Publications; www.gpo.gov.
10. GSA - General Services Administration; www.gsa.gov.
11. HUD - Department of Housing and Urban Development; www.hud.gov.
12. LBL - Lawrence Berkeley National Laboratory; Environmental Energy Technologies Division; http://eetd.lbl.gov.
13. NIST - National Institute of Standards and Technology; www.nist.gov.
14. OSHA - Occupational Safety & Health Administration; www.osha.gov.
15. SD - Department of State; www.state.gov.
16. TRB - Transportation Research Board; National Cooperative Highway Research Program; www.trb.org.
17. USDA - Department of Agriculture; Agriculture Research Service; U.S. Salinity Laboratory; www.ars.usda.gov.
18. USDA - Department of Agriculture; Rural Utilities Service; www.usda.gov.
19. USDJ - Department of Justice; Office of Justice Programs; National Institute of Justice; www.ojp.usdoj.gov.
20. USP - U.S. Pharmacopeia; www.usp.org.
21. USPS - United States Postal Service; www.usps.com.

D. Standards and Regulations: Where abbreviations and acronyms are used in Specifications or other Contract Documents, they shall mean the recognized name of the standards and regulations in the following list. This information is subject to change and is believed to be accurate as of the date of the Contract Documents.

1. ADAAG - Accessibility Guidelines for Buildings and Facilities, Available from United States Access Board; www.access-board.gov.

2. AHERA - Asbestos Hazard Emergency Response Act, Available from US Environmental Protection Agency; www.epa.gov.

3. BCNYS - Building Code of New York State, Available from New York State Department of State; www.dos.ny.gov/DCEA/.

4. CFR - Code of Federal Regulations; Available from Government Printing Office; www.gpo.gov/fdsys.

5. DOD - Department of Defense; Military Specifications and Standards; Available from Department of Defense Single Stock Point; http://quicksearch.dla.mil.

6. DSCC - Defense Supply Center Columbus; (See FS).

7. FED-STD - Federal Standard; (See FS).

8. FS - Federal Specification; Available from DLA Document Services; www.quicksearch.dla.mil.

   a. Available from Defense Standardization Program; www.dsp.dla.mil.
   b. Available from General Services Administration; www.gsa.gov.
   c. Available from National Institute of Building Sciences/Whole Building Design Guide; www.wbdg.org/ccb.

9. IBC - International Building Code, Available from International Code Council; www.iccsafe.org.
10. LEED - Leadership in Energy and Environmental Design (Green Building Rating Systems), Available from U.S. Green Building Council; www.usgbc.org.

11. MILSPEC - Military Specification and Standards; (See DOD).

12. NEC - National Electrical Code, Available from NFPA (National Fire Protection Association); www.nfpa.org.

13. NSPC - National Standard Plumbing Code, Available from Plumbing-Heating-Cooling Contractors Association; www.phccweb.org.

14. NYSED/MPS - New York State Education Department Manual of Planning Standards, Available from New York State Education Department (Facilities Planning); www.p12.nysed.gov/facplan/forms.html.

15. USAB - United States Access Board; www.access-board.gov.

16. UFAS - Uniform Federal Accessibility Standards Available from Access Board; www.access-board.gov.

17. USATBCB - U.S. Architectural & Transportation Barriers Compliance Board; (See USAB).

E. State Government Agencies: Where abbreviations and acronyms are used in Specifications or other Contract Documents, they shall mean the recognized name of the entities in the following list. This information is subject to change and is believed to be accurate as of the date of the Contract Documents.

1. CBHF - State of California; Department of Consumer Affairs; Bureau of Electronic Appliance and Repair, Home Furnishings and Thermal Insulation; www.bearhfti.ca.gov.
2. NYSDEC - New York State Department of Environmental Conservation; www.dec.ny.gov.
3. NYSDOH - New York State Department of Health; www.health.ny.gov.
4. NYSDOT - New York State Department of Transportation; www.dot.ny.gov.
5. NYSED - New York State Education Department (Facilities Planning); www.p12.nysed.gov/facplan/.
6. NYSERDA - New York State Energy Research and Development Authority; www.nyserda.ny.gov.
7. OSHPD - Office of Statewide Health Planning and Development (State of California); www.oshpd.ca.gov.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION (Not Used)

END OF SECTION 01 42 00

SECTION 01 50 00 - TEMPORARY FACILITIES AND CONTROLS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General 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. Division 01 Section "Multiple Contract Project Summary - Project Schedule" for responsibilities for temporary facilities and controls for projects utilizing multiple contracts.

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 engaged in the Project to use temporary services and facilities without cost, including, but not limited to, Architect, testing agencies, and authorities having jurisdiction.

1.4 SUBMITTALS, GENERAL

A. General: Submit all informational submittals required by this Section concurrently.

1.5 INFORMATIONAL SUBMITTALS

A. Site Utilization Plan: Show temporary facilities, temporary utility lines and connections, staging areas, construction site entrances, vehicle circulation, and parking areas for construction personnel.

B. Shoring and Bracing Plan: Submit shoring and bracing plan, designed, signed and sealed by the qualified professional engineer responsible for its preparation.

1.6 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 United States Access Board's ADA-ABA Accessibility Guidelines and ICC/ANSI A117.1.

PART 2 - PRODUCTS

2.1 MATERIALS

A. Chain-Link Fencing: Minimum 2-inch, 0.148-inch-thick, galvanized-steel, chain-link fabric fencing; minimum 6 feet high with galvanized-steel pipe posts; minimum 2-3/8-inch-OD line posts and 2-7/8-inch-OD corner and pull posts, with 1-5/8-inch-OD top rails.

B. Fencing Windscreen Privacy Screen: Polyester fabric scrim with grommets for attachment to chain link fence, sized to height of fence, in color selected by Architect from manufacturer's standard colors.

C. Plastic Barrier Fencing: High-density polyethylene mesh, high-visibility orange; minimum 4 feet high with minimum 6-foot-long wood stakes spaced a maximum of 8 feet on center, and with a continuous wood top stake; steel wire or nylon cable ties every 12 inches on center; with warning signs as indicated or required.

2.2 TEMPORARY FACILITIES

A. Field Offices, General: Prefabricated or mobile units with serviceable finishes, temperature controls, and foundations adequate for normal loading.

B. Storage Sheds: Provide sheds sized, furnished, and equipped to accommodate materials and equipment for construction operations.

1. Store combustible materials apart from building.

2.3 EQUIPMENT

A. Fire Extinguishers: Portable, UL rated; with class and extinguishing agent as required by locations and classes of fire exposures.

B. HVAC Equipment: Provide vented, self-contained, liquid-propane-gas with individual space thermostatic control. Use of permanent HVAC system is not permitted.

1. Use of gasoline-burning space heaters, open-flame heaters, or salamander-type heating units is prohibited.

2. HVAC 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.

a. Directly vent all combustion gases to the exterior.

b. Design system to use 100 percent outside make-up air.

c. 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) Temp-Air, Inc.

C. Air-Filtration Units: Primary and secondary HEPA-filter-equipped portable units with four-stage filtration. Provide single switch for emergency shutoff. Configure to run continuously.

PART 3 - EXECUTION

3.1 TEMPORARY FACILITIES, GENERAL

A. Conservation: Coordinate construction and use of temporary facilities with consideration given to conservation of energy, water, and materials. Coordinate use of temporary utilities to minimize waste.

3.2 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.

3.3 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. Sewers and Drainage: Provide temporary utilities to remove effluent lawfully.

1. Connect temporary sewers to municipal system as directed by authorities having jurisdiction.

C. Water Service: Install water service and distribution piping in sizes and pressures adequate for construction.

1. 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.

2. Provide reduced pressure zone (RPZ) backflow preventer at connection to existing system. Provide appropriate drainage piping with air gap from the backflow preventer relief port to an approved discharge point.

    a. Basis-of-Design Product: Watts Water Technologies; Series LF909.

3. Provide 3/4-inch hose connections at each level spaced so that a 200-foot-long hose will reach all areas of building where a Contractor requires water.

4. Provide sign at each outlet indicating temporary water sources are not for human consumption.

D. Sanitary Facilities: Provide temporary toilets, wash facilities, and bottled 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. Use of Owner's toilet facilities and drinking water facilities is not permitted.

1. Provide continual supply of toilet paper, paper towels, soap, and bottled drinking water.

E. Temporary Heating and Cooling: 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.

1. Provide temporary dehumidification systems when required to reduce ambient and substrate moisture levels to level required to allow installation or application of finishes and their proper curing or drying.

F. Isolation of Work Areas in Occupied Facilities: Prevent dust, fumes, and odors from entering occupied areas.

1. Prior to commencing work, isolate the HVAC system in area where work is to be performed.

    a. Disconnect supply and return ductwork in work area from HVAC systems servicing occupied areas.

    b. Maintain negative air pressure within work area using HEPA-equipped air-filtration units, starting with commencement of temporary partition construction, and continuing until removal of temporary partitions is complete.

2. Maintain dust partitions during the Work. Use vacuum collection attachments on dust-producing equipment. Isolate limited work within occupied areas using portable dust-containment devices.

3. Perform daily construction cleanup and final cleanup using approved, HEPA-filter-equipped vacuum equipment.

G. Electric Power Service: Provide electric power service and distribution system of sufficient size, capacity, and power characteristics required for construction operations.

1. Install electric power service overhead unless otherwise indicated.

2. Connect temporary service to Owner's existing power source, as directed by Owner. Maintain equipment in a condition acceptable to Owner.

3. Service Requirements:

a. Provide 120/208 V, 60 Hz, single/three phase alternating current with capacity to accommodate maximum electric power and lighting requirements during construction.

b. Provide minimum of two each 120/208 V duplex outlets spaced so that a 50-foot-long extension cord will reach all areas of building where a Contractor requires electric power.

4. Distribution System: Provide poles, pole hardware, overhead, exterior and interior wiring, transformers, and similar items required for electric power service and lighting.

a. Single-Phase Wiring: 3-wire, 120/208 V feeders, with No. 12 three- or four-wire branch circuits conforming to NEC No. 210-7 and OSHA requirements, with branch circuit protective device.

1) Provide each branch circuit with 120/208 V, single-phase fused grounding-type power outlets, buss type SRX or SKY, with approved covered box and fuses as required.

2) Provide panelboards containing ground fault interrupter type circuit breakers meeting applicable NEC requirements with required number of poles.

a) Basis-of-Design Product: Square D by Schneider Electric; QO120GFI for each branch circuit allowing maximum total load of 16 amps on each 20 amp branch circuit.

3) Provide appropriately-sized green grounding wiring complying with NEC requirements in feeder and branch circuits to provide grounding of all 120 and 208 V outlets in approved manner.

b. Three-Phase Wiring: Three-wire, 208 V feeders, with fused disconnect switches, allowing minimum 5 hp motor load at 208 V from each feeder, and providing four three-phase outlets on each floor near points of use.

5. Extension Cords: Temporary 3-wire plug-in extensions with grounding features at both ends.

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.

I. Telephone Service: Provide telephone service to Contractor's Field Personnel

3.4 SUPPORT FACILITIES INSTALLATION

A. General: Comply with the following:

1. Provide construction for temporary offices, shops, and sheds located within construction area or within 30 feet of building lines that is noncombustible according to ASTM E 136. Comply with NFPA 241.

2. Maintain support facilities until Substantial Completion.

B. Temporary Roads and Paved Areas: Construct and maintain temporary roads and paved areas adequate for construction operations. Locate temporary roads and paved areas as indicated on Drawings.

1. Provide dust-control treatment that is nonpolluting and nontracking. Reapply treatment as required to minimize dust.

C. Temporary Use of Planned Permanent Roads and Paved Areas: Locate temporary roads and paved areas in same location as permanent roads and paved areas. Construct and maintain temporary roads and paved areas adequate for construction operations. Extend temporary roads and paved areas, within construction limits indicated, as necessary for construction operations.

1. Coordinate elevations of temporary roads and paved areas with permanent roads and paved areas.

2. Prepare subgrade and install subbase and base for temporary roads and paved areas according to Division 31 Section "Earth Moving."

3. Recondition base after temporary use, including removing contaminated material, regrading, proofrolling, compacting, and testing.

4. Delay installation of final course of permanent hot-mix asphalt pavement until immediately before Substantial Completion. Repair hot-mix asphalt base-course pavement before installation of final course according to Division 32 Section "Asphalt Paving."

D. Traffic Controls: Comply with requirements of authorities having jurisdiction.

1. Protect existing site improvements to remain including curbs, pavement, and utilities.
2. Maintain access for fire-fighting equipment and access to fire hydrants.

E. Parking: Use designated areas of Owner's existing parking areas for construction personnel.

F. Dewatering Facilities and Drains: Comply with requirements of authorities having jurisdiction. Maintain Project site, excavations, and construction free of water.

1. Dispose of rainwater in a lawful manner that will not result in flooding Project or adjoining properties or endanger permanent Work or temporary facilities.
2. Remove snow and ice as required to minimize accumulations in all areas of construction operations.

G. Waste Disposal Facilities: Provide waste-collection containers in sizes adequate to handle waste from construction operations. Comply with requirements of authorities having jurisdiction. Comply with progress cleaning requirements in Division 01 Section “Execution."

1. Waste from Construction Operations: Includes materials not intended or necessary for completion of Work, including packing materials, food waste, waste paper, and similar items. Excavated material is not included in this definition.

2. Chutes: Provide enclosed chutes for removal of waste from construction operations from levels above grade level or roof. Remove waste in a controlled manner; materials shall not be dropped or thrown from heights.

H. Recycling Procedures: Separate recyclable waste from other waste materials, trash, and debris. Separate recyclable waste by type at Project site to the maximum extent practical.

1. Provide appropriately marked containers or bins for controlling recyclable waste until they are removed from Project site. Include list of acceptable and unacceptable materials at each container and bin.

   a. Inspect containers and bins for contamination and remove contaminated materials if found.

2. Packaging:

   a. Cardboard and Boxes: Break down packaging into flat sheets. Bundle and store in a dry location.
   b. Polystyrene Packaging: Separate and bag materials.
   c. Pallets: As much as possible, require deliveries using pallets to remove pallets from Project site.

3. Remove recyclable waste off Owner's property and transport to recycling receiver or processor.

I. Shoring and Bracing: Provide and maintain shoring, bracing, and structural supports, designed by a qualified professional engineer, required to preserve stability and prevent movement, settlement, or collapse of new and existing construction and to prevent unexpected or uncontrolled movement or collapse of construction.

J. Staging and Scaffolding: Provide facilities necessary for supporting materials and personnel in accordance with requirements of authorities having jurisdiction.

K. Lifts and Hoists: Provide facilities necessary for hoisting materials and personnel.

L. Temporary Elevator Use: Use of elevators is not permitted.

M. Temporary Stairs: Until permanent stairs are available, provide temporary stairs where ladders are not adequate.

N. Existing Stair Usage: Use of Owner's existing stairs will be permitted, provided stairs are cleaned and maintained in a condition acceptable to Owner. At Substantial Completion, restore stairs to condition existing before initial use.

1. Provide protective coverings, barriers, devices, signs, or other procedures to protect stairs and to maintain means of egress. If stairs become damaged, restore damaged areas so no evidence remains of correction work.

O. Temporary Use of Permanent Stairs: Use of new stairs for construction traffic will be permitted, provided stairs are protected and finishes restored to new condition at time of Substantial Completion.

3.5 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.

1. Where access to adjacent properties is required in order to affect protection of existing facilities, obtain written permission from adjacent property owner to access property for that purpose.

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.

C. Temporary Erosion and Sedimentation Control:

1. Provide measures to prevent soil erosion and discharge of soil-bearing water runoff and airborne dust to undisturbed areas and to adjacent properties and walkways, according to “New York State Standards and Specifications for Erosion and Sediment Control” published by Empire State Chapter Soil and Water Conservation Society, under the direction of the New York State Department of Environmental Conservation, Division of Water.

a. Soil Erosion and Sediment Control (SESC) Plan: Comply with SESC Plan for this Project in consultation with appropriate local agencies and soil conservation service.

1) At the Preconstruction Conference, Architect will provide the Contractor, for its signing, certificates of compliance, which the Architect will submit with the SESC plan to the New York State Department of Environmental Conservation (NYSDEC) to satisfy the State Pollutant Discharge Elimination System (SPDES) permit. The Contractor is responsible for complying with the SPDES permit and Stormwater Pollution Prevention Plan (SPPP) throughout construction.

2) At the Preconstruction Conference, submit schedule for completion of installation of measures identified in SESC Plan.

a) Do not begin construction at the site until measures identified in the SESC Plan have been accepted by the Architect and installed at site.

3) If conditions change during construction, submit proposed revisions to the SESC Plan to the Architect and other agencies identified in the SPDES permit and SPPP.

2. General Soil Erosion and Sediment Control Measures:

a. Refer to SESC Plan for specific measures in addition to those identified below.

b. Take precautions to prevent mud from construction site accumulating on adjoining public roads and sidewalks and Owner's roads and sidewalks. Clean accumulations of mud from public roads and sidewalks and from Owner's roads and sidewalks when required by public authorities and when directed by Architect.

c. Plan and execute construction by methods to control surface drainage from cuts and fills and from borrow areas, and to prevent erosion and sedimentation.

1) Minimize amount of bare soil exposed at one time.

2) Provide temporary measures and erosion control devices or methods appropriate to conditions at site.

3) Construct fills and waste areas by selective placement to avoid erosive surface silts or clays.

4) Inspect earthwork to detect evidence of erosion and sedimentation as outlined in the SPDES permit and SPPP. Immediately apply corrective measures at no cost to the Owner. Contractor will be responsible for any fines issued by any agency as a result of non-compliance with the SPDES permit and SPPP.

D. Stormwater Control: Comply with requirements of authorities having jurisdiction. Provide barriers in and around excavations and subgrade construction to prevent flooding by runoff of stormwater from heavy rains.

E. Tree and Plant Protection: Install temporary fencing located as indicated or outside the drip line of trees to protect vegetation from damage from construction operations. Protect tree root systems from damage, flooding, and erosion.

1. Maintain protection zones free of weeds and trash.

2. Do not prune roots or branches of trees to remain without approval of Architect.

a. If pruning is approved, engage an experienced, qualified arborist to perform pruning and treating.

3. Repair or replace trees, shrubs, and other vegetation indicated to remain or be relocated that are damaged by construction operations, in a manner approved by Architect.

F. Pest Control: Engage pest-control service to recommend practices to minimize attraction and harboring of rodents, roaches, and other pests and to perform extermination and control procedures at regular intervals so Project will be free of pests and their residues at Substantial Completion. Perform control operations lawfully, using materials approved by authorities having jurisdiction as environmentally safe.

G. Site Enclosure Fence: Before construction operations begin, furnish and install site enclosure fence in a manner that will prevent people from easily entering site except by entrance gates.

1. Extent of Fence: As required to enclose entire Project site or portion determined sufficient to accommodate construction operations.
2. Maintain security by limiting number of keys and restricting distribution to authorized personnel.

H. Security Enclosure and Lockup: Install temporary enclosure around partially completed areas of construction. Provide lockable entrances to prevent unauthorized entrance, vandalism, theft, and similar violations of security. Lock entrances at end of each workday.

I. Barricades, Warning Signs, and Lights: Comply with requirements of authorities having jurisdiction for erecting structurally adequate barricades, including warning signs and lighting.

J. Temporary Egress: Maintain temporary egress from existing occupied facilities as indicated and as required by authorities having jurisdiction.

1. Where temporary egress doors occur, provide minimum clear opening width of 36 Inches.

K. 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. Face exterior enclosures with plywood, unless otherwise approved, in advance, by Architect. Polyethylene sheet may not be used for exterior enclosures.

1. Where heating or cooling is needed and permanent enclosure is incomplete, insulate temporary enclosures.

L. Temporary Partitions: Provide floor-to-ceiling dustproof partitions to limit dust and dirt migration and to separate areas occupied by Owner from fumes and noise.

1. Construct dustproof partitions with gypsum wallboard with joints taped on occupied side, and fire-retardant-treated plywood on construction operations side.
2. Where fire-resistance-rated temporary partitions are indicated or are required by authorities having jurisdiction, construct partitions according to the rated assemblies.
3. Insulate partitions to control noise transmission to occupied areas.
4. Seal joints and perimeter. Equip partitions with gasketed dustproof doors and security locks where openings are required.
5. Paint surfaces exposed to view in areas occupied by Owner.
6. Protect air-handling equipment.
7. Provide walk-off mats at each entrance through temporary partition.

M. 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.

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.

3.6 MOISTURE AND MOLD CONTROL

A. Exposed Construction Period: Before installation of weather barriers, when materials are subject to wetting and exposure and 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.

B. Partially Enclosed Construction Period: 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 and replace stored or installed material that begins to grow mold.
7. Perform work in a sequence that allows wet materials adequate time to dry before enclosing the material in gypsum board or other interior finishes.

C. Controlled Construction Period: After completing and sealing of the building enclosure but prior to the full operation of permanent HVAC systems, maintain as follows:

1. Control moisture and humidity inside building by maintaining effective dry-in conditions.
2. Comply with manufacturer's written instructions for temperature, relative humidity, and exposure to water limits.

3.7 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, HVAC, and similar facilities on a 24-hour basis where required to achieve indicated results and to avoid possibility of damage.

a. Heating: Provide heating between September 15th and May 31st.

1) Maintain minimum interior temperature of 60 deg F.
2) Maintain relative humidity levels between 50 and 55 percent.

2. Where temperature and humidity levels required for the proper installation and application of a product or system differ from those listed above, provide supplemental temporary services to maintain the required temperature and humidity levels.

3. Use temporary duct systems, industrial fans, or other equipment to circulate tempered air to all areas of work.

4. Maintain operation of temporary lighting in corridors, stairwells, and similar locations on a 24-hour basis.

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.

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 Division 01 Section “Closeout Procedures."

END OF SECTION 01 50 00

SECTION 01 60 00 - PRODUCT REQUIREMENTS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General 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.

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. 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.

1.4 ACTION SUBMITTALS

A. Comparable Product Request Submittal: Submit request for consideration of each comparable product. Identify product or fabrication or installation method to be replaced. Include Specification Section number and title and Drawing numbers and titles.

1. Include data to indicate compliance with the requirements specified in "Comparable Products" Article.

2. 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 through Construction Manager of approval or rejection of proposed comparable product request.

   a. Form of Approval: As specified in Division 01 Section "Submittal Procedures."

B. Basis-of-Design Product Specification Submittal: Comply with requirements in Division 01 Section "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. Each contractor is responsible for providing products and construction methods compatible with products and construction methods of other contractors.
2. If a dispute arises between contractors over concurrently selectable but incompatible products, Architect will determine which products shall be used.

B. The use of asbestos containing building materials is prohibited.

1. Contractor is responsible for providing closeout documentation certifying no asbestos containing building materials have been used in the Work.

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 review 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.

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.

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. Warranty periods related to Boilers and Accessory Equipment, and Air Conditioning Equipment do not begin until one year after the date of substantial completion.
3. See individual Specification Sections for specific content requirements and particular requirements for submitting special warranties.

C. Submittal Time: Comply with requirements in Division 01 Section "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. 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. 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, or a product by an unnamed manufacturer that complies with requirements. 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.

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 Division 01 Section "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 of Comparable Products: 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 01 60 00

SECTION 01 73 00 - EXECUTION

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

A. Section includes general administrative and procedural requirements governing execution of the Work including, but not limited to, the following:

1. Examination of conditions.
2. Preparation for construction.
3. Construction layout.
4. Field engineering and surveying.
5. Installation of the Work.
6. Cutting and patching.
7. Progress cleaning.
8. Starting and adjusting.
9. Protection of installed construction.
10. Correction 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 construction to original conditions after installation of other work.

1.4 INFORMATIONAL SUBMITTALS

A. Qualification Data: For professional engineer.
B. Structural Layout Plan: Survey of Structural Grid in relation to existing building(s).

1.5 CLOSEOUT SUBMITTALS

A. Certificates: Submit certificate signed by professional engineer certifying that location and elevation of improvements comply with requirements.
B. Certified Surveys: Submit two copies signed by professional engineer.

1.6 QUALITY ASSURANCE

A. Land Surveyor Qualifications: A professional land surveyor who is legally qualified to practice in jurisdiction where Project is located and who is experienced in providing land-surveying services of the kind indicated.

B. 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.

C. Cutting and Patching: Comply with requirements for and limitations on cutting and patching of construction elements.

1. Structural Elements: When cutting and patching structural elements, shore, brace, and support structural elements during cutting and patching. Do not cut and patch structural elements in a manner that could change their load-carrying capacity or increase deflection

2. 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.

3. Other Construction Elements: Do not cut and patch other construction elements or 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.

4. Visual Elements: Do not cut and patch construction in a manner that results in visual evidence of cutting and patching. Do not cut and patch exposed construction 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.

D. Manufacturer's Installation Instructions: Obtain and maintain on-site manufacturer's written recommendations and instructions for installation of products and equipment.

PART 2 - PRODUCTS

2.1 MATERIALS

A. General: Comply with requirements specified in other Sections.

B. In-Place Materials: Use materials for patching 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 provide a match acceptable to Architect for the visual and functional performance of in-place materials.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Existing Conditions: The existence and location of underground and other utilities and construction indicated as existing are not guaranteed. Before beginning sitework, investigate and verify the existence and location of underground utilities, mechanical and electrical systems, and other construction affecting the Work.

1. Before construction, verify the location and invert elevation at points of connection of sanitary sewer, storm sewer, and water-service piping; underground electrical services, and other utilities.

2. Furnish location data for work related to Project that must be performed by public utilities serving Project site.

B. Examination and Acceptance of Conditions: Before proceeding with each component of the Work, 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. Examine roughing-in for mechanical and electrical systems to verify actual locations of connections before equipment and fixture installation.
2. Examine walls, floors, and roofs for suitable conditions where products and systems are to be installed.
3. Verify compatibility with and suitability of substrates, including compatibility with existing finishes or primers.

C. Proceed with installation only after unsatisfactory conditions have been corrected. Proceeding with the Work indicates acceptance of surfaces and conditions.

3.2 PREPARATION

A. Existing Utility Information: Furnish information to local utility that is necessary to adjust, move, or relocate existing utility structures, utility poles, lines, services, or other utility appurtenances located in or affected by construction. Coordinate with authorities having jurisdiction.

B. 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.

C. Space Requirements: Verify space requirements and dimensions of items shown diagrammatically on Drawings.

D. Review of Contract Documents and Field Conditions: Immediately on discovery of the need for clarification of the Contract Documents caused by differing field conditions outside the control of Contractor, submit a request for information to Architect according to requirements in Division 01 Section "Project Management and Coordination."

3.3 CONSTRUCTION LAYOUT

A. Verification: Before proceeding to lay out the Work, verify layout information shown on Drawings, in relation to the property survey and existing benchmarks. If discrepancies are discovered, notify Architect and Construction Manager promptly.

B. General: Engage a professional engineer to lay out the Work using accepted surveying practices.

1. Establish benchmarks and control points to set lines and levels at each story of construction and elsewhere as needed to locate each element of Project.
2. Establish dimensions within tolerances indicated. Do not scale Drawings to obtain required dimensions.
3. Inform installers of lines and levels to which they must comply.
4. Check the location, level and plumb, of every major element as the Work progresses.
5. Notify Architect and Construction Manager when deviations from required lines and levels exceed allowable tolerances.

C. Site Improvements: Locate and lay out site improvements, including pavements, grading, fill and topsoil placement, utility slopes, and rim and invert elevations.

D. Building Lines and Levels: Locate and lay out control lines and levels for structures, building foundations, column grids, and floor levels, including those required for mechanical and electrical work. Transfer survey markings and elevations for use with control lines and levels. Level foundations and piers from two or more locations.

1. Structural Layout Plan: Perform Survey of Structural Grid as provided in Contract Documents, including any specific Layout Notes and/or Plan. Provide Structural Layout Plan for review by Engineer prior to performing any additional work.

E. Record Log: Maintain a log of layout control work. Record deviations from required lines and levels. Include beginning and ending dates and times of surveys, weather conditions, name and duty of each survey party member, and types of instruments and tapes used. Make the log available for reference by Architect and Construction Manager.

3.4 FIELD ENGINEERING

A. Reference Points: Locate existing permanent benchmarks, control points, and similar reference points before beginning the Work. Preserve and protect permanent benchmarks and control points during construction operations.

1. Do not change or relocate existing benchmarks or control points without prior written approval of Architect or Construction Manager. Report lost or destroyed permanent benchmarks or control points promptly. Report the need to relocate permanent benchmarks or control points to Architect and Construction Manager before proceeding.

2. Replace lost or destroyed permanent benchmarks and control points promptly. Base replacements on the original survey control points.

B. Benchmarks: Establish and maintain a minimum of two permanent benchmarks on Project site, referenced to data established by survey control points.

1. Record benchmark locations, with horizontal and vertical data, on Project Record Documents.
2. Where the actual location or elevation of layout points cannot be marked, provide temporary reference points sufficient to locate the Work.
3. Remove temporary reference points when no longer needed. Restore marked construction to its original condition.

C. Certified Survey: On completion of foundation walls, major site improvements, and other work requiring field-engineering services, prepare a certified survey showing dimensions, locations, angles, and elevations of construction and sitework.

3.5 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.
4. Maintain minimum headroom clearance of 96 inches in occupied spaces and 90 inches in unoccupied spaces, 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. Attachment: Provide blocking and attachment plates and anchors and fasteners of adequate size and number to securely anchor each component in place, accurately located and aligned with other portions of the Work. Where size and type of attachments are not indicated, verify size and type required for load conditions.

1. Mounting Heights: Where mounting heights are not indicated, mount components at heights directed by Architect.

2. Allow for building movement, including thermal expansion and contraction.

3. Coordinate installation of anchorages. Furnish setting drawings, templates, and directions for installing anchorages, including sleeves, concrete inserts, anchor bolts, and items with integral anchors, that are to be embedded in concrete or masonry. Deliver such items to Project site in time for installation.

H. Joints: Make joints of uniform width. Where joint locations in exposed work are not indicated, arrange joints for the best visual effect. Fit exposed connections together to form hairline joints.

I. Hazardous Materials: Use products, cleaners, and installation materials that are not considered hazardous.

3.6 CUTTING AND PATCHING

A. Cutting and Patching, 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. Existing Warranties: Remove, replace, patch, and repair materials and surfaces cut or damaged during installation or cutting and patching operations, by methods and with materials so as not to void existing warranties.

C. Temporary Support: Provide temporary support of work to be cut.

D. 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.

E. Adjacent Occupied Areas: Avoid interference with use of adjoining areas or interruption of free passage to adjoining areas.

F. 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 prevent interruption to occupied areas.

G. 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.

1. In general, use hand or small power tools designed for sawing and grinding, not hammering and chopping. Cut holes and slots neatly to minimum 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 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.

H. 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 practicable. Provide materials and comply with installation requirements specified in other Sections, where applicable.

1. Exposed Finishes: Restore exposed finishes of patched areas and extend finish restoration into retained adjoining construction in a manner that will minimize evidence of patching and refinishing.

2. 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, prepare substrate and apply primer and intermediate paint coats appropriate for substrate over the patch, and apply final paint coat over entire unbroken surface containing the patch. Provide additional coats until patch blends with adjacent surfaces.

3. Ceilings: Patch, repair, or rehang in-place ceilings as necessary to provide an even-plane surface of uniform appearance.

4. Exterior Building Enclosure: Patch components in a manner that restores enclosure to a weathertight condition and ensures thermal and moisture integrity of building enclosure.

I. Cleaning: Clean areas and spaces where cutting and patching are performed. Remove paint, mortar, oils, putty, and similar materials from adjacent finished surfaces.

3.7 PROGRESS CLEANING

A. General: Clean Project site and work areas daily, including common areas. Enforce requirements strictly. Dispose of materials lawfully.

1. Comply with requirements in NFPA 241 for removal of combustible waste materials and debris.

2. Do not hold waste materials more than seven days during normal weather or three 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.

   a. Use containers intended for holding waste materials of type to be stored.

4. Coordinate progress cleaning for joint-use areas where Contractor and other contractors are working concurrently.

B. Site: Maintain Project site free of waste materials and debris.

C. Work Areas: 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.

D. Installed Work: Keep installed work clean. Clean installed surfaces according to written instructions of manufacturer or fabricator of product installed, using only cleaning materials specifically recommended. If specific cleaning materials are not recommended, use cleaning materials that are not hazardous to health or property and that will not damage exposed surfaces.

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: Do not bury or burn waste materials on-site. Do not wash waste materials down sewers or into waterways. Comply with waste disposal requirements in Division 01 Section "Temporary Facilities and Controls."

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.

3.8 STARTING AND ADJUSTING

A. Coordinate startup and adjusting of equipment and operating components with requirements in Division 01 Section "General Commissioning Requirements."
B. Start equipment and operating components to confirm proper operation. Remove malfunctioning units, replace with new units, and retest.
C. Adjust equipment for proper operation. Adjust operating components for proper operation without binding.
D. Test each piece of equipment to verify proper operation. Test and adjust controls and safeties. Replace damaged and malfunctioning controls and equipment.

3.9 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.

3.10 CORRECTION OF THE WORK

A. Repair or remove and replace damaged, defective, or nonconforming Work. Restore damaged substrates and finishes.

    1. Repairing includes replacing defective parts, refinishing damaged surfaces, touching up with matching materials, and properly adjusting operating equipment.

B. Architect may issue "Construction Deficiency Report" for items identified by Architect as needing correction. Promptly repair or remove and replace defective construction identified in Construction Deficiency Report. Provide written notification to Architect when identified item has been corrected.

C. Restore permanent facilities used during construction to their specified condition.

D. Remove and replace damaged surfaces that are exposed to view if surfaces cannot be repaired without visible evidence of repair.

E. Repair components that do not operate properly. Remove and replace operating components that cannot be repaired.

F. Remove and replace chipped, scratched, and broken glass or reflective surfaces.

END OF SECTION 01 73 00

SECTION 01 77 00 - CLOSEOUT PROCEDURES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General 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. All Submittals identified in Section 01 77 00 are classified as “Informational Submittals” in accordance with Specification Section 01 33 00.

1.3 SUBSTANTIAL COMPLETION PROCEDURES

A. Submittals Prior to Substantial Completion: Complete the following before Contract-scheduled date of Substantial Completion:

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, electrical inspection reports, preliminary balance reports, and similar releases.

2. Submit notarized letter on Contractor’s letterhead certifying no asbestos containing building materials have been used in the Work. Also include a copy in the Operation and Maintenance Manuals.

3. Submit testing, adjusting, and balancing records. Also include a copy in the Operation and Maintenance Manuals.

4. Submit changeover information related to Owner's occupancy, use, operation, and maintenance.

B. Procedures Prior to Substantial Completion: Complete the following before Contract-scheduled date of Substantial Completion:

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. Maintenance to be performed by a factory authorized service representative so as not to void the equipment warranty.

5. Advise Owner of changeover in heat and other utilities.

6. Terminate and remove temporary facilities from Project site, along with mockups, construction tools, and similar elements.

7. Complete all items on any Field Observation and Construction Deficiency Reports and submit a copy of the reports to the Architect and Construction Manager identifying how each item was addressed in detail, including the date of completion.

8. Complete final cleaning requirements as specified below, including touchup painting.

9. Repair and restore marred exposed finishes to eliminate visual defects.

10. Complete all items noted as requiring completion/correction from the Commissioning consultant and TAB (Testing and Balancing) consultant.

C. Inspection: No later than 14 days prior to the Contract-scheduled date of Substantial Completion, submit a letter to the Architect and Construction Manager confirming the work is ready for the Substantial Completion inspection. No later than seven days after Contract-scheduled date of Substantial Completion (including authorized adjustments), the Architect will make an inspection to determine whether the Work or designated portion thereof is substantially complete. Absent the Contractor letter confirming readiness of work, the Architect may elect to postpone the Substantial Completion inspection.

1. Additional Inspections: Request additional Substantial Completion inspections when the work that was not complete for the scheduled Substantial Completion inspection is now ready to inspect.

a. Costs for such additional Substantial Completion inspections will be deducted from sums otherwise due the Contractor by deduct Change Order.

2. Results of completed inspection will form the basis of requirements for final completion.

1.4 FUNCTIONAL COMPLETION PROCEDURES

A. Functional Completion applies to Contract Work being Commissioned. The commissioning of Divisions 01 and 23 (as applicable to each Contractor) must be complete prior to Functional Completion, except for the following:

1. Deferred Work approved in writing by the Architect.
2. Control system training planned to be performed after occupancy and final acceptance

3. Any required seasonal TAB work to be formed during Warranty period.
4. Other approved deferred testing.

B. Completion of Commissioning required to demonstrate Functional Completion includes the following as applicable for all systems, but is not limited to:

1. Completed and signed pre-functional checklists and start-up documentation.
2. Requested trend logs complete, data and forms submitted and approved.
3. Completion of all functional testing.
4. Required training of Owner personnel completed and approved.
5. Submission of final approved TAB report.
6. Submission of final approved commissioning report.
7. Submission of the approved O&M manuals.
8. All identified deficiencies have been corrected or are approved in writing by the Owner to be excepted from this milestone.

C. The Architect will determine the date of Functional Completion after reviewing the Commissioning Agent's recommendation for Functional Completion.

1.5 FINAL COMPLETION PROCEDURES

A. Submittals Prior to Final Completion: Before final inspection for determining final completion, complete the following:

1. Submit copy of Architect's Substantial Completion inspection list of items to be completed or corrected. The copy of the list shall state that each item has been completed or otherwise resolved for acceptance, what corrective action was taken, and the date of completion. Items that are in dispute shall have an explanation attached.

2. Instruct Owner's personnel in operation, adjustment, and maintenance of products, equipment, and systems. Submit demonstration and training video recordings specified in Division 01 Section "Demonstration and Training."

3. Submit closeout submittals specified in other Division 01 Sections, including project record documents, operation and maintenance manuals, property surveys, and similar final record information.

4. Submit closeout submittals specified in individual Specification Sections, including specific warranties, workmanship bonds, maintenance service agreements, final certifications, and similar documents.

5. Submit maintenance material submittals specified in individual Specification Sections, including tools, spare parts, extra materials, and similar items, and deliver to location designated by Owner. Contractor to provide a transmittal detailing all delivered maintenance materials and obtain Owner signature confirming delivery of such; a copy of transmittal with Owner's signature shall be provided with Closeout submittals. Label with manufacturer's name and model number where applicable. All keys shall be tagged and labeled.

6. Certificate of Insurance: Submit evidence of final, continuing insurance coverage complying with insurance requirements.

7. Submit a final Application for Payment according to Division 01 Section "Payment Procedures."

B. Inspection: No later than seven days after the Contract-scheduled date for final completion, Architect and Construction Manager will proceed with the final completion inspection. The Architect will review the final Certificate for Payment after the inspection or will notify the Contractor of the outstanding items that must be completed or corrected before the certificate will be processed.

1. Reinspection: Request reinspection when the Work identified in previous inspections as incomplete has been completed or corrected. The Owner and Architect and Construction Manager reserve the right to add items to the Substantial Completion and final completion inspection lists as long as it is part of the Contractor's work. Complete all Contract requirements prior to the final completion inspection to avoid any further re-inspection cost.

a. Costs for such reinspections and any costs for extension of the Architect's and Construction Manager's services will be deducted from sums otherwise due the Contractor.

1.6 SUBMITTAL OF PROJECT WARRANTIES

A. Organize warranty documents into an orderly sequence based on the table of contents of Project Manual. Warranties for all equipment, materials, and systems on the Project are to start no sooner than the date of substantial completion. Provide extended warranties for all equipment, materials, and systems that may have been turned over to the Owner for its use.

B. Warranty Electronic File: Provide warranties and bonds in PDF format. Assemble complete warranty and bond submittal package into a single electronic PDF file with bookmarks enabling navigation to each item. Provide bookmarked table of contents at beginning of document.

1. Submit two digital media copies, PDF on thumb drive.

C. Warranties in Paper Form:

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 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. Submit two paper copies, as listed above.

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 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. Remove tools, construction equipment, machinery, and surplus material from Project site.

c. Clean exposed exterior and interior hard-surfaced finishes to a dirt-free condition, free of stains, films, and similar foreign substances. Remove surface dust and dirt from all vertical and horizontal painted surfaces. Avoid disturbing natural weathering of exterior surfaces. Restore reflective surfaces to their original condition.

d. Remove debris and surface dust from limited access spaces, including roofs, plenums, shafts, trenches, equipment vaults, manholes, attics, and similar spaces.

e. Sweep concrete floors broom clean in unoccupied spaces using sweeping compound that is compatible with new finishes.

f. Vacuum carpet and similar soft surfaces, removing debris and excess nap; clean according to manufacturer's recommendations if visible soil or stains remain.

g. Remove labels that are not permanent.

h. Wipe surfaces of mechanical and electrical equipment and similar equipment. Remove excess lubrication, paint and mortar droppings, and other foreign substances.

i. Replace disposable air filters and clean permanent air filters. Clean exposed surfaces of diffusers, registers, and grills.

j. Clean ducts, blowers, and coils if units were operated without filters during construction or that display contamination with particulate matter on inspection.

k. Leave Project clean and ready for occupancy.

C. Construction Waste Disposal: Comply with waste disposal requirements in Division 01 Section "Temporary Facilities and Controls."

3.2 REPAIR OF THE WORK

A. Complete repair and restoration operations before 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 condition acceptable to Construction Manager.

1. 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.

2. Replace parts subject to operating conditions during construction that may impede operation or reduce longevity.

END OF SECTION 01 77 00

SECTION 01 78 23 - OPERATION AND MAINTENANCE DATA

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General 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.

1.3 CLOSEOUT SUBMITTALS

A. Operation and Maintenance Manual Format: Submit operation and maintenance manuals in the following format:

1. Two paper copies as listed below.
2. Two digital media copies, PDF format on thumb drive.

B. Prior to submission of paper copies and thumb drives as listed above, submit electronic files in PDF format for review and approval.

1.4 FORMAT OF OPERATION AND MAINTENANCE MANUALS

A. Manuals, Paper Copy: Submit manuals in the form of hard-copy, bound and labeled volumes.

1. Binders: Heavy-duty, three-ring, vinyl-covered, loose-leaf binders, in thickness necessary to accommodate contents, sized to hold 8-1/2-by-11-inch paper; with clear plastic sleeve on spine to hold label describing contents.

   a. If two or more binders are necessary to accommodate data of a system, organize data in each binder into groupings by subsystem and related components. Cross-reference other binders if necessary to provide essential information for proper operation or maintenance of equipment or system.

   b. Identify each binder on front and spine, with printed title "OPERATION AND MAINTENANCE MANUAL," Project title or name, and subject matter of contents. Indicate volume number for multiple-volume sets.

2. Dividers: Heavy-paper dividers with plastic-covered tabs for each section of the manual. Mark each tab to indicate contents. Include typed list of products and major components of equipment included in the section on each divider, cross-referenced to Specification Section number and title of Project Manual.

3. Drawings: Attach reinforced, punched binder tabs on drawings and bind with text.

   a. If oversize drawings are necessary, fold drawings to same size as text pages and use as foldouts.

4. If drawings are too large to be used as foldouts, fold and place drawings in labeled envelopes and bind envelopes in rear of manual. At appropriate locations in manual, insert typewritten pages indicating drawing titles, descriptions of contents, and drawing locations.

B. 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: Bookmark 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.

1.5 REQUIREMENTS FOR 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: Include the following information:

   a. Subject matter included in manual.
   b. Name and address of Project.
   c. Date of submittal.
   d. Name and contact information for Contractor.

2. 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.

   a. 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.

3. 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.

1.6 OPERATION AND MAINTENANCE MANUALS

A. Operation 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.

    a. Product name and model number. Use designations for products indicated on Contract Documents.
    b. Manufacturer's name.
    c. Equipment identification with serial number of each component.
    d. Equipment function.
    e. Complete nomenclature and number of replacement parts.

2. Operating Procedures: Include the following, as applicable:

    a. Startup procedures.
    b. Routine and normal operating instructions.
    c. Regulation and control procedures.
    d. Normal shutdown instructions.
    e. Seasonal and weekend operating instructions.
    f. Special operating instructions and procedures.

3. Emergency Procedures: Include the following, as applicable:

    a. Instructions on stopping.
    b. Shutdown instructions for each type of emergency.
    c. Operating instructions for conditions outside normal operating limits.
    d. Special operating instructions and procedures.

4. Wiring diagrams.

5. Control diagrams.

6. Piped system diagrams.

    a. Piped Systems: Diagram piping as installed, and identify color-coding where required for identification.

7. Precautions against improper use.

8. Systems and Equipment Controls: Describe the sequence of operation, and diagram controls as installed.

B. Maintenance Content: Organize manual into a separate section for each product, material, and finish. Include source information, product information, maintenance procedures, manufacturers' maintenance documentation, maintenance and service schedules, spare parts list and source information, maintenance service contracts, repair materials and sources, and warranties and bonds, as described below.

1. 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.

2. Product Information: Include the following, as applicable:

    a. Product name and model number.
    b. Manufacturer's name.
    c. Color, pattern, and texture.
    d. Material and chemical composition.
    e. Reordering information for specially manufactured products.

3. Maintenance Procedures: Include manufacturer's written recommendations and the following:

    a. Inspection procedures.
    b. Types of cleaning agents to be used and methods of cleaning.
    c. List of cleaning agents and methods of cleaning detrimental to product.
    d. Schedule for routine cleaning and maintenance.
    e. Repair instructions.

4. Manufacturers' Maintenance Documentation: Manufacturers' maintenance documentation including the following information for each component part or piece of equipment:

    a. Standard maintenance instructions and bulletins.
    b. Drawings, diagrams, and instructions required for maintenance, including disassembly and component removal, replacement, and assembly.
    c. Identification and nomenclature of parts and components.
    d. List of items recommended to be stocked as spare parts.

5. 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.

    a. Scheduled Maintenance and Service: Tabulate actions for daily, weekly, monthly, quarterly, semiannual, and annual frequencies.
    b. Maintenance and Service Record: Include manufacturers' forms for recording maintenance.

6. 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.

7. Maintenance Service Contracts: Include copies of maintenance agreements with name and telephone number of service agent.

8. Repair Materials and Sources: Include lists of materials and local sources of materials and related services.

9. Warranties and Bonds: Include copies of warranties and bonds and lists of circumstances and conditions that would affect validity of warranties or bonds.

    a. Include procedures to follow and required notifications for warranty claims.

1.7 MANUAL PREPARATION

A. 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.

B. 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.

C. 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.

D. Submittals: Include copy of each product submittal approved by Architect.

    1. If the “As-Specified Verification Form” was used as the product submittal, include all pertinent product data as described in this Section.

E. Safety Data Sheets (SDS): Include copy of SDS for each product installed.

F. Comply with Division 01 Section "Closeout Procedures" for schedule for submitting operation and maintenance documentation.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION (Not Used)

END OF SECTION 01 78 23

SECTION 01 78 39 - PROJECT RECORD DOCUMENTS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General 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. Miscellaneous record submittals.

1.3 CLOSEOUT SUBMITTALS

A. Record Drawings: Contractor to submit a full set of marked-up record drawings pertaining to their contract. Provide each drawing, whether or not changes and additional information were recorded. Comply with the following:

1. Submit one full size set of the original, marked-up record prints.
2. Submit two digital media copies, in color, in PDF format on thumb drives. PDFs to be saved and submitted as one file.
3. Prior to submission of paper copies and thumb drives as listed above, submit electronic files in PDF format for review and approval.

B. Miscellaneous Record Submittals: See other Specification Sections for miscellaneous record-keeping requirements and submittals in connection with various construction activities.

1. Submit two paper copies of each submittal.

1.4 RECORD DRAWINGS

A. Record Prints: Architect will provide Contractor with one paper set of Contract Drawings at beginning of Work at no cost.

1. Preparation: Mark record prints to show the actual installation where installation varies from that shown originally.

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.

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. Revisions to routing of piping and conduits.
   d. Revisions to electrical circuitry.
   e. Locations of concealed internal utilities.
   f. Changes made by Addendum.
   g. Changes made by Architect's Supplemental Instruction (ASI) forms.
   h. Changes made by Change Order or Construction Change Directive.
   i. Changes made following Architect's written orders.

3. Mark record sets with red, permanent marker.

B. Record Digital Data Files: Prepare a full set of digital data files of the Contract Drawings from the marked-up record prints.

C. Format: Identify and date each record Drawing; include the designation "PROJECT RECORD DRAWING" in a prominent location. Indicate name of Contractor.

1. Record Prints: Organize record prints into manageable sets. Bind each set with durable paper cover sheets. Include identification on cover sheets.

2. Record Digital Data Files: Organize digital data information into separate electronic files that correspond to each sheet of the Contract Drawings. Name each file with the sheet identification. Include identification in each digital data file.

1.5 MISCELLANEOUS RECORD SUBMITTALS

A. Assemble miscellaneous records required by other Specification Sections for miscellaneous record keeping and submittal in connection with actual performance of the Work. Bind or file miscellaneous records and identify each, ready for continued use and reference.

1.6 RECORDING AND MAINTENANCE

A. Maintenance of Record Documents: Store record documents 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, Construction Manager's and Owner's reference during normal working hours.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION (Not Used)

END OF SECTION 01 78 39

SECTION 01 79 00 - DEMONSTRATION AND TRAINING

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

A. Section includes administrative and procedural requirements for instructing Owner's personnel, including the following:

1. Demonstration of operation of systems, subsystems, and equipment.
2. Instruction in operation and maintenance of systems, subsystems, and equipment.
3. Demonstration and training video recordings.

1.3 CLOSEOUT SUBMITTALS

A. Attendance Record: For each demonstration and training session, submit list of participants, subjects covered, and length of instruction time.

B. Demonstration and Training Video Recordings: Submit two copies of each demonstration and training session.

1. Identification: On each copy, provide an applied label with the following information:

a. Name of Project.
b. Name of Architect.
c. Name of Construction Manager.
d. Name of Contractor.
e. Name of service representative providing training.
f. Name of instructor.
g. Date of video recording.

1.4 QUALITY ASSURANCE

A. Instructor Qualifications: A factory-authorized service representative, complying with requirements in Division 01 Section "Quality Requirements," experienced in operation and maintenance procedures and training.

1.5 COORDINATION

A. Coordinate instruction schedule with Owner's operations. Adjust schedule as required to minimize disrupting Owner's operations and to ensure availability of Owner's personnel.

1.6 INSTRUCTION PROGRAM

A. Program Structure: Develop an instruction program that includes individual training for each system and for equipment not part of a system, as required by individual Specification Sections. Include instruction for the following as applicable to the system, equipment, or component:

1. Basis of System Design, Operational Requirements, and Criteria: Include the following:

    a. System, subsystem, and equipment descriptions.
    b. Operating standards.

2. Documentation: Review the following items in detail:

    a. Manuals.
    b. Warranties and bonds.

3. Operations: Include the following, as applicable:

    a. Startup procedures.
    b. Routine and normal operating instructions.
    c. Regulation and control procedures.
    d. Safety procedures.
    e. Normal shutdown instructions.
    f. Operating procedures for emergencies.
    g. Seasonal and weekend operating instructions.
    h. Special operating instructions and procedures.

4. Adjustments: Include the following:

    a. Noise and vibration adjustments.
    b. Economy and efficiency adjustments.

5. Troubleshooting: Include the following:

    a. Diagnostic instructions.
    b. Test and inspection procedures.

6. Maintenance: Include the following:

    a. Types of cleaning agents to be used and methods of cleaning.
    b. Procedures for routine cleaning
    c. Procedures for preventive maintenance.
    d. Procedures for routine maintenance.

7. Repairs: Include the following:

    a. Diagnosis instructions.
    b. Repair instructions.

1.7 INSTRUCTION

A. Engage qualified instructors to instruct Owner's personnel to adjust, operate, and maintain systems, subsystems, and equipment not part of a system.

B. Scheduling: Provide instruction at mutually agreed on times. For equipment that requires seasonal operation, provide similar instruction at start of each season.

1. Schedule training with Owner, through Construction Manager, with at least seven days' advance notice.

1.8 DEMONSTRATION AND TRAINING VIDEO RECORDINGS

A. Digital Video Recordings: Provide high-resolution, digital video in MPEG format, produced by a digital camera with minimum sensor resolution of 12 megapixels and capable of recording in full HD mode.

1. Submit video recordings on CD-ROM or thumb drive.

B. Preproduced Video Recordings: Provide video recordings used as a component of training modules in same format as recordings of live training.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION (Not Used)

END OF SECTION 01 79 00

SECTION 02 41 19 - SELECTIVE DEMOLITION

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. Demolition and removal of selected portions of building or structure.
2. Demolition and removal of selected site elements.
3. Salvage of existing items to be reused or recycled.

1.3 DEFINITIONS

A. Remove: Detach items from existing construction and dispose of them off-site unless indicated to be salvaged or reinstalled.

B. Remove and Salvage: Detach items from existing construction, in a manner to prevent damage, and deliver to Owner ready for reuse.

C. Remove and Reinstall: Detach items from existing construction, in a manner to prevent damage, prepare for reuse, and reinstall where indicated.

D. Existing to Remain: Leave existing items that are not to be removed and that are not otherwise indicated to be salvaged or reinstalled.

1.4 MATERIALS OWNERSHIP

A. Unless otherwise indicated, demolition waste becomes property of Contractor.

B. Historic items, relics, antiques, and similar objects including, but not limited to, cornerstones and their contents, commemorative plaques and tablets, and other items of interest or value to Owner that may be uncovered during demolition remain the property of Owner.

1. Carefully salvage in a manner to prevent damage and promptly return to Owner.

1.5 PREINSTALLATION MEETINGS

A. Predemolition Conference: Conduct conference at Project site.

1. Inspect and discuss condition of construction to be selectively demolished.
2. Review and finalize selective demolition schedule and verify availability of materials, demolition personnel, equipment, and facilities needed to make progress.

3. Review requirements of work performed by other trades that rely on substrates exposed by selective demolition operations.
4. Review areas where existing construction is to remain and requires protection.

1.6 SUBMITTALS, GENERAL

A. General: Submit all informational submittals required by this Section concurrently.

1.7 INFORMATIONAL SUBMITTALS

A. Predemolition Photographs or Video: Show existing conditions, including finish surfaces, that might be misconstrued as damage caused by demolition operations. Submit photos or video recordings on thumb drive before Work begins. Include copy of key plan indicating each photograph's or video's location and direction.

1. Submit digital media as originally recorded in the digital camera, without alteration, manipulation, editing, or modification.

2. Photographs: Provide high-resolution color images in JPG format, produced by a digital camera with minimum sensor size of 12 megapixels.

a. Name each image with date photograph was taken, location, and unique sequential number keyed to accompanying key plan in file name.

3. Video: Provide high-resolution, digital video in MPEG format, produced by a digital camera with minimum sensor resolution of 12 megapixels.

a. Name each video recording with date video recording was recorded, location, and unique sequential number keyed to accompanying key plan in file name.

b. Begin narration of each video recording with Contractor's name, videographer's name, and location in Project.

1) Describe scenes on video recording by audio narration.
2) Confirm date and time at beginning and end of recording.

1.8 CLOSEOUT SUBMITTALS

A. Warranties: Documentation indicating that existing warranties are still in effect after completion of selective demolition.

1.9 QUALITY ASSURANCE

A. Refrigerant Recovery Technician Qualifications: Certified by an EPA-approved certification program.

1.10 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.

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.

1.11 WARRANTY

A. Existing Warranties: Remove, replace, patch, and restore materials and surfaces cut or damaged during selective demolition, by methods and with materials and using approved contractors so as not to void existing warranties. Notify warrantor before proceeding. Existing warranties include the following:

1. Roofing.

B. Notify warrantor on completion of selective demolition, and obtain documentation verifying that existing system has been inspected and warranty remains in effect. Submit documentation at Project closeout.

1.12 COORDINATION

A. Arrange selective demolition schedule so as not to interfere with Owner's 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 ANSI/ASSP A10.6 and NFPA 241.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Survey existing conditions and correlate with requirements indicated to determine extent of selective demolition required.

B. When unanticipated mechanical, electrical, or structural elements that conflict with intended function or design are encountered, investigate and measure the nature and extent of conflict. Promptly submit a written report to Architect.

C. Engage a professional engineer to 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. Record existing conditions by use of preconstruction photographs or video.

   1. Inventory and record the condition of items to be removed and salvaged. Provide photographs or video of conditions that might be misconstrued as damage caused by demolition operations.

   2. Inventory and record the condition of items to be removed and reinstalled. Provide photographs or video of conditions that might be misconstrued as damage caused by demolition operations.

F. Beginning selective demolition constitutes Contractor’s acceptance of conditions.

3.2 PREPARATION

A. Refrigerant: Before starting demolition, remove refrigerant from mechanical equipment according to 40 CFR 82 and regulations of authorities having jurisdiction.

3.3 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.

d. Equipment to Be Removed and Reinstalled: Disconnect and cap services and remove, clean, and store equipment; when appropriate, reinstall, reconnect, and make equipment operational.

e. Equipment to Be Removed and Salvaged: Disconnect and cap services and remove equipment and deliver to Owner.

f. Ducts to Be Removed: Remove portion of ducts indicated to be removed and plug remaining ducts with same or compatible ductwork material.

g. Ducts to Be Abandoned in Place: Cap or plug ducts with same or compatible ductwork material and leave in place.

3.4 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 Division 01 Section "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.

C. Remove temporary barricades and protections where hazards no longer exist.

3.5 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 adequate ventilation when using cutting torches.

6. Remove decayed, vermin-infested, or otherwise dangerous or unsuitable materials and promptly dispose of off-site.

7. Remove structural framing members and lower to ground by method suitable to avoid free fall and to prevent ground impact or dust generation.

8. Locate selective demolition equipment and remove debris and materials so as not to impose excessive loads on supporting walls, floors, or framing.

9. 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. Removed and Salvaged Items:

1. Clean salvaged items.
2. Pack or crate items after cleaning. Identify contents of containers.
3. Store items in a secure area until delivery to Owner.
4. Transport items to Owner's storage area designated by Owner.
5. Protect items from damage during transport and storage.

D. Removed and Reinstalled Items:

1. Clean and restore items to functional condition adequate for intended reuse.

2. Pack or crate items after cleaning and restoring. Identify contents of containers.

3. Protect items from damage during transport and storage.

4. Reinstall items in locations indicated. Comply with installation requirements for new materials and equipment. Provide connections, supports, and miscellaneous materials necessary to make item functional for use indicated.

E. 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.

3.6 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. Resilient Floor Coverings: Remove floor coverings and adhesive according to recommendations in RFCI's "Recommended Work Practices for Removal of Resilient Floor Coverings."

E. 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 Division 07 Sections for new roofing requirements.

3.7 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.
3. Remove debris from elevated portions of building by chute, hoist, or other device that will convey debris to grade level in a controlled descent.

B. Burning: Do not burn demolished materials.

3.8 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 02 41 19

SECTION 02 82 00 – ASBESTOS ABATEMENT

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. Asbestos abatement quality assurance requirements, including personnel training and certification.

2. Work sequence requirements.

3. Personnel protective equipment.

4. Construction facilities and temporary controls for asbestos abatement, including containment barriers, engineering controls and decontamination facilities to ensure contamination from areas where abatement activities occur does not migrate to other areas.

5. Procedures for performing asbestos-containing material abatement, including (but not limited to) repair of existing flooring surfaces after completion of abatement.

6. Project monitoring and testing services for asbestos abatement, including requirements for air sampling and monitoring during asbestos abatement activities.

7. Requirements for transport and disposal of asbestos abatement waste materials by legal and appropriate means.

B. In accordance with 8 NYCRR 155 and ICR 56 asbestos testing has been performed in areas to be disturbed by scheduled renovation or demolition. Testing information is available for review at the Owner's administrative offices.

1.3 CODES AND REFERENCES

A. The following codes and references apply:

1. Asbestos Hazard Emergency Response Act - 40 CFR Part 763.

2. ASTM E 1368 – Standard Practice for Visual Inspection of Asbestos Abatement Projects.

3. National Emission Standards for Hazardous Air Pollutants; Asbestos-40 CFR 61, Subparts A and M.

4. New York State Industrial Code Rule 56 - 12 NYCRR Part 56 (ICR 56).

5. New York State Hazardous Wastes Management Regulations - 6 NYCRR 360 and 364.

6. OSHA

   a. 29 CRF 1910.134 – Respiratory Protection
   b. 29 CFR 1910.1001 – Asbestos
   c. 29 CFR 1926.1101 – Asbestos for Construction
   d. 29 CFR 1926.2 – Variances from Safety and Health Standards
   e. 29 CFR 1926.1200 – Confined Spaces for Construction

7. NYSDOH Asbestos Safety Program Requirements – 10 NYCRR Part 73

B. Failure to expressly refer to applicable code, regulation, standard, law and ordinance within Contract Documents does not imply that applicable regulatory requirements are not applicable to the Project.

1.4 DEFINITIONS

A. Refer to 12 NYCRR Part 56–2.1 for standard definitions. Additional terms are as follows:

1. Asbestos Abatement Work: Encapsulation, enclosure, repair, removal and disposal of asbestos-containing materials in accordance with all applicable codes, regulations, standards, laws and ordinances.

2. Dust and Debris: Visible particles, fragments, or chunks of material, large enough to have settled in the work area by virtue of their weight, that are presumed to have originated from the material abated by the response action, or from a fiber release episode.

3. Manual Removal: Removal work undertaken using only manually powered equipment such as scrapers, brushes, spud bars, etc. Manual removal does not include tools that are powered by electrical motors, compressed air, hydraulic fluid, combustion engines, etc.

4. Residue: Visible material which remains on the abated surface due to incomplete removal and cleaning.

5. Unremoved Material: Any material which was required to be removed by a response action but remains substantially undisturbed.

6. Visual Inspection: The activities associated with detecting the presence of visible residue, dust and debris, or unremoved material and verifying the absence thereof at the completion of a response action.

1.5 ACRONYMS

A. ACM: Asbestos Containing Materials.

B. HEPA: High Efficiency Particulate Air filter which is capable of trapping and retaining 99.97 percent of all mono-dispersed particles of 0.3 microns in diameter or larger.

C. NAD: No Asbestos Detected.

D. NOB: Non-friable asbestos materials embedded in flexible-to-rigid asphalt or vinyl matrices, including but not limited to flooring materials, adhesives, mastics, asphalt shingles, roofing materials and caulks.

E. PPE: Personal Protective Equipment.

F. RACM: Regulated Asbestos Containing Material.

G. TSI: Thermal System Insulation.

1.6 SUBMITTALS, GENERAL

A. Submit all action submittals and informational submittals (except Employee Training and Certification Documentation) required by this Section concurrently.

1.7 PRE-ABATEMENT SUBMITTALS

A. Product Data: For each type of product indicated. Submit MSDS and SDS for each type of chemical to be utilized. Include a summary table or narrative detailing the intended usage of each chemical/product.

1. Encapsulants.
2. Fire Rated Caulking or Expansion Foams

B. Quality Control Submittals:

1. USEPA Notification, including all updates.

2. NYSDOL Notification, including all amended notifications.

3. Copy of ICR 56 Notification to Building Occupants

4. NYSDEC “Industrial Waste Hauler Permit”.

5. NYSDOL Asbestos Handling License.

6. Proposed Specific Variances from ICR 56.

7. Approved Specific Variances from ICR 56.

8. Work-plan identifying work areas, local exhaust system locations, areas of proposed decontamination units, waste trailers, temporary power/utility, barriers, and boundaries of each regulated area.

1.8 POST-ABATEMENT SUBMITTALS

A. Notification of intended waste transporter and disposal site. Notification shall include draft manifest clearly identifying type of waste, transporter to be utilized, and disposal facility.

B. Waste Manifests for RACM and Trip Tickets for all other waste.

C. Results of any bulk sample analysis, area air sample analysis or OSHA compliance air sample analysis.

D. Copy of Project record.

E. Copy of the supervisor Project log, including training and certification documentation for all workers and supervisors who performed any work on site during the course of the project.

F. Record drawings, which identify:

1. The extents of each abatement work area.
2. All locations where asbestos materials were removed.
3. Amount of asbestos materials removed, per location.
4. Where partial removal occurred, the amount of remaining asbestos material, per location.

1.9 QUALITY ASSURANCE

A. Qualifications:

1. Asbestos Abatement Firm:

a. Licensing: Possess valid Asbestos-Handling License issued by Commissioner of Labor of New York State.

b. Supervision: Full-time, on-site supervisor.

c. Personnel Training Requirements. Provide, to Project Monitor, valid training and certification documentation for new employees prior to employees beginning work.

1) Abatement Personnel: Successfully completed USEPA asbestos handler training course (initial or refresher) or USEPA approved asbestos contractor supervisor course (initial or refresher) within the previous 12 months, in accordance with 40 CFR 763. Acceptable documentation is the NYSDOH form DOH - 2832.

2) Abatement Supervisory Personnel: Successfully completed USEPA asbestos contractor/supervisor training course (initial or refresher) within previous 12 months, in accordance with 40 CFR 763. Acceptable documentation is the NYSDOH form DOH - 2832.

d. Personnel Certification Requirements:

1) Abatement Personnel: Possess valid asbestos handling certificate or valid asbestos supervisor certificate, issued by New York State Department of Labor in accordance with ICR 56.

2) Abatement Supervisory Personnel: Possess valid asbestos supervisor certificate issued by New York State Department of Labor in accordance with ICR 56.

2. Project Monitoring and Air Sampling Firm:

a. Employed by Owner with valid asbestos handling license issued by NYSDOL and employing individuals performing project monitoring and air sampling duties possessing asbestos handling certificates issued by NYSDOL for following categories:

1) Asbestos Air Sampling Technician.
2) Asbestos Project Monitor.

b. Contractor responsible for abatement shall not perform air sampling (except for OSHA compliance sampling) or project monitoring. Contractor shall notify Owner and Architect of any conflict of interest between itself and party responsible for project air sampling and monitoring.

3. Laboratories Performing Phase Contrast Microscopy (PCM) Air Sample Analysis (By Owner):

a. Possess valid Environmental Laboratory Approval Program (ELAP) certificate issued by New York State Department of Health for category of Environmental Analysis/Air and Emissions, subcategory of Asbestos Fibers.

b. Enrolled in American Industrial Hygiene Association's Proficiency Analytical Testing Program for PCM.

c. Use National Institute for Occupational Safety and Health (NIOSH) Method 7400 entitled "Fibers" published in NIOSH Manual of Analytical Methods, 3rd Edition. Second Supplement, August 1987.

4. Laboratories Performing Transmission Electron Microscopy (TEM) Air Sample Analysis (By Owner):

a. Possess valid Certificate of Accreditation issued by United State Department of Commerce's National Institute of Standards and Technology (NIST) for Airborne Asbestos Fiber Analysis.

b. Use TEM methodology as required by Appendix A to Subpart E of the AHERA regulations 40 CFR 763.

5. Laboratories Performing Polarized Light Microscopy (PLM) and Transmission Electron Microscopy (TEM) Bulk Sample Analysis (By Owner):

a. Possess valid Environmental Laboratory Approval Program (ELAP) certificate issued by New York State Department of Health for the category of Environmental Analysis / Solid and Hazardous Waste, subcategory of Asbestos in Friable Material and/or Non-Friable Material appropriate to analysis performed.

b. Possess valid Certificate of Accreditation issued by United States Department of Commerce's National Institute of Standards and Technology (NIST) for Bulk Asbestos Fiber Analysis.

B. Regulatory Requirements: Comply with all federal, state, and local codes, laws, ordinances, standards and regulations applicable to asbestos abatement work, transport and disposal, including (but not limited to) standards referenced in "Codes and References" Article.

1.10 NOTIFICATIONS

A. Comply with the following notification requirements:

1. New York State Department of Labor: Submit notification to Division of Safety and Health Asbestos Control Bureau as required in ICR 56 such that notification is received not fewer than 10 days prior to commencement of Project. Include payment of all related notification fees and other notification expenses.

2. United States Environmental Protection Agency (USEPA): Submit notification to USEPA at following address such that notification is received not fewer than 10 days prior to commencement of Project:

Asbestos NESHAP Coordinator
Air & Waste Management Division
USEPA Region 2
26 Federal Plaza
New York, New York 10278

3. Building Occupant Notification: Provide notification to building occupants not fewer than 10 days prior to mobilization or start of preparation work. Ensure notifications are posted in accordance with ICR 56, and remain in place. Contractor shall be responsible for maintaining and replacing notifications if damaged or removed.

1.11 VARIANCES

A. Variances from ICR 56: Use any Applicable Variances issued by New York State Department of Labor (NYSDOL) and any Specific Variances issued by NYSDOL and approved by the Owner and Architect. Remain solely responsible for complying with provisions of variances used.

1. Obtain any and all variances from ICR 56 which may be necessary or desired to perform the Work.

2. Contractor-Obtained Variances: Provide copies of all Petitions for Variance requested by Contractor or subcontractors to Owner, Construction Manager and Architect prior to submission of Petition for Variance to NYSDOL.

   a. Comply with following requirements for all Petitions for Variance:

      1) Provide adequate protection from contaminating areas outside work area.

      2) Provide adequate relief from air sampling requirements, including relief from air sampling requirements on days when no active abatement work occurs.

      3) Conform to overall design criteria for Project.

      4) Protect facility from damage as result of conditions of Petition for Variance.

   b. Contractor retains responsibility for providing all additional conditions, equipment, and other provisions imposed by NYSDOL as part of NYSDOL acceptance of Petition for Variance.

   c. Extensions of time for performance of asbestos abatement work will not be granted to compensate for NYSDOL review of Contractor-obtained variances.

   d. Contractor is responsible for all fees and expenses related to submission of any Petitions for Variance.

1.12 PROJECT CONDITIONS

A. Project/Site Access Limitations: Restrict access to all work areas. Immediately report any access by unauthorized individuals to Owner and Project Monitor.

1.13 PRE-FIRE PLAN

A. Pre-Fire Plan, indicating primary and secondary emergency escape routes from the work area, local exhaust system locations, decontamination units, waste-out units, access tunnels, temporary facilities, location of fire extinguishers, and location of negative air emergency disconnect switch (if required).

B. Plan shall be reviewed with all personnel to enter the work area and shall be posted in the decon area as well as in the work area.

1.14 ASBESTOS LOGS/PROJECT RECORD

A. Maintain a project log as part of ICR 56 during the abatement phase of the work with all information required by ICR 56 and as described herein.

B. Make project log available on site at all times when a project as defined by ICR 56 is active.

C. At a minimum, comply with ICR 56 requirements and as follows:

1. Asbestos Abatement Contractor Project Log (Supervisor's Daily Project Log): As per 12 NYCRR 56-7.3.

2. Non-abatement Asbestos Contractor responsible for Air Sampling (Air Sampling Log): As per 12 NYCRR 56-4.5.

3. Non-abatement Asbestos Contractor responsible for Project Monitoring (Project Monitoring Log):

a. Name of the firm and the certified Project Monitor(s) performing project monitoring duties.

b. Dates of project.

c. Observations, per work area regarding:

1) The stage of completion of the work.
2) Schedule concerns.
3) Work that may be out of compliance with project documents or pertinent asbestos regulations.
4) Asbestos abatement contractor corrections to barriers/required cleaning of areas outside of the work area.
5) Removal of work area containment by asbestos abatement contractor.
6) Hidden conditions.
7) Other relevant information.

d. Information about potential change orders or work performed for which the asbestos abatement contractor contends is outside the scope of work.

e. Coordination with asbestos abatement contractor or others to resolve identified issues.

f. Resolution of identified issues.

g. Project Monitor final visual inspections and final clearance.

h. At a minimum, document project observations and other information by work area and day with additional entries to accurately describe the project status.

4. Where the same non-abatement asbestos contractor is responsible for both air sampling and project monitoring, one project log containing all required components of the Air Sampling Log and the Project Monitoring Log shall suffice.

D. Project Record: At all sites where there is an active project, a project record is required as per ICR 56-3.4 (a) (2).

1. The asbestos abatement contractor shall act as the Owner's representative as it relates to responsibility for the following portions of the Project Record required by ICR 56-3.4 (a) (2):

   a. Copies of licenses of all entities involved with the project.
   b. Copies of all supervisors and handler certificates.
   c. Copies of notifications and amendments.
   d. Copies of all variances, amendments and re-openings being used for the project.
   e. A copy of all air sampling results, including method of analysis, by date for the entire asbestos project, organized by regulated abatement work area.
   f. The supervisor's daily log with entry/exit logs organized by date.
   g. All bulk sample data including all asbestos inspections and surveys completed for affected portions of the building, structure and work site.

2. The asbestos contractor performing air sampling on this Project shall act as the Owner's representative as it relates to responsibility for the following portions of the Project Record required by ICR 56-3.4 (a) (2):

   a. A copy of the air sample log if the Air Sampling Technician is on site. If the Air Sampling Technician is not on site, a copy of the air sample log shall be supplied within 24 hours of the request to produce a copy thereof.

3. The asbestos contractor performing project monitoring on this project shall act as the Owner's representative as it relates to responsibility for the following portions of the Project Record required by ICR 56-3.4 (a) (2):

   a. A copy of the Project Monitor's daily logs during abatement (if a Project Monitor is used on the project).

1.15 SEQUENCING AND SCHEDULING

A. Timing of Abatement Preparation and Removal Operations:

1. Coordinate abatement preparation and removal work to allow for removal or demolition work by other entities, prior to commencing abatement preparation or removal activities, where such activities will not disturb ACM.

2. Where items scheduled to be removed, relocated, or demolished by others will impact ACM, coordinate with other entities regarding temporary relocation of these items during abatement activities. Work that will disturb ACM must be performed by the Contractor responsible for abatement activities.

B. Completion: Complete Asbestos Abatement Work in accordance with construction schedule requirements specified in Division 01 Section “Multiple Contract Summary” with each phase considered distinct and separate for purpose of schedule and substantial completion.

1. Substantial Completion of a phase occurs when all of the following occur:

a. All components of the phase have passed visual inspection by Project Monitor.
b. Satisfactory clearance air sampling is achieved for each portion of the phase.
c. All containment barriers have been removed.
d. Areas are returned to Owner.

2. If Contractor fails to achieve substantial completion within specified schedule requirements, all costs associated with extension of schedule, including (but not limited to) Architect time and expenses, air sampling costs, project monitoring costs, direct costs incurred by Owner, and costs to accelerate sample analysis shall be deducted from final payment.

C. Restrictions on Working Hours: Schedule work only during regular working hours, as established for Project. Do not use overtime or multiple shifts with "overtime" defined as any time in excess of 8 hours in single day, work on weekends, or work on holidays.

D. Changes in Working Hours: Advise Project Monitor of any changes in hours or days which Contractor will be on site, at least 24 hours prior to change. Contractor retains all liability resulting from Contractor’s failure to make required notification.

E. Security: Contractor shall maintain the security of the work areas for which they are performing work in, have modified the existing facilities, or are utilizing for staging area.

PART 2 - PRODUCTS

2.1 NON-ASBESTOS PRODUCTS

A. No products containing asbestos may be used on this project, including but not limited to the following: for temporary construction, work area containment, restoration or renovation work.

2.2 EQUIPMENT

A. Respirators: Provide respirators jointly approved as acceptable for protection by National Institute for Occupational Safety and Health (NIOSH) under provisions of 30 CFR Part 11.

1. Supply and use respirators in accordance with 29 CFR 1910.134 and 29 CFR1926.1101.
2. Provide respirators, filters and ancillary supplies as required for employees and authorized visitors.
3. Account for hazards other than asbestos in respirator selection.

B. Protective Clothing: Provide disposable protective clothing complying with requirements of 29 CFR 1926.1101 that is disposed of after one use. Provide disposable clothing as required for employees and authorized visitors.

C. Asbestos Abatement Construction Facilities and Controls: Provide all materials and equipment in compliance with requirements of:

1. NYS Industrial Code Rule 56.
2. 29 CFR 1926.1101.

D. Project Monitoring and Testing Services Equipment (By Owner):

1. Transmission Electron Microscopy (TEM) Air Sampling Cassettes: Use commercially available 25 mm or 37 mm cassettes.

a. Filter Media: Use sample collection filters which are either:

1) Polycarbonate with pore size less than or equal to 0.4 micrometers; or
2) Mixed cellulose ester having pore size less than or equal to 0.45 micrometers.

2. Phase Contrast Microscopy (PCM) Air Sampling Cassettes: Use commercially available 25 mm cassettes.

a. Filter Media: Use mixed cellulose ester sample collection filters with pore size of 0.8 micrometers.

3. Use only new cassettes. Reloaded cassettes are not acceptable.

2.3 ENCAPSULANTS

A. Encapsulants shall conform to USEPA requirements, shall contain no toxic or hazardous substances and no solvent.

2.4 FIRE RATED SEALANTS

A. All sealants to be used shall meet minimum 2-hour fire rating as per ASTM E-814.

B. Sealant shall be either a polyurethane based expansion foam or a silicone based caulk system.

1. Fire-rated expansion foams shall be manufacturer-colored pink so as to identify its rating. Acceptable products include:

a. ABESCO FP200 Fire Rated Expansion Foam,
b. FlameShield Fire Rated Expansion Foam, or
c. Pyroplex-Fire Rated Expanding Foam.

2. Fire-rated caulking materials are not required to be manufacturer-colored pink. Acceptable products include:

a. DAP Fire-Stop Fire Rated Silicon Sealant, and
b. Hilti CP 601S Elastomeric Firestop Sealant.

3. Fire-rated caulking may require the use of backer material per manufacturer instructions.

C. All sealants shall be applied per manufacturer instructions.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine substrates, areas, and conditions for compliance with requirements for installation tolerances and other conditions affecting performance of the Work.
B. Beginning installation constitutes Contractor's acceptance of substrates and conditions.

3.2 GENERAL REQUIREMENTS

A. The Contractor shall not permit eating, smoking, drinking, chewing or applying cosmetics in the regulated area.

3.3 PROTECTION

A. Provide personal protective equipment as required by 29 CFR 1926.1101 at no cost to employees or authorized visitors.

B. Institute respirator program in accordance with 29 CFR 1910.134 (b), (d), (e) and (f).

C. Use protective clothing and respirators whenever asbestos containing materials are being disturbed, abated, cleaned up, containerized or stored in vehicle or container used to transport waste to landfill.

D. Institute medical surveillance program in accordance with 29 CFR 1926.1101 for all employees performing or supervising asbestos handling work, entering work area containment, or using respirator.

3.4 PREPARATION

A. Perform all preparation work in accordance with Industrial Code Rule 56 and 29 CFR 1926.1101.

B. Do not begin asbestos abatement activities until all of following have occurred:

1. Monitoring Firm has completed background air sampling as required.
2. All preparation work, including installation of decontamination enclosure systems and engineering controls (ex. negative air pressure equipment, etc.) is complete.
3. The Project Monitor has inspected containment area.
4. The Project Monitor has given written authorization to proceed.

C. Decontamination Facilities and Practices

1. The Contractor shall establish a decontamination area in accordance with ICR 56 for the decontamination of employees, material and equipment. The Contractor shall ensure that employees enter and exit the regulated area through the decontamination area.

2. Decontamination Facility – Remote

a. Construct decontamination facilities in accordance with ICR 56 and as follows:

1) Personal decontamination facility minimum requirements:

a) Where remote decontamination facilities are allowed, construction of the decontamination facility shall include an additional airlock after the equipment room and which shall include a lockable door. An additional airlock is required at the entrance to the containment / regulated area and shall include a lockable door.

2) Waste decontamination facility minimum requirements

a) Where remote decontamination facilities are allowed in small and large work areas shall have a washroom constructed between the work area and airlock.

D. Large and Small Asbestos Work Area Preparation - Interior Work:

1. Ensure occupants vacate work area prior to starting preparation. Post caution signs at all approaches to asbestos abatement work area.

a. Do not conduct asbestos abatement activities in occupied buildings. Provide exits from isolated portion of building that do not pass through occupied portions of building. Physically separate and seal ventilation systems passing through occupied portions of building at isolation barrier.

1) “Building”: As defined by New York State Education Department, references to “building” in this Section means wing or major section of structure that can be completely isolated from other portions of the structure with sealed non-combustible construction.

b. Where interior abatement occurs, isolate wing or major section of building from occupied portions of building with sealed isolation barriers constructed of non-combustible materials. Provide exits from isolated portion of building that do not pass through occupied portions of building. Physically separate and seal ventilation systems passing through occupied portions of building at isolation barrier.

c. Do not remove isolation barriers until satisfactory TEM clearance sampling results have been obtained as required by New York State Education Department.

2. Shut down and secure electric power to asbestos abatement work area. Provide temporary power and lighting in accordance with all applicable codes and requirements of project schedule.

    a. Ensure all power to asbestos abatement work area from outside area passes through ground-fault interrupter at source of power.

    b. Confirm which electrical circuits that pass through the asbestos abatement work area, but do not serve the asbestos work area, cannot be shut down.

    c. If electrical circuits, machinery or other electrical systems pass through, but do not service the work area and cannot be shut down, isolate, protect and label such systems as per ICR 56-7.7 (a).

3. Install or construct a personal decontamination enclosure system fully complying with ICR 56-7.5.

    a. Secure personal decontamination enclosure system to prevent unauthorized entry.

    b. Remote decontamination system enclosures shall only be used when allowed by ICR 56, or if a petition for variance from ICR 56 is accepted by Owner and Architect and approved by NYSDOL.

        1) Confirm that remote decontamination enclosure system location will allow access to regulated work areas without adversely affecting use of the building by Owner or other entities.

        2) Provide additional airlocks as required by ICR 56.

4. Shut down and isolate heating, ventilating and air conditioning systems.

5. Pre-clean and remove all movable objects. Pre-clean all fixed objects and other items to remain and enclosed with two distinct and separate layers of plastic sheeting. Pre-clean asbestos abatement work area.

6. Install isolation barriers in accordance with ICR 56-7.11.

7. Install negative pressure equipment fully complying with ICR 56-7.8.

    a. Provide a manometer for all OSHA Class I work areas.

        1) Maintain a minimum of –0.02 column inches of water pressure differential relative to pressure outside the work area.

        2) Document the manometer reading at least twice per work shift.

        3) At a minimum, provide four air changes per hour or as modified by ICR 56 or a specific variance for particular materials, containment or other requirements.

8. Maintain emergency and fire exits from asbestos abatement work area in accordance with all applicable codes.

9. In boiler areas, shut down and seal burner and boiler accesses and breechings.

10. Shut down elevators that run through asbestos abatement work area or isolate them in accordance with ICR 56-7.11.

11. Install or construct waste decontamination enclosure system fully complying with ICR 56-7.5 and secure to prevent unauthorized entry.

    a. Waste decontamination system enclosures shall be constructed and functional prior to completion of work area preparation.

    b. Where a remote personal decontamination system enclosure is allowed comply with the following additional requirements:

        1) Small and Large Size Regulated Abatement Work Areas: Construct an additional chamber attached to the regulated work area for use in conjunction with the existing airlock as a contiguous waste decontamination enclosure.

        2) Minor Size Regulated Abatement Work Area: No additional chamber required.

E. Negative Pressure Tent Enclosures:

1. Negative pressure tent enclosures may be used in the following circumstances:

    a. Any amount of gross abatement of exterior and interior non-friable ACM.
    b. Any amount of glovebag abatement of friable TSI.
    c. Gross abatement of Minor or Small amounts of friable ACM.

2. Construct negative pressure tent regulated abatement work area enclosures as per ICR 56-7.11 (f) (1).

F. Exterior Project Removal of Non-friable ACM Roofing, Siding, Caulking, Glazing Compound, Transite, Tars, Sealers, Coatings, and Other NOB ACMs:

1. Perform preparation work in accordance with ICR 56-11.6.

2. Ensure that the materials are maintained in a non-friable condition and that debris does not fall into the building. Contractor shall be responsible for any additional provisions required by failure to comply with these provisions.

G. Removal of Ceilings and Components:

1. Where non-ACM suspended ceilings and components exist below friable ACM:

a. Complete all preparation work, including all plasticizing, decontamination enclosure construction and instituting negative pressure, up to the suspended ceiling.

b. Remove ceiling tiles and components and dispose or decontaminate as required.

c. Mounted objects or fixtures shall be disposed of or decontaminated and supported in place if scheduled for reuse.

d. Complete preparation work above ceiling.

H. Plasticizing Floors, Walls and Ceilings:

1. Plasticize and seal floors, walls and ceilings as per ICR 56-7.11 or as modified elsewhere in ICR 56 or in accordance with a specific variance from ICR 56 which is approved by NYSDOL and accepted by the Owner and Architect.

I. Pre-Abatement Settling Period: For all Small and Large size regulated abatement work areas where negative pressure equipment is required, upon completion of construction of all isolation barriers and decontamination system enclosures, including the establishment of the negative air system and prior to beginning actual abatement activities, at a minimum, allow 4-hour settling period to insure that barriers remain intact and secured to walls and fixtures.

3.5 ABATEMENT PROCEDURES

A. Perform all asbestos abatement work in accordance with ICR 56 and 29 CFR 1926.1101.

B. Work Area Entry and Exit Procedures: All personnel enter and exit asbestos abatement work area through personal decontamination enclosure system. Post pertinent regulations, personal protection requirements, work area entry and exit procedures, and emergency procedures in clean room.

1. Entry/Exit Log: Ensure all persons sign Entry/Exit Log for each entry and exit. Include at least the following information in Entry/Exit Log:

a. Project name.

b. Building name.

c. Unique work area description.

d. Date.

e. Statement that signature acknowledges review and understanding of posted regulations, personal protection requirements, work area entry and exit procedures, and emergency procedures.

f. Printed name, signature, social security number, NYS asbestos certificate number, entry time and exit time for each individual.

2. Asbestos Abatement Work Area Entry:

a. Initially proceed to clean room and remove all clothing and put on disposable coveralls, head covering, foot covering and gloves.

b. Put on NIOSH-approved respiratory protection appropriate to airborne concentrations of asbestos.

c. Use clean respirators and protective clothing for each separate entry into asbestos abatement work area.

d. Inspect respirators prior to each use and test for proper seal using quantitative or qualitative fit checks.

e. Proceed through personal decontamination enclosure system to equipment room and collect necessary tools and put on any additional clothing before entry into asbestos abatement work area.

3. Asbestos Abatement Work Area Exit:

a. Before leaving asbestos abatement work area, remove gross contamination from outside of respirators and protective clothing on all personnel by brushing, wet cleaning, and HEPA vacuuming.

b. Proceed to equipment room.

c. Remove all disposable coveralls, head covering, foot covering and gloves and deposit into labeled containers for disposal.

d. Store reusable contaminated clothing, footwear, head gear and gloves in equipment room when not in use in asbestos abatement work area.

e. Still wearing respirators, enter shower for decontamination.

f. Proceed to clean room and put on clothing.

4. Remote Decontamination Procedure Modifications: If remote decontamination enclosures systems are allowed by ICR 56, modify asbestos abatement work area entry and exit procedures as follows:

a. Designate a pathway from the regulated abatement work area to the personal decontamination system or next regulated abatement work area that is cordoned off and has appropriate signage as per ICR 56.

b. Confirm that location of designated pathway will not adversely affect the operations of the Owner or other entities.

c. Put on two suits (coveralls, head covering and foot covering) when putting on disposable clothing.

d. Provide attached airlock for each remote asbestos abatement work area and at the entrance to the equipment room of the remote decontamination enclosure system.

e. Prior to leaving asbestos abatement work area, HEPA-vacuum and/or wet wipe outer suit, enter airlock, remove outer suit, don a clean set of protective clothing.

f. Where provisions of specific variance vary from above, most stringent requirements apply.

C. Asbestos Removal – General Requirements:

1. Wetting Requirements: Wet asbestos materials frequently with amended water, and allow sufficient time for penetration to occur prior to abatement activities.

2. Handling: Directly bag or drop asbestos material on detachment from substrate into flexible catch basin for subsequent bagging.

a. Chutes: Use dust tight, enclosed, inclined chutes for asbestos material dropped distances greater than 10 feet.

b. Handling Large Components: Wrap large components, removed intact, in two: layers of plastic sheeting, secure and make airtight with tape.

c. Sharp-Edged Components: Place asbestos waste material with sharp-edged components that may tear plastic bags or sheeting into hard wall containers and seal airtight.

3. Daily Cleanup Procedures: Perform cleanup of loose asbestos material whenever enough loose asbestos material has been removed to fill single leak-tight container of type suitable for material properties. Perform cleanup at least once per day prior to close of each working day. Keep asbestos material wet until cleaned up.

D. Equipment and Waste Container Decontamination and Removal Procedures:

1. Wet clean or HEPA-vacuum external surfaces of contaminated containers and equipment in asbestos abatement work area before moving items into waste decontamination enclosure system airlock. Do not enter airlock.

2. Remove these contaminated items from airlock using individuals stationed in washroom during waste removal operations.

3. Once in waste decontamination enclosure system, clean external surfaces of contaminated containers and equipment and clean equipment second time by wet cleaning.

4. Dry any excessive pooled or beaded liquid from cleaned containers of asbestos material and equipment, place in uncontaminated plastic bags or sheeting as required by characteristics of item, and seal airtight.

5. Move clean re-containerized items into airlock leading to holding area. Do not enter airlock until waste removal is finished for that period.

6. Provide individuals dressed in clean personal protective equipment that has entered from uncontaminated areas to move containers and equipment from airlock and place in holding area.

7. Place cleaned containers of asbestos material and equipment in watertight carts with doors or tops that close and can be secured. Hold these carts in holding area until removal. Wet-clean or HEPA-vacuum carts at least once each day.

8. When waste decontamination enclosure is part of personal decontamination enclosure, do not remove waste during shift change or when otherwise occupied.

E. Asbestos Removal – Additional Requirements:

1. Multiple Abatement within a Single Regulated Abatement Area: Perform abatement of multiple materials from the same regulated work area as per ICR 56-8.6.

2. Non-Friable Flooring Removal:

a. Perform non-friable flooring removal in accordance with ICR 56-11.7.

b. Full work area preparation, attached decontamination system enclosures, abatement and multiple cleanings per ICR 56-7, ICR 56-8 and ICR 56-9 are required if abrasive abatement methods are used.

3. Removal of ACM Ceilings, Walls or Other Components that Expose Areas Beyond:

a. Where removal of an ACM component or system, e.g. ceiling or wall, may expose openings to adjacent areas:

1) Complete all preparation work, including, plasticizing, installation of decontamination systems and instituting negative pressure.

2) Carefully remove the component or system at the perimeter and penetrations prior to gross removal.

3) Clean the area around any and all exposed openings.

4) Install critical barriers on all exposed openings.

5) If any additional openings are exposed during gross removal, immediately stop work, clean the area around the exposed opening and install critical barriers.

4. Glovebag Removal Operations:

a. Glovebag removals are limited to non-planar surfaces, such as pipes or ducts, unless a variance is granted by the NYSDOL and accepted by the Owner and Architect.

b. All glovebag removal work shall be performed within a negative pressurized regulated abatement work area as per ICR 56-7.11 (f) (1).

c. Perform all glovebag removal work in accordance with ICR 56-8.4 (a).

d. When abating pipe or duct insulation, the pipe or duct insulation diameter worked shall not exceed one half the bag working length.

5. Exterior Work Area Removal of Non-Friable ACM Roofing, Siding, Caulking, Glazing Compound, Transite, Tars, Sealers, Coatings, and Other NOB ACMs

a. All removal work shall be performed using manual methods, except for roof removal using rotating blade cutters.

b. In no event shall methods be used that may render the ACM friable.

c. All removal shall be performed using wet methods.

d. Work to the building face, including windows, where not removed within tents, whenever possible, ACM shall be removed with an asbestos handler using a HEPA vacuum to capture small pieces of the ACM as it is dislodged. The vacuum hose shall be within four inches of the material being removed.

e. Asbestos containing materials shall not be allowed to accumulate in the work area or the drop cloth.

f. Asbestos-containing roofing material shall not be dropped or thrown to the ground, but shall be lowered to the ground via covered, dust-tight chute, crane, hoist or other approved method.

g. In lieu of using an exterior chute, waste bags and containers may be lowered to the waste trailer / dumpster by crane or hoist using a temporary waste transfer container of adequate size and strength.

3.6 WORK STOPPAGE CRITERIA

A. Work Stoppage Level Criteria During Abatement:

1. At any time during abatement activities, stop work immediately for inspection and repair of barriers if:

a. Air samples collected outside of work area indicate airborne asbestos fiber concentrations at or above 0.01 fibers per cubic centimeter, or background level, whichever is greater;

b. Visible emissions are observed outside a regulated abatement work area; or

c. Water leaks are observed outside a regulated abatement work area.

2. Work stoppage due to elevated air results shall require:

   a. Inspection and repair of barriers and negative air ventilation systems as necessary.

   b. Clean up of surfaces outside of the regulated abatement work area using HEPA-vacuums and wet-cleaning methods prior to resumption of abatement activities.

   c. A summary of the elevated results, clean up activities, the results of barrier and negative air system inspections including any necessary repairs, to be documented in the asbestos abatement contractor supervisor's daily project log.

   d. Work methods shall be altered accordingly to reduce fiber concentrations to acceptable levels.

3. Work stoppage due to visible emissions or water leaks outside a regulated abatement work area shall require:

   a. Isolate HVAC systems.

   b. Isolate uncontaminated areas.

   c. Install critical barriers.

   d. Negative air pressure equipment ventilation.

   e. All accumulations of asbestos waste material shall be containerized and removed.

   f. All surfaces in the regulated abatement work area shall be wet-cleaned using rags, mops and sponges.

   g. After the first cleaning, at least twelve hours shall be allowed for asbestos to settle. Thereafter, all objects and surfaces in the regulated abatement work area shall be HEPA vacuumed and wet-cleaned.

   h. All remaining contaminated equipment and containerized waste shall be removed from the regulated abatement work area.

   i. Clearance air sampling shall be conducted, as per the schedule for air sampling and analysis.

3.7 FINAL CLEANING AND CLEARANCE PROCEDURES

A. Post-Abatement Cleaning: Ensure negative pressure ventilation units remain in continuous operation during settling periods and cleaning. Do not proceed to subsequent stage of cleaning; sheeting removal or clearance air sampling until cleaning has been properly completed. Following completion of all stripping work, HEPA-vacuum and wet clean surfaces from which asbestos material has been removed.

   1. Inspection: Provide for Project Monitor to visually inspect entire asbestos abatement work area at completion of each cleaning to determine whether removal and cleaning has been properly completed.

a. Any debris and/or residual material in asbestos abatement work area shall be assumed to be asbestos containing material.
b. Cleaning not considered properly completed until debris and residue has been cleaned or removed.

2. First Cleaning: Wet clean all surfaces in asbestos abatement work area first using rags, mops and sponges.

3. Encapsulant Use During Cleanup: After first cleaning, prior to first sheeting removal and after asbestos abatement work area has been rendered free of visible residue, apply thin coat of encapsulation agent to any surfaces in asbestos abatement work area not subject to removal or other remediation activities. Do not apply encapsulant to any surface involved in asbestos removal or other remediation activities prior to obtaining satisfactory clearance air monitoring results.

4. First Sheeting Removal: After first cleaning, observe a settling period equal to or greater than that required by ICR 56-9.1 (f) before continuing. Remove cleaned exposed barrier layer of plastic sheeting from walls and floors. Keep windows, doors, HVAC system vents and all other openings sealed. Keep in place and use decontamination systems.

5. Second Cleaning and Sheeting Removal: Then HEPA-vacuum or wet clean all objects and surfaces in asbestos abatement work area. Remove remaining plastic on walls and floors only. Keep all windows, HVAC system vents and all other openings sealed.

6. Third Cleaning After second cleaning, observe a settling period equal to or greater than that required by ICR 56-9.1 (f) before continuing with HEPA-vacuuming and then wet cleaning all surfaces in asbestos abatement work area.

7. Removal of Waste, Tools and Equipment: Remove from asbestos abatement work area and from holding area and decontaminate tools and equipment.

8. Where an exemption from multiple cleaning and sheeting removal exists in ICR 56-9.1 (e) or specific variance granted by NYSDOL and accepted by the Owner and Architect, modify cleaning and sheeting removal to reflect that in ICR 56-9.1 (e) or specific variance.

B. Supervisor Post Abatement Visual Inspection:

1. After all required abatement and cleanings, the asbestos abatement contractor supervisor shall perform a visual inspection for completeness of abatement and cleaning.

2. The asbestos abatement supervisor visual inspection must determine that abatement and cleaning have been properly completed as per the project documents and all pertinent regulations prior to commencement of the Project Monitor visual inspection.

3. Contractor supervisor shall document in the Project Log that abatement and cleaning have been satisfactorily completed in accordance with project documents and all pertinent regulations.

C. Project Monitor Visual Inspection:

1. After all required abatement, cleanings and the asbestos abatement contractor supervisor visual inspection, the Project Monitor shall perform a visual inspection for completeness of abatement and completeness of cleanup as per project documents and the current ASTM E 1368.

2. Upon satisfactory completion of the required Project Monitor visual inspection, an entry shall be made into the asbestos abatement contractor supervisor's daily log by both the supervisor and the Project Monitor, detailing the findings of the visual inspection.

3. The full name and NYSDOL asbestos handling certificate number of the Project Monitor shall also be documented in the supervisor's daily log.

D. Clearance Air Monitoring (By Owner):

1. After Project Monitor has performed visual inspection and provisionally determined that removal and cleaning have been properly completed, Project Monitor shall conduct clearance air monitoring.

   a. Removal and cleaning not considered properly completed until asbestos abatement work area has achieved satisfactory clearance air sampling in accordance with this Section.

   b. During clearance air monitoring, negative air pressure equipment shall remain in continuous operation.

2. Failure of Clearance Air Monitoring:

   a. Satisfactory clearance air sampling is achieved only when requirements of ICR 56, AHERA under 40 CFR 763 and New York State Education Department have been met.

   b. Re-clean any asbestos abatement work area or other area not meeting satisfactory clearance air monitoring results criteria for any of the following:

      1) ICR 56.
      2) AHERA under 40 CFR 763, using wet methods with negative air pressure equipment operating as required by ICR 56.

   c. Project Monitor shall collect new samples in same locations for each asbestos abatement work area with air samples not meeting clearance air monitoring results criteria.

   d. Repeat cleaning, air sampling, monitoring, and analysis until satisfactory clearance air monitoring results are achieved throughout entire asbestos abatement work area.

e. Failure of clearance air monitoring indicates that Contractor did not properly complete abatement activity:

1) Contractor shall perform all cleaning at no additional cost to Owner.

2) Contractor shall reimburse Owner for all costs associated with project monitoring, air sampling and air sample analysis during additional cleaning and clearance air sampling.

3) Contractor remains responsible for complying with all specified schedules and timing.

3.8 WORK AREA REMOVAL PROCEDURES

A. Removal of Work Area Containment:

1. Remove all remaining plastic sheeting, barriers, decontamination facilities; negative pressure equipment and ancillary items only after satisfactory clearance air monitoring results are achieved.

2. Notify Project Monitor immediately if any residual asbestos-containing debris is discovered during removal of plastic sheeting, barriers, decontamination facilities, negative pressure equipment and ancillary items, and clean up debris in accordance with ICR 56-9.3.

3. Clean all tape, glue, staples, etc. used in abatement process.

4. Repair any damage to walls, floors, ceilings, fixtures, or other items not scheduled for demolition or abatement to at least pre-abatement condition. Where finishes are damaged, refinish or repaint entire object or to nearest break in surface of walls, ceilings, soffits, etc.

5. Where partial occupancy by Owner is required, portion of asbestos abatement work will not be considered returned to Owner until entire containment is removed and Owner can use space for intended purpose or other entities can occupy space for additional work as applicable.

3.9 FIELD QUALITY CONTROL

A. Inspection of Barriers: Provide inspection of all barriers at least twice daily by Asbestos Supervisor and record inspections and observations in daily project log.

B. Repairs to Barriers and/or Enclosure Systems: Repair damage and defects in barriers and enclosure systems immediately upon discovery and prior to resumption of abatement activities.

C. Testing of Barriers and Enclosure Systems: Use smoke tubes with negative air pressure ventilation units in operation to test effectiveness of asbestos abatement work area barriers and personal and waste decontamination enclosure systems. Perform these tests prior to beginning of abatement activities and at least once daily afterwards until satisfactory clearance air monitoring results are achieved. Document test results, observations and modifications in daily project log.

D. Testing By Owner:

1. Intent: Project Monitoring and Air Sampling provided by Owner intended to:

   a. Monitor Contractor's compliance with plans, specifications and asbestos related regulatory requirements.
   b. Fulfill air-sampling requirements of ICR 56, 40 CFR 763 and New York State Education Department.

2. Where no air sampling is required by applicable regulations, Owner reserves the right, without incurring any obligation to perform air sampling for any or all stages or portions of the work.

3. Contractor Requirements:

   a. Provide access to asbestos abatement work areas for Project Monitor/Air Sampling Technician employed by Owner to observe all asbestos abatement work and collect air samples as required by ICR 56, 40 CFR 763 and New York State Education Department.

   b. Provide adequate lighting, ladders, scaffolding, and similar items to enable Project Monitor/Air Sampling Technician to perform visual inspections of all surfaces within asbestos abatement work areas.

   c. Provide sufficient temporary electrical power to locations within asbestos abatement work areas as required to supply high volume air sampling pumps for daily and clearance air samples.

   d. Do not perform any air monitoring functions under ICR 56. Notify Owner and Architect immediately of any conflict of interest between Contractor and any firm providing project monitoring, air sampling or laboratory analysis.

   e. Contractor retains complete and total responsibility for complying with plans, specifications and all regulatory requirements.

E. Air Sampling Procedures:

1. Flow Rate, Capacity and Chain of Custody:

   a. Flow Rate: Between 2 and 10 liters per minute.

   b. Calibration: Pre-calibrate and post-calibrate pumps with each use.

c. Chain of Custody: Transport all samples under chain of custody.

d. Clearance Air Sampling Equipment Placement: Place air sampling equipment within asbestos abatement work area at random around asbestos abatement work area. If asbestos abatement work area contains number of rooms equivalent to required number of samples, place sampler in each room. When number of rooms is greater than required number of samples, select representative sample of rooms. Do not place in corners of rooms or near obstructions.

2. Analysis Time:

a. PCM Clearance Air Sample Analysis: Provide overnight delivery of the samples to the laboratory. Maximum turnaround time from receipt of the samples at laboratory until receipt of faxed results is 12 hours. Ensure maximum time between sample collection and analysis of all samples is 48 hours.

b. TEM Clearance Air Sample Analysis: Provide overnight delivery of the samples to the laboratory. Maximum turnaround time from receipt of the samples at laboratory until receipt of faxed results is 24 hours. Ensure maximum time between sample collection and analysis of all samples is 48 hours.

3. Air Sample Blanks:

a. PCM Air Samples: Submit blank sample cassettes daily equal to 10 percent of the total number of samples collected that day, but not less than 2 cassette blanks per day.

b. TEM Air Samples: Submit 1 sealed blank and 2 field blanks for each set of clearance samples.

F. Air Sampling Required by New York State Education Department: In addition to clearance air sampling requirements included in ICR 56 and AHERA regulations – 40 CFR 763, provide TEM clearance air samples collected and analyzed per AHERA for all projects where clearance air samples are required by ICR 56.

G. Air Sampling Required by ICR 56:

1. Method of Analysis: At a minimum, use PCM analysis as method of analysis for ICR 56 compliance sampling. Owner reserves the right to allow TEM clearance air samples without PCM samples and where PCM analysis results in fiber counts exceeding air clearance levels, Owner reserves right to use TEM analysis to obtain more accurate asbestos fiber count.

2. Variance: Where provisions of specific variance differ from ICR 56 and provisions specified in this Section, comply with provisions of specific variance. Where provisions of a specific variance differ from AHERA regulations, the more stringent provisions shall prevail.

3. Background Air Sampling (prior to start of Project): Collect minimum 1 air sample from inside and outside of each area with minimum volume collected of 1500 liters.

4. Pre-Abatement Air Sampling (Area Preparation): Collect pre-abatement air samples on at least 1 day during work area preparation with minimum 1500 liters volume collected.

   a. Large Asbestos Abatement Projects: Collect minimum of 5 samples inside and outside of each asbestos abatement work area. Where area is greater than 25,000 square feet, collect additional representative area sample for every 5,000 square feet.

   b. Small Asbestos Projects: Collect minimum of 3 samples inside and outside of each asbestos abatement work area.

   c. Minor Asbestos Projects: Collect minimum of 1 sample inside and outside of each asbestos abatement work area.

5. During Abatement: Collect air samples daily when actual abatement activities have begun, preparation or other work prior to beginning actual abatement activities has disturbed asbestos containing materials, or preparation or other work prior to beginning actual abatement activities can reasonably be anticipated to disturb asbestos.

   a. Large Asbestos Projects: Collect samples as required by ICR 56-17.3.
   b. Quantity: Collect as close to 1500 liters as possible without exceeding flow rate of 10 liters per minute. Continue sample collection during entire workday.

6. Post Abatement (Clearance Air Monitoring):

   a. Drying Time:

      1) Do not begin sampling until period equal to or greater than that required by ICR 56-9.1 (f) final cleaning has been completed and no visible pools of liquid or condensation remain. Use aggressive sampling techniques as per ICR 56-17.

      2) Negative air pressure equipment shall remain in continuous operation during clearance air monitoring.

   b. Minimum Collection Volume: 1500 liters.

   c. Large Asbestos Abatement Projects: Collect minimum of 5 samples inside and outside of each asbestos abatement work area. Where area is greater than 25,000 square feet, collect additional representative area sample for every 5,000 square feet.

   d. Small Asbestos Projects: Collect minimum of 5 samples inside and 3 samples outside of each asbestos abatement work area.

   e. Minor Asbestos Projects: Collect minimum of 5 samples inside and 1 sample outside of each asbestos abatement work area.

   f. Clearance Criteria: Clearance air monitoring results considered satisfactory when every sample demonstrates airborne concentration of asbestos fibers less than 0.01 fibers per cubic centimeter or background level, whichever is greater.

g. Dirt Floor Crawlspace Clearance Monitoring Modifications

1) During ICR 56 "Abatement Phase IIC – Final Cleaning & Clearance Air Samples", in addition to the requirements of ICR 56 Subpart 56-4.9(c), air monitoring within the work area shall be conducted daily for the entire workshift. The number of required inside work area air samples shall be consistent with the size of the work area (i.e. 1-minor, 3-small, 5-large, including required additional samples for work areas over 25,000 sf). The inside sample locations shall be distributed throughout the work area.

2) In lieu of post-abatement clearance air monitoring in compliance with ICR-56-9.2(d), the most recent daily abatement air samples collected during cleaning operations in the regulated work area, shall be used for comparison with ICR 56-4.11 clearance criteria. For large abatement work areas (≥ 160 square feet or ≥ 260 linear feet of abatement) TEM air samples shall be collected and analyzed for the daily / clearance air samples used for comparison to clearance criteria.

H. Clearance Air Sampling Required by AHERA Regulations 40 CFR 763:

1. Clearance air sampling requirements for compliance with AHERA regulations provided in addition to ICR 56 requirements.

a. For all clearance air sampling for compliance with the AHERA Regulations, 40 CFR 763, 5 samples shall be collected within each regulated abatement work area.

b. Where PCM air samples are allowed by AHERA, collect and analyze additional PCM samples to supplement samples collected for compliance with ICR 56 for a minimum of 5 samples collected within the regulated abatement work area.

c. Where TEM air samples are required by AHERA, collect and analyze TEM air samples required by AHERA in lieu of PCM air samples required by ICR 56. Collect a minimum of 5 samples within each regulated abatement work area.

2. Required Analysis:

a. Type of Analysis: Provide TEM analysis when more than 160 square feet or 260 linear feet of asbestos containing material are removed within containment barriers used to isolate functional space. Do not separate contiguous portions of material subject to abatement conducted concurrently or at approximately same time within same building to qualify for PCM analysis.

b. TEM Sampling:

1) Sample Volumes - Collect sample volumes as follows:

a) 25 mm Cassettes: Between 1,199 and 1,800 liters of air.
b) 37 mm Cassettes: Between 2,799 and 4,000 liters of air.

2) Sample Number - Collect and submit following samples:

a) Within Containment Barriers: 5 samples.
b) Outside Containment Barriers: 5 samples.
c) Submit 1 sealed blank and 2 field blanks.

3) Clearance Criteria:

a) Results considered satisfactory and asbestos abatement activity considered complete when average of 5 samples collected inside containment barriers does not exceed 70 structures per square millimeter.

b) If average of 5 samples collected inside containment barriers exceeds 70 structures per square millimeter, Owner may elect to compare results of 5 samples collected inside containment barriers to remaining samples. If concentration of asbestos on 5 samples collected within barriers is not statistically different from concentration of asbestos of 5 samples collected outside of containment barriers when analyzed and compared as per Appendix A of Subpart E of 40 CFR 763, clearance air monitoring results considered satisfactory and asbestos abatement activity considered to be complete.

c. PCM Sample Analysis:

1) Sample Volume: Collect minimum of 1500 liters of air.

2) Sample Number: Collect 5 samples within containment barriers.

3) Clearance Criteria: Results considered satisfactory and asbestos abatement activity considered complete when each of 5 samples collected inside containment barriers is less than 0.01 fibers per square centimeter.

3.10 CLEANING

A. Daily Cleaning of Enclosures: HEPA vacuum and/or wet clean personal and waste decontamination enclosure systems at end of each day of abatement activities.

3.11 ASBESTOS WASTE DISPOSAL PROCEDURES

A. All waste generated as part of the asbestos project shall be removed from the site within 10 days after successful completion of satisfactory clearance air sampling and dismantling of all regulated abatement work areas at the site.

B. Regulated Asbestos Containing Material (RACM): Category I non-friable asbestos-containing material that does not become friable is not considered to be RACM. All other waste materials removed as part of asbestos abatement work, including (but not limited to) friable asbestos-containing material, Category II non-friable asbestos-containing materials, plastic sheeting, disposable clothing and filters from control devices are considered to be RACM.

1. Adequately wet and properly containerize or seal in leak-tight wrapping all RACM.

2. Label all containers or wrapped material in accordance with requirements of OSHA in 29 CFR 1926.1101 (j) (2) with labels printed in letters of sufficient size and contrast to be readily visible and legible. Include following information on labels:

   a. Name of waste generator.
   b. Location where waste was generated.
   c. Name of abatement contractor.

3. Provide written notification a minimum of 5 days prior to transport of waste to each Appendix A

4. site and transporter will be used, and which type of waste is included in the shipment. Purpose of notification is to verify if landfill and transporter are permitted and match the submitted items.

5. Deposit all RACM as soon as practical at waste disposal site operated in accordance with 40 CFR Part 61.154 and 6 NYCRR 364.

6. Line all vehicles used to transport RACM off site with two layers of plastic sheeting sealed leak-tight.

7. When RACM is transported off site (regardless of amount), transport using vehicles with valid Industrial Waste Hauler Permit for asbestos containing material as per 6 NYCRR 364.

8. Identify vehicles used to transport RACM during loading, during entire time vehicle is on site, and during unloading as per 40 CFR 61.149.

9. Maintain waste shipment records as per 40 CFR 61.150, and provide copy of waste shipment records to disposal site owners or operators when RACM is delivered to disposal site. Return copy of waste shipment record, signed by owner or operator of designated disposal site, to Owner within 35 days of date waste was accepted by initial transporter.

C. All Other Waste: Category I non-friable material may be transported and disposed of as Construction and Demolition debris in accordance with 6 NYCRR 360 and 364. Contractor is responsible for maintaining Category I non-friable material in non-friable condition if intended to be disposed of as construction and demolition debris. Provide trip tickets or other documentation clearly identifying amount of material removed from site, transported to disposal site and disposed of including at least:

1. Name, address and telephone of waste generator.

2. Approximate quantity.
3. Name and telephone number of disposal site operator.
4. Name and physical site location of disposal site.
5. Name, address and telephone number of transporter.

D. Contractor is responsible to confirm if flow control measures (if in effect in the county of operation) permits use of the proposed landfill.

END OF SECTION 02 82 00

PH2 Asbestos Report Available Upon Request – Please email your request to
INE.Waverly@tetratech.com

SECTION 02 83 00 – LEAD SAFE WORK PRACTICES

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. Lead safe work practices quality assurance requirements including personnel training.
2. Project monitoring and testing services for lead related work, including requirements for sampling and monitoring during lead related activities.
3. Requirements for transport and disposal of lead waste materials by legal and appropriate means.

B. Lead inspections have been performed in accordance with New York State Education Department requirements and a copy of the lead inspection report is available in the Owner's offices for review.

C. All painted and glazed surfaces not identified as Lead-Based Paint shall be treated as lead containing. All contractors shall comply with OSHA requirements for work which disturbs lead containing materials.

1.3 CODES AND REFERENCES

A. The following codes and references apply:

1. New York State Department of Environmental Conservation (DEC):

a. 6 NYCRR 360 - Solid Waste Management Facilities.
b. 6 NYCRR 364 - Waste Transporter Permits.
c. 6 NYCRR 370 - Hazardous Waste Management System: General.
d. 6 NYCRR 371 - Identification and Listing of Hazardous Wastes.
e. 6 NYCRR 372 - Hazardous Waste Manifest and Related Standards for Generators, Transporters and Facilities.
f. 6 NYCRR 373-1 - Hazardous Waste Treatment, Storage and Disposal Facility Permitting Requirements.
g. 6 NYCRR 373-2 - Final Status Standards for Owners and Operators of Hazardous Waste Treatment, Storage and Disposal Facilities.
h. 6 NYCRR 373-3 - Interim Status Standards Regulations for Owners and Operators of Hazardous Waste Facilities.
i. 6 NYCRR 376 - Land Disposal Restrictions.

2. Occupational Safety and Health Administration (OSHA) - 29 CFR 1926.62 - Safety and Health Regulations for Construction - Lead.

3. United States Department of Transportation (DOT):

   a. 49 CFR 171 - General Information, Regulations, and Definitions.
   b. 49 CFR 172 - Hazardous Materials Table, Special Provisions, Hazardous Materials Communications, Emergency Response Information, and Training Requirements.
   c. 49 CFR 173 - Shippers - General Requirements for Shipments and Packagings.
   d. 49 CFR 174 - Carriage by Rail.
   e. 49 CFR 175 - Carriage by Aircraft.
   f. 49 CFR 176 - Carriage by Vessel.
   g. 49 CFR 177 - Carriage by Public Highway.
   h. 49 CFR 178 - Specifications for Packagings.
   i. 49 CFR 179 -Specifications for Tank Cars.
   j. 49 CFR 180 -Continuing Qualification and Maintenance of Packagings.

4. United States Environmental Protection Agency (USEPA):

   a. 40 CFR Part 260 - Hazardous Waste Management System: General.
   b. 40 CFR Part 261 - Identification and Listing of Hazardous Waste.
   c. 40 CFR Part 262 - Standards Applicable to Generators of Hazardous Waste.
   d. 40 CFR Part 263 - Standards Applicable to Transporters of Hazardous Waste.
   e. 40 CFR Part 264 - Standards for Owners and Operators of Hazardous Waste Treatment, Storage, and Disposal Facilities.
   f. 40 CFR Part 265 - Interim Status Standards for Owners and Operators of Hazardous Waste Treatment, Storage, and Disposal Facilities.
   g. 40 CFR Part 266 - Standards for the Management of Specific Hazardous Wastes and Specific Types of Hazardous Waste Management Facilities.
   h. 40 CFR Part 268 - Land Disposal Restrictions.
   i. 40 CFR Part 270 - EPA Administered Permit Programs: The Hazardous Waste Permit Program.
   j. 40 CFR Part 745, Subpart L - Lead-Based Paint Activities.

5. United States Department of Housing and Urban Development (HUD)

   a. Guidelines for the Evaluation and Control of Lead-Based Paint Hazards In Housing.

B. Failure to expressly refer to applicable code, regulation, standard, law and ordinance within Contract Documents does not imply that applicable regulatory requirements are not applicable to the Project.

1.4 DEFINITIONS

A. Lead-Based Paint: Paint or other surface coatings that contain lead equal to or greater than 1.0 mg/cm2 or 0.5 percent by weight.

B. Lead Containing Materials: Paint or other surface coatings that contain less than 1.0 mg/cm2 or 0.5 percent by weight.

C. Lead Safe Work Practices: Lead safe work practices provide for disturbance of lead, including removal and disposal of lead-based paint; lead containing dust; and lead contaminated soil in accordance with the "HUD Guidelines for the Evaluation and Control of Lead-Based Paint Hazards in Housing", all applicable codes, regulations, standards, laws and ordinances and this Section.

D. Surface Coatings: Paint, shellac, varnish, glaze coat of ceramic tile or block or any other coating including wallpaper that covers painted surfaces.

1.5 ACRONYMS

A. LBP: Lead-Based Paint.

1.6 SUBMITTALS, GENERAL

A. Submit all action submittals and informational submittals (except Employee Training and Certification Documentation) required by this Section concurrently.

1.7 ACTION SUBMITTALS

A. Quality Control Submittals:

1. Valid Waste Transporter Permit, issued by New York State Department of Environmental Conservation.

2. Written communication from designated treatment, storage or disposal facility that it:

   a. Is authorized to receive and dispose of waste products generated by this Project.
   b. Has capacity to receive and dispose of waste products generated by this Project.
   c. Will provide or assure that ultimate disposal method indicated on manifest for particular hazardous waste(s) will be followed.

3. Instruction regarding requirements for distribution of waste manifest as manifest is completed, at time of shipment.

4. Emergency Contact List: List providing means to contact applicable individuals and agencies in event of emergency at any time of day or night and including at least the following individuals and agencies:

   a. Contractor Personnel:

      1) Project manager.
      2) Project supervisor.

   b. Sampling Organization: On site sampling technician.

   c. Owner.

   d. Local police department.

e. Local fire department.

f. Local hospital and ambulance service.

1.8 INFORMATIONAL SUBMITTALS

A. Qualification Data: Employee Training and Certification Documentation: Valid training and certification documentation for new employees prior to employees beginning work.

1.9 CLOSEOUT SUBMITTALS

A. Daily Logs.

B. Sign In Sheets.

C. Laboratory Analysis for clearance sampling.

D. Documentation of Hazardous Waste Determination: Toxicity Characteristic Leachate Procedure sample analysis and documentation that identifies the material(s) sampled.

E. New York State Uniform Hazardous Waste Manifest or manifest as required by the state where the waste is disposed, for waste that is known or determined to be hazardous, and Trip Tickets for all other waste.

1.10 QUALITY ASSURANCE

A. Qualifications:

1. Contractor:

a. Supervision: Full-time, on-site supervisor for each site.

b. Personnel Certification Requirements:

1) Lead-Based Paint Personnel: Maintain current USEPA certification to engage in lead-based paint activities per 40 CFR 745.226.

2) Lead-Based Paint Supervisory Personnel: Maintain current USEPA certification as a lead-based paint abatement supervisor per 40 CFR 745.226.

c. Personnel Training Requirements: In addition to the training requirements for USEPA certification, all lead personnel or lead supervisory personnel, including any personnel entering lead activity areas, shall have training as required by 29 CFR 1926.62.

2. Owner's Sampling/Monitoring Firm: Independent of Contractor and possessing current USEPA certification to perform lead-based paint activities.

   a. Personnel Certification:

      1) Monitoring: Possess current USEPA certification, as per 40 CFR 745, subpart L, as either "Risk Assessor" or "Inspector".

      2) Final Inspection or Clearance Testing: Possess current USEPA certifications, as per 40 CFR 745, subpart L, as either "Risk Assessor" or "Inspector".

3. Lead Analysis Laboratories:

   a. Maintain current National Lead Laboratory Accreditation Program (NLLAP) accreditation.

   b. Maintain current New York State Environmental Laboratory Approval Program (ELAP) accreditation in each method of analysis used.

   c. Use most recent version of specified test method.

   d. Analyze samples for waste characterization using:

      1) Toxicity Characteristic Leachate Procedure - EPA Method 1311.

      2) Analysis by one of following:

         a) Inductively Coupled Plasma-Atomic Emission Spectrometry - EPA Method 6010.
         b) Inductively Coupled Plasma-Mass Spectrometry - EPA Method 6020.
         c) Lead (Atomic Absorption, Direct Aspiration) - EPA Method 7420.
         d) Lead (Atomic Absorption, Furnace Technique) - EPA Method 7421.

   e. Analyze air samples for lead for total lead (if required) using one of following:

      1) Lead by Flame Atomic Absorption Spectrophotometer - NIOSH 7082.
      2) Lead by Graphite Furnace Atomic Absorption Spectrophotometer - NIOSH 7105.
      3) Elements by Inductively Coupled Argon Plasma, Atomic Emission Spectroscopy - NIOSH 7300.

   f. Analyze wipe samples, paint chip samples and soil samples using one of following methods:

      1) Inductively Coupled Plasma-Atomic Emission Spectrometry - EPA Method 6010.
      2) Inductively Coupled Plasma-Mass Spectrometry - EPA Method 6020.
      3) Lead (Atomic Absorption, Direct Aspiration) - EPA Method 7420.
      4) Lead (Atomic Absorption, Furnace Technique) - EPA Method 7421.

B. Regulatory Requirements:

1. Hazardous Waste Generator Status: Owner is “Conditionally Exempt Small Quantity Generator” as defined by 6 NYCRR 371 and 40CFR 260. Schedule removal, on-site storage, and transport as required to maintain Owner’s status as “Conditionally Exempt Small Quantity Generator”.

1.11 PROJECT CONDITIONS

A. Project/Site Access Limitations: Restrict access to all work areas. Immediately report any access by unauthorized individuals to Owner and Project Monitor.

1.12 SEQUENCING AND SCHEDULING

A. Completion: Complete lead hazard control activities in accordance with construction schedule requirements specified in Section 01 12 00 “Multiple Contract Summary-Project Schedule” with each phase considered distinct and separate for purpose of schedule and substantial completion.

1. Substantial Completion of a phase occurs when all of the following occur:

a. All components of the phase have passed visual inspection by Supervisor.
b. Satisfactory clearance criteria are achieved for each portion of the phase.
c. All containment barriers have been removed.
d. Areas are returned to Owner.

2. If Contractor fails to achieve substantial completion within specified schedule requirements, all costs associated with extension of schedule, including (but not limited to) sampling costs, monitoring costs, direct costs incurred by Owner, and costs to accelerate sample analysis shall be deducted from final payment.

B. Restrictions on Working Hours: Schedule work only during regular working hours, as established for Project. Do not use overtime or multiple shifts with "overtime" defined as any time in excess of 8 hours in single day, work on weekends, or work on holidays.

C. Changes in Working Hours: Advise Owner of any changes in hours or days when leas hazard control activities will be conducted on site, at least 24 hours prior to change. Contractor retains all liability resulting from Contractor’s failure to make required notification.

PART 2 - PRODUCTS

2.1 EQUIPMENT

A. Respirators: Provide respirators jointly approved as acceptable for protection by National Institute for Occupational Safety and Health (NIOSH) under provisions of 30 CFR Part 11.

1. Supply and use respirators in accordance with 29 CFR 1910.134 and 29 CFR1926.62.

2. Provide respirators, filters and ancillary supplies as required for employees and authorized visitors.
3. Account for hazards other than lead in respirator selection.

B. Protective Clothing: Provide disposable protective clothing complying with requirements of 29 CFR 1926.62 that is disposed of after one use. Provide disposable clothing as required for employees and authorized visitors.

C. Lead-Related Construction Facilities and Controls:

1. Polyethylene sheeting (plastic sheeting) - 6-mil thickness, sized to minimize seams.

2. Tape and/or adhesive spray capable of sealing joints in adjacent polyethylene sheets and for attachment of polyethylene sheet to finished or unfinished surfaces of dissimilar materials and capable of adhering under both dry and wet conditions, including use of amended water.

3. Polyethylene waste disposal bags - 6-mil thickness with preprinted labels.

4. HEPA filtered negative pressure equipment.

5. HEPA filtered vacuums.

6. Water filtration, 3 stage with final filtration to at least 5 microns.

7. Barrier tape.

8. Warning signs.

9. Hygiene facilities as required by 29 CFR 1926.62 including showers, cleansing agents and disposable towers.

10. Lead specific detergent, similar to:

a. LSZ, Inc.; Ledizolv.
b. Sentinel Products, Inc.; Sentinel 805.

D. Testing Services Equipment:

1. Wipe Testing:

a. Disposable wipe meeting criteria of ASTM E1792.
b. Non-sterilized non-powdered disposable gloves.
c. Non-sterilized polyethylene centrifuge tubes (50 ml size) or equivalent hard-shell container that can be rinsed quantitatively in laboratory.

2. Air Sampling Cassettes: Commercially available 37 mil cassettes, using mixed cellulose ester sample collection filters with pore size of 0.8 micrometers. Use only new cassettes; reloaded cassettes not acceptable.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine substrates, areas, and conditions for compliance with requirements for conditions affecting performance of the Work.
B. Beginning installation constitutes Contractor's acceptance of substrates and conditions.

3.2 DE MINIMIS WORK LEVELS

A. De minimis disturbance of lead-based paint is defined as work that does not disturb LBP coated surfaces that total more than:

1. 20 square feet on exterior surfaces;
2. 2 square feet in any one interior room or space; or
3. 10 percent of the total surface area on an interior or exterior type of component with a small surface area. Examples include window sills, baseboards, and trim.

B. Disturbance of lead-based paint that is determined to be at de minimis levels may be performed using the following work methods:

1. None of the "Unacceptable Removal Methods" listed below are used.

2. Work area preparation in full compliance with Level 1 work area preparation.

3. Methods to minimize the creation of dust are used. Methods include, but are not limited to, misting the area to be disturbed, drilling through a wet sponge, using nail fasteners instead of pre-drilling and using screw fasteners.

4. Any generated dust is wet cleaned and appropriately disposed.

5. Clearance sampling consists of a visual inspection by the supervisor to confirm that no dust or debris remains in the area work occurred.

3.3 PROTECTION

A. Provide personal protective equipment as required by 29 CFR 1926.62 at no cost to employees or authorized visitors.

B. Institute respirator program in accordance with 29 CFR 1926.62 and 29 CFR 1910.134 (b), (d), (e) and (f).

C. Use protective clothing and respirators whenever lead is being disturbed, abated, cleaned up, containerized or stored in vehicle or container used to transport waste to landfill.

D. Institute medical surveillance program in accordance with 29 CFR 1926.26 for all employees performing or supervising lead handling work, entering work area containment, or using respirator.

3.4 PREPARATION

A. Prior to all other preparation activities, construct decontamination facilities adjacent to lead work area, consisting of:

1. Dirty area changing room.
2. Shower room.
3. Clean area changing room.
4. Airlock at each entrance and between each room.
5. Floors, walls and ceilings sealed with 2 layers of plastic sheeting.
6. Provision of privacy while using decontamination facilities.

B. Exterior Preparation (Other Than Windows):

1. Seal all openings to interior of building within 20 feet of lead work area, except windows or doors may be closed and locked with two layers of plastic sheeting.

2. Install single layer of plastic sheeting on ground extending 10 feet beyond perimeter of lead work area in all directions. Anchor or tape plastic sheeting to building to avoid gaps between sheeting and building. Secure all plastic to prevent movement; wood studs or similar objects acceptable.

3. Install barrier tape and warning signs at 20-foot perimeter from lead work area.

4. Move all movable objects 20 feet from lead work area.

5. Seal fixed objects and large objects that cannot be moved with a single layer of plastic sheeting.

C. Window Treatment or Removal Preparation:

1. Close all windows within 20 feet of lead activities.

2. Attach single layer of plastic sheeting on ground extending 5 feet beyond perimeter of lead activity in all directions. Anchor or tape plastic sheeting to building to prevent gaps between sheeting and building. Secure all plastic to prevent movement; wood studs or similar objects acceptable.

3. Install barrier tape and warning signs at 20-foot perimeter from lead work area.

4. Where lead activities occur outside structure, seal interior of affected window with two layers of plastic sheeting.

5. Where lead activities occur within structure, provide at least lead work area preparation conforming to Interior Preparation, Level 2, specified below.

6. Move all movable objects 20 feet from lead work area.

7. Seal fixed objects and large objects that cannot be moved with single layer of plastic sheeting.

D. Interior Preparation:

1. Level 1: Dust removal and lead disturbance of no more than 2 square feet of painted surface per room.

    a. Single layer of plastic sheeting on floor extending 5 feet beyond perimeter of treated area in all directions.
    b. Barrier tape and warning signs at all entrances to room.
    c. Ventilation systems turned off and all vents within 5 feet of treated surfaces sealed with plastic sheeting.
    d. Move furniture and movable objects at least 5 feet from treated surfaces.
    e. Seal fixed objects and large objects that cannot be moved with plastic sheeting.
    f. Provide negative pressure equipment where large supplies of fresh air are required to control exposure to other hazardous substances, such as solvent vapors.

2. Level 2: Lead disturbance of 2 square feet to 10 square feet of painted surface per room, where all work in all rooms will be completed in one day.

    a. Apply 2 layers of plastic over entire floor.
    b. Install airlock at entrance to lead work area or room.
    c. Install barrier tape and warning signs at all entrances to room.
    d. Turn off ventilation systems and seal all vents with plastic sheeting.
    e. Move furniture and movable objects from lead work area.
    f. Seal fixed objects and large objects that cannot be moved with a single layer of plastic sheeting.
    g. Provide negative pressure equipment where large supplies of fresh air are required to control exposure to other hazardous substances, such as solvent vapors.

3. Level 3: Lead disturbance of 2 square feet to 10 square feet of painted surface per room, where work in all rooms will be completed in not more than 5 work days.

    a. Apply 2 layers of plastic over entire floor.
    b. Install airlock at entrance to lead work area or room. Airlock not required on doors between adjacent rooms within lead work area.
    c. Post warning signs at entrances to building.
    d. Install barrier tape and warning signs at all entrances to room.
    e. Seal or lock any entrances to room or lead work area not to be used.
    f. Turn off ventilation systems and seal all vents with plastic sheeting.
    g. Move furniture and movable objects from lead work area.
    h. Seal fixed objects and large objects that cannot be moved with a single layer of plastic sheeting.
    i. Provide negative pressure equipment where large supplies of fresh air are required to control exposure to other hazardous substances, such as solvent vapors.

4. Level 4: Lead disturbance of more than 10 square feet of painted surface per room.

    a. Apply 2 layers of plastic over entire floor.
    b. Install airlock at entrance to lead work area or room. Airlock not required on doors between adjacent rooms within lead work area.
    c. Post warning signs at entrances to building.

d. Install barrier tape and warning signs at all entrances to room.
e. Seal or lock any entrances to room or lead work area not to be used.
f. Turn off ventilation systems and seal all vents with plastic sheeting.
g. Move furniture and movable objects from lead work area.
h. Seal fixed objects and large objects that cannot be moved with a single layer of plastic sheeting.
i. Provide negative pressure equipment where large supplies of fresh air are required to control exposure to other hazardous substances, such as solvent vapors.

E. Do not begin lead disturbance or removal activities until all preparation work, including installation of decontamination enclosure systems and any required engineering controls, including negative air pressure equipment, has been completed.

3.5 LEAD WORK PROCEDURES

A. Exterior Lead Work Constraints: Do not proceed with lead activities if wind speeds are greater than 20 miles per hour. Stop lead activities and proceed with cleanup activities before rain begins.

B. Unacceptable Removal Methods:

1. Open flame burning or torching (includes propane-fueled heat grids).
2. Machine sanding or grinding without HEPA local vacuum exhaust tool.
3. Hydroblasting or high-pressure wash.
4. Abrasive blasting or sandblasting without HEPA vacuum exhaust tool.
5. Heat guns operating above 1,100 deg F.
6. Methylene chloride paint removal products.
7. Dry scraping.

C. Acceptable Removal Methods: Since acceptable methods are not appropriate or acceptable for every item or location, refer to Drawings for approved removal methods for individual items and locations.

1. Component Removal:

a. Mist all disturbed paint and dust and maintain in moist condition.
b. Entirely remove indicated components.
c. Wet scrape residual paint from adjacent unpainted surfaces. Do not damage adjacent surfaces.
d. Collect all paint chips, dust and debris and seal in 6 mil plastic bags.
e. Seal removed building components in 6 mil plastic sheeting or 6 mil plastic bags.

2. Heat Gun Removal (operating at less than 1,100 deg F):

a. Provide fire extinguishers in lead work area, and ensure adequate electrical power is available.
b. Use in limited areas only.
c. Do not gouge or abrade substrate.

3. Wet Scraping:

   a. Apply adequate water to moisten surface completely; avoid large amounts of water on floor or ground.
   b. Do not moisten areas near electrical circuits.
   c. Use spray bottles or wet sponge attached to scraper.

4. Offsite Stripping:

   a. Apply paint removers in accordance with manufacturer's recommendations.

   b. Test paint remover in inconspicuous location approved by Architect to avoid damage to substrate.

   c. Identify building component to ensure reinstallation in same location.

   d. Mist all paint and dust disturbed and maintain in moist condition.

   e. Remove components indicated on Drawings entirely. Wet scrape residual paint from adjacent unpainted surfaces. Do not damage adjacent surfaces.

   f. Collect all paint chips, dust and debris and seal in 6 mil plastic bags. Seal removed building components in plastic sheeting. Inform offsite paint remover regarding presence of lead-based paint before shipping;

   g. Do not reinstall components until removal of residual paint and cleaning is complete and satisfactory clearance sampling achieved.

5. Onsite Stripping:

   a. Apply paint removers in accordance with manufacturer's recommendations.
   b. Test paint remover in inconspicuous location approved by Architect to avoid damage to substrate.
   c. Do not damage adjacent surfaces.
   d. Collect all paint chips, dust and debris and seal in 6 mil plastic bags.

D. Work Stoppage Criteria During Lead Activities:

1. During lead related activities, stop work immediately if damaged containment barriers are discovered or if dust or paint chips are discovered outside of lead work area.
2. Prior to resumption of lead activities, perform cleanup of areas adjacent to lead work area using HEPA vacuums or wet cleaning methods.

E. Clean Up Procedures:

1. Exterior:

   a. At end of each day, whether or not lead related activities are complete, clean up and store all removed components, debris, and plastic sheeting drop cloths in lockable containers with solid floors, walls and ceilings until transported off site.

b. HEPA vacuum and wash all plastic sheeting with lead specific detergent.

c. Place all plastic sheeting used to cover ground and seal openings to interior of building in containers.

2. Interior:

a. Conduct ongoing cleaning during lead related activities, including regular removal of large and small debris.

b. Clean up visible debris and components prior to leaving lead work site at end of work shift.

c. Decontaminate all tools, equipment, and worker protection gear before removing from contaminated areas.

d. Wait at least 1 hour after active lead removal or disturbance has ceased before final cleaning.

e. Final cleaning includes HEPA vacuum, wet wash, and HEPA vacuum cycle:

1) HEPA vacuum all surfaces in room (ceilings, walls, trim, and floors), starting with ceiling and working down, moving toward entry door. Completely clean each room before beginning clean up in another room.

2) Wash all surfaces with lead-specific detergent, changing cleaning solution after completing cleaning in every room.

3) Repeat HEPA vacuuming of all surfaces in room (ceilings, walls, trim, and floors), starting with ceiling and working down, moving toward entry door. Completely clean each room before clean up in another room.

f. After completing all disturbance, removal and cleaning activities, and completion of the 1 hour waiting period, provide access to areas for Owner's monitoring firm to perform visual examination to ensure that all removal has been completed and all visible dust and debris have been removed. Correct all incomplete lead work prior to clearance sampling.

F. Clearance Monitoring: After supervisor and monitor have performed visual inspection and have provisionally determined that removal and cleaning have been properly completed, monitor begins clearance monitoring. Removal and cleaning not properly completed until lead work area achieves satisfactory clearance sampling in accordance with this Section.

G. Removal of Work Area Containment:

1. Do not remove remaining plastic sheeting, barriers, decontamination facilities, negative pressure equipment and ancillary items until satisfactory clearance air monitoring results are achieved.

2. Notify Owner immediately if any residual lead debris is identified during removal of plastic sheeting, barriers, decontamination facilities, negative pressure equipment and ancillary items, and clean up debris.

3. Clean all tape, glue, staples, etc. used in lead work process.

4. Repair damage to walls, floors, ceilings, fixtures, or other items not scheduled for demolition or lead work to pre-lead work condition. Where finishes are damaged, refinish or repaint entire object or to nearest break in surface of walls, ceilings, soffits, etc.

5. Remove entire containment when partial occupancy by Owner is required before Owner occupies area or other entities occupy space for additional construction as required.

6. Paint or otherwise seal treated surfaces not scheduled for painting.

3.6 WASTE SEGREGATION AND CHARACTERIZATION

A. Segregate waste in following categories:

1. Removed components (considered construction and demolition debris for bidding purposes).

2. Paint chips, dust and filters from HEPA vacuums (considered hazardous waste for bidding purposes).

3. Respirator filter cartridges, rags, sponges, mops, scrapers and other materials used for testing lead work, and clean-up (considered construction and demolition debris for bidding purposes).

4. Contaminated soil (considered hazardous waste for bidding purposes).

5. Cleaned plastic sheeting and disposable work clothes (considered construction and demolition debris for bidding purposes).

B. Sample each container of waste to determine if it is characterized as hazardous waste, treating each sample as follows:

1. Prepare using Toxicity Characteristic Leachate Procedure, EPA method 1311.
2. Analyze for lead using EPA method 6010, 6020, 7420 or 7421.
3. Analyze for any other hazardous characteristic introduced into waste by lead procedures.

C. Consider cleaned plastic sheeting and disposable work clothes not sufficiently cleaned as hazardous waste and dispose as hazardous waste at no additional cost to Owner.

D. Maintain each waste category above in separate hard-walled lockable containers until waste characterization is complete. If waste is mixed from different categories, dispose all mixed waste as hazardous waste at no additional cost to Owner.

3.7 FIELD QUALITY CONTROL

A. Inspection of Barriers: Provide inspection of all barriers at least twice daily by Contractor's Supervisor and record inspections and observations in daily project log.

B. Repairs to Barriers and/or Enclosure Systems: Repair damage and defects in barriers and enclosure systems immediately upon discovery and prior to resumption of lead activities.

C. Testing By Owner: Owner reserves right to obtain independent monitoring and sampling services to provide independent documentation regarding compliance with regulatory requirements. Where Owner provides monitoring, sampling (or both), use most stringent results from inspections, daily air sampling and clearance sampling.

D. Contractor Requirements:

1. Provide air sampling as required by 29 CFR 1926.62.

2. Provide sampling and analysis for waste characterization.

3. Provide access to lead work areas for Owner's Monitor/Sampling Technician to observe all lead related work and collect samples.

4. Provide adequate lighting, ladders, scaffolding, and similar items to enable Monitor/Sampling Technician to perform visual inspections of all surfaces within lead work areas.

5. Provide sufficient temporary electrical power to locations within lead work areas as required to supply high volume air sampling pumps for daily and clearance air samples.

6. Do not perform any monitoring functions with Contractor's personnel or with firms wholly or partly owned by Contractor. Notify Owner and Architect immediately of any conflict of interest between Contractor and any firm providing monitoring, sampling or laboratory analysis.

7. Contractor retains complete and total responsibility for complying with Contract Documents and all regulatory requirements.

E. Area Air Sampling Procedures (if used): Comply with provisions of NIOSH 7082.

F. Clearance Sampling Procedures:

1. Timing of Clearance Sampling: Do not begin clearance sampling until:

a. All lead related work and cleaning work has ceased.
b. All personnel have left lead work area.
c. Minimum 1 hour settling period has elapsed.

2. Exterior Work Area Clearance:

a. Background Sampling:

1) Background sampling is optional and for informational purposes only. If elected to be performed, determine required clearance sampling strategy.
2) Collect representative samples of same number and kind as required for clearance.
3) Hold samples until after lead disturbance, removal, cleaning, clearance sampling and sample analysis is complete.
4) If any sample results are above clearance criteria, analyze background samples for comparison with clearance sample results.
5) Background sampling intended for informational purposes only and does not relieve the contractor from meeting below clearance criteria.

b. Clearance Wipe Sampling:

1) Collect minimum of 1 sample from horizontal surfaces in immediate area of lead work on each side of building where lead work occurs.

2) Collect minimum of 1 window trough sample on each floor and each side of building where lead work occurs.

3) If applicable, collect minimum of 1 additional window trough sample on floor below lead work for each side of building where lead work occurs.

4) Refer to U.S. Department of Housing and Urban Development Guidelines for the Evaluation and Control of Lead-Based Paint Hazards in Housing, Appendix 13.1: Wipe Sampling for Settled Lead-Contaminated Dust for sampling requirements.

5) Use the Lead Hazard Control Clearance Dust Sampling Form (Single Surface Sampling) Form 15.2, from U.S. Department of Housing and Urban Development Guidelines for the Evaluation and Control of Lead-Based Paint Hazards in Housing to document following:

a) Sample locations.
b) Surface area sampled.
c) Project information.
d) Chain of custody information.
e) Signatures.

6) Clearance Level: 400 µg/sq ft.

c. Clearance Soil Sampling:

1) Clearance wipe sampling consists of composite samples, consisting of 2 to 4 component samples.

2) Collect 1 composite sample from each side of building on which lead work occurs.

3) Refer to U.S. Department of Housing and Urban Development Guidelines for the Evaluation and Control of Lead-Based Paint Hazards in Housing, Appendix 13.3: Soil Sampling Protocol For Housing for sampling requirements.

4) Use Lead Hazard Control Clearance Soil Sampling Form (Composite Sampling Only) Form 15.3, from U.S. Department of Housing and Urban Development Guidelines for the Evaluation and Control of Lead-Based Paint Hazards in Housing to document following:

   a) Sample locations.
   b) Surface area sampled.
   c) Project information.
   d) Chain of custody information.
   e) Signatures.

5) Clearance Level: 400 µg/g.

3. Interior Work Area Clearance:

   a. Background Sampling:

      1) Background sampling is optional and for informational purposes only. If elected to be performed, determine required clearance sampling strategy.
      2) Collect representative samples of same number and kind as required for clearance.
      3) Hold samples until after lead disturbance, removal, cleaning, clearance sampling and sample analysis is complete.
      4) If any of sample results are above clearance criteria, analyze background samples for comparison with clearance sample results.
      5) Background sampling intended for informational purposes only and does not relieve the contractor from meeting below clearance criteria.

   b. Clearance Wipe Sampling:

      1) Collect minimum 2 dust samples from at least 4 rooms. If lead work occurs in less than 4 rooms, collect samples where no lead work occurred.

      2) Collect 1 floor sample in each room where lead work occurred.

      3) Collect 1 interior windowsill or window trough per room where lead work occurred, alternating between rooms.

      4) For 20 percent of rooms where lead work occurs, collect 1 floor sample outside of room in uncontaminated space, but within 10 feet of airlock.

5) For each room over 2,000 square feet, collect 1 additional floor sample for every 2,000 square feet and collect 1 floor sample outside of room in uncontaminated space, but within 10 feet of airlock.

6) Refer to U.S. Department of Housing and Urban Development Guidelines for the Evaluation and Control of Lead-Based Paint Hazards in Housing, Appendix 13.1: Wipe Sampling for Settled Lead-Contaminated Dust for sampling requirements.

7) Use Lead Hazard Control Clearance Dust Sampling Form (Single Surface Sampling) Form 15.2, from U.S. Department of Housing and Urban Development Guidelines for the Evaluation and Control of Lead-Based Paint Hazards in Housing to document following:

   a) Sample locations.
   b) Surface area sampled.
   c) Project information.
   d) Chain of custody information.
   e) Signatures.

8) Satisfactory Clearance Level:

   a) Bare and Carpeted Floors: 10 µg/sq ft.
   b) Interior Window Sills: 100 µg/ sq ft.
   c) Window Troughs: 400 µg/sq ft.

G. Failure of Clearance Sampling:

1. Clearance criteria achieved when:

   a. All scheduled lead removal is complete.
   b. No dust or debris remains within lead work area.
   c. Clearance sample results are below clearance level or background whichever is greater.

2. Re-clean any lead work area or other area not meeting clearance criteria.

3. Where clearance criteria are not met for soil, remove 2 inches of soil from perimeter of 20 feet around building, or portion thereof, where lead was removed or wherever paint chips are found, whichever is greater.

4. Sampling technician collects new samples in approximately same locations for each lead work area with samples not meeting clearance criteria.

5. Repeat cleaning, sampling, monitoring, and analysis until satisfactory clearance criteria are achieved.

6. Failure of clearance monitoring indicates lead activity has not been properly completed; Contractor performs additional cleaning at no additional cost to Owner, including sampling and sample analysis during additional cleaning and clearance sampling. Contractor remains responsible for complying with all specified schedules and timing.

3.8 PACKAGING, TRANSPORTATION AND WASTE DISPOSAL

A. Perform additional surveys as hazardous material disposal progresses to detect hazards resulting from hazardous material disposal activities.

B. Use hazardous waste characterization performed in accordance with "Waste Segregation and Characterization" Article above to document and confirm classification of waste. Prior to removing waste from site, confirm in writing to Owner:

1. Results of waste characterization testing.
2. Identification of waste documented to have waste classification identified in "Waste Segregation and Characterization".
3. Identification of waste characterization varying from "Waste Segregation and Characterization".

C. Packaging: Package, label, and mark all hazardous waste materials in accordance with applicable requirements of 49 CFR 173, 178 and 179.

D. Temporary On-Site Storage and Protection: Provide storage on site of hazardous materials removed from service and scheduled for disposal complying with requirements of 6 NYCRR 372.2 (a) (8). Do not exceed 180 days storage on site.

E. Hazardous Waste Determination: Provide analysis required by treatment, storage or disposal facility to document hazardous waste determination.

F. Hazardous Waste Manifests:

1. Maintain manifest from date of transport until date of disposal, destruction or recycling.

2. Return fully executed manifests to Owner within 60 days of date waste accepted by initial transporter.

3. Use following type of manifest as applicable:

   a. If waste disposed of in New York State or if waste disposed in state not requiring use of specific manifest form, use New York State Uniform Hazardous Waste Manifest.

   b. If waste disposed of in state other than New York State and use of specific manifest form is required, use manifest required by state where waste is disposed in lieu of New York State Uniform Hazardous Waste Manifest.

4. Complete manifest and deliver to Owner for review and signature.

5. Retain copies of manifest required to remain with hazardous waste shipment and deliver remaining copies to Owner.

6. Advise Owner regarding required distribution of manifest, both verbally and in writing.

G. Disposal: Transport hazardous waste to treatment or disposal facility complying with following requirements:

1. Permitted, licensed or registered by state to dispose of hazardous waste.
2. Possesses interim status to dispose of hazardous waste.
3. Authorized to manage hazardous waste under Resource Conservation and Recovery Act (RCRA).
4. Beneficially uses/re-uses or legitimately recycles/reclaims waste; or treats waste prior to beneficial use/reuse or legitimate recycling/reclamation.

H. Construction and Demolition Debris: Dispose of material determined to be construction and demolition debris as such in accordance with 6 NYCRR 360 and 364. Provide trip tickets or other documentation clearly identifying amount of material removed from site, transported to disposal site and disposed of, including at least:

1. Name, address and telephone of waste generator.
2. Approximate quantity.
3. Name and telephone of disposal site operator.
4. Name and physical site location of disposal site.
5. Name, address and telephone number of transporter.

END OF SECTION 02 83 00

SECTION 02 84 00 – HAZARDOUS MATERIAL REMOVAL

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. Selective removal and subsequent off-site disposal of the following hazardous waste:

   a. Caulk containing heavy metals, characterized as hazardous waste in accordance with RCRA 40 CFR 260-265, based on total metals analysis. The below caulking materials contain the following heavy metals (total metal analysis result):

      1) Window Frame/Sill caulk – lead (733 ppm).
      2) Louver caulk – lead (775 ppm).
      3) Interior Column caulk – lead (1,430 ppm).
      4) Expansion Joint Caulk – lead (1,030 ppm).

1.3 REFERENCES

A. Regulatory Requirements

1. National Institute For Occupational Safety And Health (NIOSH)

   a. NIOSH 94-113 (1994; 4TH Ed) –NIOSH Manual of Analytical Methods.
   b. 42 CFR 84 –Approval of Respiratory Protection Devices.

2. New York State Department of Environmental Conservation (NYSDEC)

   a. 6 NYCRR 360 - Solid Waste Management Facilities.
   b. 6 NYCRR 364 - Waste Transporter Permits.
   c. 6 NYCRR 370 - Hazardous Waste Management System: General.
   d. 6 NYCRR 371 - Identification and Listing of Hazardous Wastes.
   e. 6 NYCRR 372 - Hazardous Waste Manifest System and Related Standards for Generators, Transporters and Facilities.
   f. 6 NYCRR 373-1 - Hazardous Waste Treatment, Storage and Disposal Facility Permitting Requirements.
   g. 6 NYCRR 373-2 - Final Status Standards for Owners and Operators of Hazardous Waste Treatment, Storage and Disposal Facilities.
   h. 6 NYCRR 373-3 - Interim Status Standards for Owners and Operators of Hazardous Waste Facilities.
   i. 6 NYCRR 376 - Land Disposal Restrictions.

3. United States Department Of Labor –Occupational Safety And Health Administration (OSHA)

   a. 29 CFR 1910.134 –Respiratory Protection.
   b. 29 CFR 1910.141 –Sanitation.
   c. 29 CFR 1910.147 –Control of Hazardous Energy (Lock Out / Tag Out).
   d. 29 CFR 1926 –Safety and Health Regulations for Construction.

4. United States Department of Transportation (USDOT)

   a. 49 CFR 107 – Hazardous Materials Program Procedures.
   b. 49 CFR 171 - General Information, Regulations, and Definitions.
   c. 49 CFR 172 - Hazardous Materials Table, Special Provisions, Hazardous Materials Communications, Emergency Response Information, and Training Requirements.
   d. 49 CFR 173 - Shippers - General Requirements for Shipments and Packaging.
   e. 49 CFR 177 - Carriage by Public Highway.
   f. 49 CFR 178 - Specifications for Packaging.
   g. 49 CFR 180 - Continuing Qualification for Maintenance of Packaging.

5. United States Environmental Protection Agency (EPA), Resource Conservation and Recovery Act (RCRA)

   a. 40 CFR 26 – Protection of Human Subjects.
   b. 40 CFR 260 Hazardous Waste Management System: General.
   c. 40 CFR 261 - Identification and Listing of Hazardous Waste.
   d. 40 CFR 262 - Standards Applicable to Generators of Hazardous Waste.
   e. 40 CFR 263 Standards Applicable to Transporters of Hazardous Waste.
   f. 40 CFR 264 Standards for Owners and Operators of Hazardous Waste Treatment, Storage, and Disposal Facilities.
   g. 40 CFR 265 Interim Status Standards for Owners and Operators of Hazardous Waste Treatment, Storage, and Disposal Facilities.
   h. 40 CFR 266 Standards for the Management of Specific Hazardous Wastes and Specific Types of Hazardous Waste Management Facilities.
   i. 40 CFR 268 Land Disposal Restrictions.
   j. 40 CFR 270 EPA Administered Permit Programs: The Hazardous Waste Permit Program.
   k. 40 CFR 761 - Polychlorinated Biphenyls (PCBs) Manufacturing, Processing, Distribution in Commerce, and Use Prohibitions.

6. United States Department of Transportation (USDOT)

   a. 49 CFR 107 – Hazardous Materials Program Procedures.
   b. 49 CFR 171 - General Information, Regulations, and Definitions.
   c. 49 CFR 172 - Hazardous Materials Table, Special Provisions, Hazardous Materials Communications, Emergency Response Information, and Training Requirements.
   d. 49 CFR 173 - Shippers - General Requirements for Shipments and Packaging.
   e. 49 CFR 177 - Carriage by Public Highway.
   f. 49 CFR 178 - Specifications for Packaging.
   g. 49 CFR 180 - Continuing Qualification for Maintenance of Packaging.

1.4 HAZARDOUS WASTE GENERATOR STATUS

A. Owner is a Very Small Quantity Generator as defined by 6 NYCRR 371 and 40 CFR 26. Schedule removals, on-site storage, and transport as required to maintain Owner's status as a Very Small Quantity Generator.

1.5 DEFINITIONS

A. Critical barriers: Barriers that seal off all openings to or within the defined regulated work area, including but not limited to operable windows and skylights, doorways, ducts, grills, diffusers and any other penetrations to surfaces adjacent to or within the regulated work area.

B. Leak-tight: Sealed such that solids or liquids cannot escape or spill out.

C. Plasticize To cover floors, walls, ceilings or other surfaces with 6-mil fire-retardant plastic sheeting.

D. Regulated Work Area: The portion of the restricted area where removal work actually occurs. For tent work areas, the interior of each tent is a regulated work area.

E. Remove: Remove and legally dispose of items except those indicated to be reinstalled, salvaged, or to remain Owner's property.

F. Submit all submittals required by this Section concurrently.

1.6 PRE-REMOVAL SUBMITTALS

A. Submit all submittals required by this Section concurrently.

B. Product Data: For each type of product indicated.

1. Encapsulants.

C. Material Safety Data Sheets: For all chemicals to be used.

D. Shop Drawings: Floor or site plans showing all regulated work areas, critical barriers, local exhaust systems locations, decontamination units and load-out units, temporary waste storage facility, access tunnels, and location of temporary utilities.

E. Hazardous Material Removal Plan: Description of proposed methods of removing, packaging, handling, transporting, and disposing of PCB, lead, and mercury containing wastes, and demonstrating compliance with RCRA 40 CFR 260-265, TSCA 40 CFR 761, NYS DEC regulations, and other applicable laws and regulations. The Plan shall include descriptions and means of compliance for each waste stream.

F. Qualification Data: In accordance with "Quality Assurance" article below.

1. Removal contractor qualification.
2. On-site supervisor training certificates.
3. Workers training certificates.

4. Waste Transporter permit.
5. Disposal facility qualifications.

1.7 POST-REMOVAL SUBMITTALS

A. Submit all submittals required by this Section concurrently.

B. Daily Logs

C. Sign In Sheets

D. Results of bulk sample analysis, air samples analysis, or OSHA compliance monitoring results.

E. Completely executed Waste Shipment Records.

F. Documentation of Hazardous Waste Determination, consisting of:

1. Test results;
2. Waste analyses or
3. Other hazardous waste determination information.

1.8 QUALITY ASSURANCE

A. Qualifications

1. Hazardous Material Removal Contractor: Engage experienced firm that has successfully completed at least five hazardous material removal projects of a similar size and scope to Project.

2. Personnel Training Requirements:

a. Supervisor: Current OSHA HAZWOPER Supervisor training (29 CFR 1910.120), RCRA Hazardous Waste training, and USDOT Hazardous Material training (49 CFR 172), and be the Contractor's designated Competent Person under OSHA regulations. Contractor may only perform work on site when Supervisor is physically on site.

b. Workers: Current OSHA HAZWOPER training (29 CFR 1910.120), RCRA Hazardous Waste training, and USDOT Hazardous Material training (49 CFR 172).

c. Provide Project Monitor with copies of valid Training Documentation for all Workers and Supervisors at the project site.

3. Waste Transporter: Valid Waste Transporter Permit, issued by New York State Department of Environmental Conservation. The transporters shall meet the NYSDEC requirements of 6 NYCRR 364 and other applicable state or local requirements.

4. Disposal Facility: Contractor shall provide written evidence that the landfill to be used is approved to accept the hazardous materials removed by New York State. The disposal facility shall be approved to accept the hazardous materials for disposal under RCRA and/or TSCA and other applicable state or local requirements.

B. Regulatory Requirements: Comply with all federal, state, and local codes, laws, ordinances, standards and regulations applicable to hazardous material removal work, transport and disposal, including (but not limited to) standards referenced in "References" Article.

C. Pre-Removal Conference - Prior to beginning hazardous material removal, conduct conference at Site to review requirements and conditions for hazardous material removal with attendance by at least the following:

1. Contractor's representative.
2. Hazardous material removal contractor representative, if applicable.
3. Owner's representative.
4. Architect’s representative.

1.9 PROJECT/SITE CONDITIONS

A. Existing Conditions

1. Building Occupancy: Owner will occupy portions of building immediately adjacent to areas of hazardous material removal operations. Conduct removal operations in manner that will minimize need for disruption of Owner's normal operations. Provide minimum of 72 hours advance notice to Owner of removal activities that will affect Owner's normal operations.

2. Utility Services: Maintain existing utilities indicated to remain in service and protect them against damage during hazardous material removal operations.

   a. Do not interrupt utilities service occupied or used facilities, except when authorized in writing by authorities having jurisdiction. Provide temporary services during interruptions to existing utilities, as acceptable to governing authorities.

   b. Maintain fire protection services during removal operations.

B. Onsite Project Documentation

1. Contractor shall maintain all required documents on site. Documents shall be available for review by the Owner, Architect, Monitoring Firm, regulatory agencies and Owner representatives.

2. Supervisor shall maintain a log book containing pertinent information about the project.

3. Maintain a sign in of all individuals entering regulated areas.

C. Regulated Work Areas

1. All work that may impact hazardous materials shall be conducted within regulated areas. The regulated area shall be demarcated to minimize the number of persons within the area and to protect persons outside the area from exposure to hazardous materials. Access to regulated areas shall be limited to authorized persons. The Contractor shall control access to regulated areas, ensure that only authorized personnel enter, and verify that Contractor required medical surveillance, training and respiratory protection program requirements are met prior to allowing entrance.

PART 2 - PRODUCTS

2.1 ENCAPSULANTS

A. Encapsulants shall conform to USEPA requirements, shall contain no toxic or hazardous substances and no solvents. Provide a two part, 100% solids, moisture-tolerant epoxy resin encapsulant, similar to Sikagard 62.

1. Tensile properties (astm d-638) - 14 day

a. Tensile strength –5,400 psi;
b. Elongation at break 2.7%
c. Abrasion (astm d-1044) (taber abrader) –7 day: Weight loss, 1,000 cycles (h-22 wheel, 1,000 gm weight) –0.61 gm
d. Abrasion resistance (astm d-968) –14 day: Abrasion coefficient 51 liters/mil
e. Adhesion (astm d-3359) –1 day: Adhesion classification 4a
f. Water absorption (astm d-570) –7 day: 24 hour immersion –0.1%

2.2 PERSONAL PROTECTIVE EQUIPMENT

A. Complete sets of personal protective equipment shall be made available to authorized visitors for entry to the regulated area. Authorized visitors shall have training equivalent to that provided to Contractor employees in the selection, fitting, and use of personal protective equipment and the site safety and health requirements. Contractor workers shall be provided with personal protective clothing and equipment and the Contractor shall ensure that it is worn properly. The Contractor's Supervisor shall select and approve all the required personal protective clothing and equipment.

B. Respirators: The Contractor shall provide respirators, and ensure that they are used in accordance with CGA G-7 and the manufacturer's recommendations. Respirators shall be approved by the National Institute for Occupational Safety and Health NIOSH, under the provisions of 42 CFR 84, for use in environments containing particulate. For air-purifying respirators, the particulate filter shall be high-efficiency particulate air (HEPA)/(N-,R-,P-100).

C. Coveralls: Disposable coveralls with a zipper front shall be provided. Sleeves shall be secured at the wrists, and foot coverings secured at the ankles.

D. Gloves: Gloves shall be provided to protect the hands where there is the potential for hand injuries (i.e., scrapes, punctures, cuts, etc.).

E. Foot Coverings: Cloth socks shall be provided and worn next to the skin. Footwear, as required by OSHA and EM 385-1-1, that is appropriate for safety and health hazards in the area shall be worn. Reusable footwear removed from the regulated area shall be thoroughly decontaminated or disposed of as hazardous material waste.

F. Head Covering: Hood type disposable head covering shall be provided. In addition, protective head gear (hard hats) shall be provided as required. Hard hats shall only be removed from the regulated area after being thoroughly decontaminated.

G. Protective Eye Wear: Eye protection shall be provided, when operations present a potential eye injury hazard, and shall meet the requirements of ANSI Z87.1.

2.3 DECONTAMINATION FACILITIES AND PRACTICES

A. The Contractor shall establish a decontamination area for the decontamination of employees, material and equipment. The Contractor shall ensure that employees enter and exit the regulated area through the decontamination area.

B. Decontamination Facility Construction

1. A minimum of one layer of six mil fire-retardant plastic sheeting shall be installed on walls and ceilings.

2. A minimum of two layers of six mil fire-retardant reinforced plastic shall be used for floor protection.

3. Curtained doorways consisting of three layers of six mil fire-retardant plastic sheeting shall separate the stages of the decontamination systems.

4. Airlocks shall have minimum dimensions of three feet wide by three feet long by 6 feet tall. Curtained doorways shall be separated by at least three feet.

5. Provide at least one shower per every six full shift removal workers. Hot and cold water shall be adjustable at each shower. Provide soap, shampoo and towels for use at all times. Shower water shall be filtered through a series of filters to at least 5.0 microns. Filtered wastewater shall be discharged in accordance with applicable codes.

6. The entrance to the clean room or holding area from outside the regulated removal work area shall have a lockable door.

7. Prefabricated or Trailer units may be constructed of watertight fiberglass or painted with marine paint in lieu of plasticization.

8. Personal decontamination facility minimum requirements:

a. Five stage (large work area) personal decontamination enclosure shall consist of a clean room, airlock, shower room, airlock, and equipment room with a curtained doorway between the clean room and work area.

b. Three stage (Small work area) personal decontamination enclosure shall consist of a clean room, shower room and equipment room with a curtained doorway between each room and between the clean room and work area.

c. Where remote decontamination facilities are allowed, construction of the decontamination facility shall include an additional airlock after the equipment room and which shall include a lockable door. An additional airlock is required at the entrance to the containment / regulated area and shall include a lockable door.

9. Waste decontamination facility minimum requirements

a. Three stage (large work area) waste decontamination facility shall consist of a holding area, airlock washroom with a curtained doorway between the washroom and work area.

b. Decontamination area shall consist of a room or area that is adjacent to the work area with the floor or horizontal work surface covered with an impermeable drop cloth.

c. Small work areas with only one entrance my use the personal decontamination facility for waste decontamination.

1) Where remote decontamination facilities are allowed a small and large work areas shall have a washroom constructed between the work area and airlock.

2.4 LOCAL EXHAUST SYSTEM

A. Local exhaust units shall conform to ANSI Z9.2. Filters on local exhaust system equipment shall conform to ANSI Z9.2 and UL 586. Filter shall be UL labeled.

2.5 EQUIPMENT

A. Vacuums shall be equipped with HEPA filters, of sufficient capacity and necessary capture velocity at the nozzle or nozzle attachment to efficiently collect, transport and retain the hazardous waste material.

B. Power tools shall not be used to remove Hazardous materials unless the tool is equipped with effective, integral HEPA filtered exhaust ventilation capture and collection system.

C. Reusable tools shall be thoroughly decontaminated prior to being removed from regulated areas.

D. Hazardous Waste Disposal Vehicles: Provide vehicles for transporting hazardous waste possessing valid Waste Transporter Permit as prescribed by 6 NYCRR 364, and equipped with appropriate placards affixed as prescribed by United States Department of Transportation regulations.

2.6 MISCELLANEOUS MATERIALS

A. Duct Tape: Industrial grade duct tape of appropriate widths suitable for bonding sheet plastic and disposal container.

B. Sheet Plastic:

1. Polyethylene of 6 mil minimum thickness and shall be provided in the largest sheet size necessary to minimize seams. Film shall conform to ASTM D 4397, except as specified below.

2. Flame Resistant: Film shall conform to the requirements of NFPA 701.

3. Reinforced sheets shall be provided where high skin strength is required, such as where it constitutes the only barrier between the regulated area and the outdoor environment. The sheet stock shall consist of translucent, nylon-reinforced or woven-polyethylene thread laminated between 2 layers of polyethylene film. Film shall meet flame resistant standards of NFPA 701.

C. Warning Signs and Tape: Warning signs and tape printed in English shall be provided at the regulated boundaries and entrances to regulated areas. Signs shall be located to allow personnel to read the signs and take the necessary protective steps required before entering the area.

D. Labeling and Packaging Materials: Provide labeling and packaging materials as required by 49 CFR 173 Shippers - General Requirements for Shipments and Packaging.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Hazardous material removal work tasks shall be performed as shown on the detailed plans and drawings and as per applicable regulations, including but not limited to, 29 CFR 1926, 40 CFR 266, and 40 CFR 761. Where work methods described within differ from applicable regulations the more stringent requirement shall apply.

B. Personnel shall wear and utilize protective clothing and equipment.

C. The Contractor shall not permit eating, smoking, drinking, chewing or applying cosmetics in the regulated area.

D. Verification of Conditions (by Removal Contractor): Examine conditions under which hazardous material removal is to be conducted in coordination with removal contractor and notify affected Contractors and Architect in writing of any conditions detrimental to proper and timely hazardous material disposal. Do not proceed with disposal until unsatisfactory conditions have been corrected in manner acceptable to removal contractor.

1. When removal contractor confirms conditions as acceptable to ensure proper and timely installation and to ensure requirements for applicable warranty or guarantee can be satisfied, submit to Architect written confirmation from applicable Installer. Failure to submit written confirmation and subsequent installation will be assumed to indicate conditions are acceptable to removal contractor.

2. Survey existing conditions and coordinate with hazardous material removal requirements indicated to determine extent of hazardous material removal required.

3. Inventory and record condition of items to be removed and reinstalled and items to be removed and salvaged.

4. Survey 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 hazardous material removal operations.

E. Perform additional surveys as hazardous material removal progresses to detect hazards resulting from hazardous material removal activities.

3.2 WORK AREA PREPARATION

A. Work Area Layout and Emergency Exiting: Emergency and fire exits from the regulated removal work area shall be maintained or alternate exits shall be established and appropriately signed according to all applicable codes. Temporary hardwall barriers are not required at emergency and fire exit locations.

B. Protection of Adjacent Work or Areas to Remain: Hazardous materials removal shall be performed without damage to or contamination of adjacent work or area. Where such work or area is damaged or contaminated, it shall be restored to its original condition or decontaminated by the Contractor at no expense to the Owner. If a spill occurs, work shall stop in all affected areas immediately and the spill shall be cleaned.

C. Establishing Each Regulated Work Area: Work area preparation shall not begin until Contractor has ensured: that the area has been vacated by all personnel; entry has been restricted to the removal contractor and authorized visitors; and required signage has been posted.

D. Decontamination Facilities: Personal decontamination facilities shall be provided and functional prior to beginning other work area preparation.

E. Electrical Power:

1. Shutdown and lockout all electrical power to the work area.

2. Extend and route temporary power from outside the work area. All temporary power shall be protected by a ground fault circuit interrupter (GFCI).

3. Electrical power that runs through the work area, but does not service the work area and cannot be shutdown, may be sealed with three independent layers of plastic sheeting and labeled with a minimum two inch lettering which reads "DANGER LIVE ELECTRICAL–KEEP CLEAR". Signage shall be posted intervals no greater than ten feet.

F. HVAC Systems: Shut down and isolate HVAC equipment from the regulated work area.

G. Pre-Cleaning:

1. Movable objects

a. HEPA vacuum and/or wet clean remaining movable objects and remove from the area

b. Carpeting to be left in place shall be covered with 3/8 inch thick plywood sheathing prior to plasticization.

2. Fixed Objects: HEPA vacuum and/or wet clean fixed or other objects to remain in the work area and seal with two layers of plastic sheeting

H. Barrier Locations: HEPA vacuum and wet all locations where critical and isolation barriers are to be installed prior to installation negative pressure equipment or barriers.

3.3 WORK AREA ENCLOSURE

A. Interior Work Areas

1. Install critical barriers - All openings and penetration to the work area shall be sealed with two independent layers of plastic sheeting

2. Negative Air Pressure Equipment

a. Negative air pressure equipment shall be HEPA filtered.

b. Once critical barriers or tent have been installed, negative air pressure equipment shall be installed and started.

c. Negative pressure equipment shall exhaust to the exterior. The negative pressure equipment shall be exhausted to the exterior of the building and away from public access and building receptors (minimum of 15 feet).

d. Negative air pressure equipment shall operate continuously from startup until satisfactory clearance criteria have been met.

e. Provide a minimum of 4 air changes per hour

f. Provide a minimum of one installed backup unit per work area.

3. Plasticization

   a. Independently install two layers of plastic sheeting on all surfaces not subject to abatement and seal each layer airtight.
   b. Install the floor layer first and extend at least 12 inches up the wall.
   c. Install the wall layer second overlapping the floor by at least 12 inches.
   d. Install the ceiling layer overlapping the wall by at least 12 inches.
   e. All seams within a layer shall be separated by 6 feet.
   f. All seams between layers shall be separated by 2 feet.
   g. Where work occurs in a portion of a room the area may be plasticized using a two layer tent with an attached airlock.

B. Exterior Work Areas:

1. The regulated removal work area shall include the immediate work area where work is occurring and shall extend twenty-five feet from the perimeter of the immediate work area.

2. If entrance and egress to the regulated work area is through the building interior (such as through an internal stairway) construct an airlock at the entrance.

3. Critical barriers

   a. Pre-clean affected areas

   b. Seal all openings in the regulated removal work area with at least two layers of plastic sheeting.

   c. Where an entrance to the building that cannot be sealed (either for primary or emergency entrance for vehicles or people) exists within one floor level above or below and within 25 feet of the perimeter of the regulated removal work area, a tunnel structure with walls and ceilings covered with plywood and sealed with two layers of plastic sheeting must extend 25 feet from the building.

   d. Hardwall isolation barriers are not required.

   e. Sealing floors, walls and ceilings with two layers of plastic sheeting is not required.

   f. For removal from the face of the building, including windows.

      1) Where work is not performed in tents, seal all openings to the building within a 25 foot perimeter of the regulated removal work area with two layers of plastic sheeting.

      2) Where removal work will expose an opening to the building (such as windows, doors, panels) seal the removal area from the inside with two layers of plastic sheeting.

3) Where work is not performed within tents, a dropcloth of plastic sheeting shall be installed below areas of removal that shall be a minimum of ten feet wide with an additional ten feet wide for every floor above the first floor to a maximum of thirty feet.

4) Scaffolding, manlifts, etc. Shall be plasticized with two layers of plastic sheeting.

3.4 WORK PROCEDURES

A. Stop Work:

1. Immediately stop work and take corrective action if any of the following occurs:

   a. Visible emissions are observed outside the work area.
   b. Water leaks are observed outside the work area.
   c. Loss of integrity of an enclosure of any type.
   d. A stop work directive is issued by the Project Monitor.

2. Corrective action shall include repair of enclosure barriers, removal of all released material and cleaning / removal of materials / surfaces contaminated by the release and restoration of such materials / surfaces.

3. Project Monitor Stop Work Directive:

   a. Monitoring Firm shall have to the prerogative and responsibility to direct the removal contractor to stop work when they believe that a release has occurred or is imminent.

   b. Monitoring Firm shall notify the removal contractor , Owner, Architect , and Construction Manager of the stop work directive at least verbally as soon as is practicable. Verbal notification shall be followed by written notification within twenty four hours. Written notification may be in electronic format.

4. Upon receipt of a verbal or written stop work directive, removal contractor shall immediately cease all new disturbance of hazardous materials and begin:

   a. Isolating and sealing areas of disturbed hazardous materials from areas outside of regulated areas or contaminated areas;
   b. Repairing containment barriers; and
   c. Cleaning up and containerizing removed or disturbed hazardous materials.

5. The stop work directive remains in effect and the removal contractor shall not resume work that will disturb previously undisturbed hazardous containing material until directed in writing by the Monitoring Firm.

3.5 MAINTENANCE AND CLEANING OF ENCLOSURES

A. Contractor's supervisor shall inspect barriers twice per work shift, prior and after completion of the day's activities.

B. Repair damage and defects immediately upon discovery.

C. Smoke tube testing of all isolation barriers, decontamination facilities, and regulated removal work areas prior to beginning removal activities and shall occur once a day whenever removal activities or cleaning occurs.

D. HEPA vacuum or wet decontamination enclosures / airlocks at the end of each workshift.

E. Accumulations of dust or debris shall be cleaned off all surfaces on a daily basis using HEPA vacuum and / or wet cleaning methods.

3.6 HANDLING AND REMOVING HAZARDOUS MATERIAL

A. Any release of hazardous materials constitutes unlawful disposal under 40 CFR 264 or 40 CFR 761. Contractor shall be strictly responsible for any and all costs resulting from unlawful disposal of hazardous materials wholly or partially due to their actions or inaction.

B. Prohibited Work Methods:

1. Use of high-speed grinding or abrasion machines without integral shroud with HEPA-vacuum attachment.
2. Work or cleanup methods that cause dust to become airborne, such as dry sweeping, or use of compressed air for cleaning.
3. Use of pressurized water.
4. Any work method that creates visible emissions.

C. All interior work shall be performed within a negative pressure containment.

D. If at any time contractor's exterior work methods create visible emissions, work methods shall be modified to ensure no visible emissions occur. Upon the second occurrence of visible emissions, all future exterior work shall be performed within tents.

E. Hazardous Materials Removal

1. Remove all hazardous material containing caulk from adjacent surfaces.

2. Where hazardous material containing caulk abuts non-porous, cleanable glass or metal scheduled for removal, the surface may be cleaned to Visual Standard No.2, Near-White Blast Cleaned Surface Finish, of the National Association of Corrosion Engineering (NACE) and dispose of the non-porous materials as non-hazardous contaminated material in lieu of disposing of the item as hazardous contaminated material.

3. Where hazardous material containing caulk abuts painted metal to be cleaned or desired to be cleaned by the Contractor prior to disposal, all paint shall be removed and disposed as hazardous contaminated material.

4. Where hazardous material containing caulk abuts porous material scheduled to remain, at a minimum, remove the surface of the porous material sufficiently to remove all residual caulk from pits, grooves, etc. at the point of contact of the caulk. Perform removal to leave a smooth surface.

5. Provide two separate layers of encapsulant.

   a. Follow manufacturer recommendations
   b. Each coat shall be a separate and distinct color.
   c. Color of each coat colors shall be as approved by the architect and may include "special colors".
   d. System total shall be a minimum of 10 mils.

6. Where hazardous material containing caulk abuts porous material scheduled for removal, remove a minimum of 6 inches of adjacent material and dispose as hazardous contaminated material.

7. Installation of new work that will disturb porous materials within three inches of original caulk shall be performed in accordance with this specification.

F. Waste Clean-Up

1. All accumulations of hazardous waste material shall be containerized using HEPA vacuums or rubber or plastic dustpans, squeegees or shovels.

   a. Surfaces shall be HEPA vacuumed after gross cleanup.
   b. Waste during removal and initial cleanup shall be immediately bagged, wrapped or containerized upon removal.
   c. Cleanup shall be performed whenever enough loose debris/waste material has been removed to fill a single leak-tight container.

2. Containerize all removed materials, including non-porous components that Contractor has not elected to clean to a Visual Standard No.2, Near-White Blast Cleaned Surface Finish, of the National Association of Corrosion Engineering (NACE).

G. Packaging Waste

1. All waste shall be packaged, labeled and marked for transport and disposal in accordance with applicable requirements of 6 NYCRR 372 and 49 CFR 172, 173, 178 and 179.

   a. Marking Format:

      1) "HAZARDOUS WASTE –Federal Law Prohibits Improper Disposal. If found, contact the nearest police or public safety authority or the U.S. Environmental Protection Agency.

      2) Generator's Name and Address _____

      3) Generator's EPA Identification Number _____

      4) Manifest Tracking Number _____"

2. All waste generated shall be bagged, wrapped or containerized immediately upon removal. Cleanup accumulations of loose debris/waste material whenever enough loose debris/waste material has been generated to fill a single leak-tight container.

H. Final Cleaning

1. First Cleaning: All surfaces of the regulated work area shall be HEPA-vacuumed.

2. Second Cleaning

a. Non-porous surfaces shall be wet-cleaned using rags, mops and sponges.
b. Porous surfaces shall be HEPA-vacuumed a second time.

3.7 TRANSPORTATION AND DISPOSAL PROCEDURES

A. Temporary On-Site Storage and Protection: Provide storage on site of hazardous materials removed from service and scheduled for disposal complying with requirements of 6 NYCRR 372.2 (a) (8). Do not exceed 90 days storage on site.

B. Hazardous Waste Determination: Provide analysis required by Treatment, Storage or Disposal facility to document hazardous waste determination.

C. Hazardous Waste Manifests

1. Provide and complete the Uniform Hazardous Waste Manifest, obtained from a USEPA Approved Registered Printer.

2. Maintain manifest from date of transport until date of disposal, destruction or recycling.

3. Return fully executed manifests to Owner within 30 days of date waste left site for review and signature.

4. Use following type of manifest as applicable:

a. If waste is to be disposed of in New York State or if waste is to be disposed of in state not requiring use of specific manifest form, use New York State Uniform Hazardous Waste Manifest;

b. If the waste is to be disposed of in state other than New York State and that state requires use of specific manifest form, use manifest required by state where waste is to be disposed in lieu of New York State Uniform Hazardous Waste Manifest.

D. Disposal - Transport hazardous waste to treatment or disposal facility that:

1. Is permitted, licensed or registered by state to dispose of hazardous waste;

2. Has interim status to dispose of hazardous waste;

3. Is authorized to manage hazardous waste under Resource Conservation and Recovery Act (RCRA) or

4. Is facility which:

a. Beneficially uses or reuses, or legitimately recycles or reclaims its waste; or

b. Treats its waste prior to beneficial use or reuse, or legitimate recycling or reclamation.

3.8 ADJUSTING/CLEANING

A. At least weekly, remove from building site debris, rubbish, and other materials resulting from hazardous material disposal operations.

1. If additional hazardous materials are encountered during hazardous material disposal operations, comply with applicable regulations, laws, and ordinances concerning removal, handling, and protection against exposure or environmental pollution.
2. Burning of removed materials not permitted on Project Site.
3. Transport materials removed and legally dispose off-site.

B. Sweep building broom clean at end of each workday and on completion of hazardous material removal operations.

C. Upon completion of hazardous material removal, remove tools, equipment, and demolished materials from Site. Remove protections and leave interior areas broom clean. Change filters on air-handling equipment to remain.

3.9 FIELD QUALITY CONTROL

A. The Owner reserves the right to engage a Project Monitoring firm to perform Monitoring services, take samples, and prepare reports.

B. Laboratory Certification: Each laboratory used shall be approved by the New York State Department of Health's Environmental Laboratory Approval Program (NYSDOH ELAP) for the analysis performed.

C. Contractor to:

1. Provide Monitoring firm with access to work area(s) to perform necessary inspections, sampling, etc. prior to, during and after completion of removal activities.
2. Provide Monitoring firm with ladders, lifts, safety equipment, electrical power, lighting, etc.
3. Coordinate with Monitoring firm for scheduled work. Provide a minimum of 48 hour notice for additional shifts / weekend work.

D. Clearance Inspections

1. Supervisor shall perform a completeness of removal and cleaning visual inspection after completion of all removal and cleaning work.

a. Supervisor inspection shall successfully document completeness of removal and cleaning prior to requesting an inspection from the Project Monitor.
b. Supervisor shall document the results of the inspection in the Daily Project Log.

2. Project Monitor visual inspection

   a. The Project Monitor shall perform a visual inspection to determine the completeness of removal and cleaning
   b. Both the Project Monitor and the Supervisor shall document the findings of the inspection in the Contractor Daily Project Log.

3. Clearance Criteria: Once the area has successfully passed the Supervisor and Project Monitor final visual inspection and achieved required air sampling clearance criteria, the area is considered to have successfully achieved clearance criteria. The work area may then be dismantled.

END OF SECTION 02 84 00

SECTION 03 30 00 - CAST-IN-PLACE CONCRETE

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 cast-in-place concrete, including formwork, reinforcement, concrete materials, mixture design, accessories, placement procedures, and finishes, for the following:

1. Footings.
2. Slabs-on-grade.
3. Suspended slabs.
4. Concrete reconstruction and corrective work.

1.3 DEFINITIONS

A. Cementitious Materials: Portland cement alone or in combination with one or more of the following: blended hydraulic cement, fly ash and other pozzolans, ground granulated blast-furnace slag, and silica fume; subject to compliance with requirements.

1.4 SUBMITTALS

A. Action Submittals:

1. Product Data: For each type of product indicated.

   a. Fiber reinforcement.
   b. Waterstops.
   c. Vapor barrier.
   d. Curing compound.
   e. Interior Slab control joint sealer.
   f. Penetrating silane sealer.
   g. Non-Shrink Grout.
   h. Chemical anchor adhesives.
   i. Corrective mortar (industry name is Repair mortar).
   j. Thin coat patching mortar.
   k. Corrective overlayment (industry name is Repair overlayment).

2. Design Mixtures: For each concrete mixture. Submit alternate design mixtures when characteristics of materials, Project conditions, weather, test results, or other circumstances warrant adjustments. Pumping of concrete requires a mix design specifically prepared and previously used for pumping.

a. Indicate amounts of mixing water to be withheld for later addition at Project site.
b. Include compressive strength test reports.
c. Include all ingredient certifications and product data concurrently.

3. Steel Reinforcement Shop Drawings: Placing drawings that detail fabrication, bending, and placement. Include bar sizes, lengths, material, grade, bar schedules, stirrup spacing, bent bar diagrams, bar arrangement, splices and laps, mechanical connections, tie spacing, hoop spacing, and supports for concrete reinforcement. Show all concrete wall and footing reinforcement on elevation drawings at a scale not less than 1/4-inch = 1 ft. Do not submit placement plans showing only piece marks referencing a cut list.

4. Construction Joint Layout: Shop Drawings indicating proposed construction joint locations and details in elevated concrete slabs and concrete beams.

5. Slab-on-Grade Control Joint Layout Drawings: Indicate joints as shown on Drawings and proposed locations following required spacing requirements.

B. Informational Submittals:

1. Material Certificates: For each type of the following, signed by manufacturers or suppliers:

a. Reinforcing bars.
b. Epoxy-coated reinforcing bars.
c. Welded wire reinforcement.
d. Joint dowel bars.
e. Epoxy-coated joint dowel bars.
f. Cementitious materials.

2. Material Test Reports: For the following, from a qualified testing agency, indicating compliance with requirements:

a. Aggregates.
b. Vapor Barrier.

3. Proposed curing method for all concrete elements.

4. Curing compound compatibility with floor finishes and adhesives certificate.

1.5 QUALITY ASSURANCE

A. Installer Qualifications: A qualified installer who employs on Project personnel qualified as ACI-certified Flatwork Technician and Finisher and a supervisor who is an ACI-certified Concrete Flatwork Technician.

B. Manufacturer Qualifications: A firm experienced in manufacturing ready-mixed concrete products and that complies with ASTM C 94/C 94M requirements for production facilities and equipment.

C. Testing Agency Qualifications: An independent agency, qualified according to ASTM C 1077 and ASTM E 329 to perform material evaluation tests and to design concrete mixtures.

1. Personnel performing laboratory tests shall be ACI-certified Concrete Strength Testing Technician and Concrete Laboratory Testing Technician - Grade I. Testing Agency laboratory supervisor shall be an ACI-certified Concrete Laboratory Testing Technician - Grade II.

D. Source Limitations: Obtain each type or class of cementitious material of the same brand from the same manufacturer's plant, obtain aggregate from single source, and obtain admixtures from single source from single manufacturer.

E. ACI Publications: Comply with the following unless modified by requirements in the Contract Documents:

1. ACI 301, "Specifications for Structural Concrete," Sections 1 through 5. and Section 7, "Lightweight Concrete."
2. ACI 117, "Specifications for Tolerances for Concrete Construction and Materials."

F. Structural Preconstruction Conference: Attend conference at Project site.

G. Slab Pre-Pour Conference: Attend conference at Project site.

1.6 DELIVERY, STORAGE, AND HANDLING

A. Steel Reinforcement: Deliver, store, and handle steel reinforcement to prevent bending and damage. Avoid damaging coatings on steel reinforcement.
B. Waterstops: Store waterstops under cover to protect from moisture, sunlight, dirt, oil, and other contaminants.

PART 2 - PRODUCTS

2.1 FORM-FACING MATERIALS

A. Rough-Formed Finished Concrete: Plywood, lumber, metal, or another approved material. Provide lumber dressed on at least two edges and one side for tight fit.

B. Forms for Cylindrical Columns, Pedestals, and Supports: Metal, glass-fiber-reinforced plastic, paper, or fiber tubes that will produce surfaces with gradual or abrupt irregularities not exceeding specified formwork surface class. Provide units with sufficient wall thickness to resist plastic concrete loads without detrimental deformation.

C. Chamfer Strips: Wood, metal, PVC, or rubber strips 3/4 by 3/4 inch, minimum.

D. Form-Release Agent: Commercially formulated form-release agent that will not bond with, stain, or adversely affect concrete surfaces and will not impair subsequent treatments of concrete surfaces. VOC compliant.

1. Formulate form-release agent with rust inhibitor for steel form-facing materials.

E. Form Ties: Factory-fabricated, removable or snap-off metal or glass-fiber-reinforced plastic form ties designed to resist lateral pressure of fresh concrete on forms and to prevent spalling of concrete on removal.

1. Furnish units that will leave no corrodible metal closer than 1 inch to the plane of exposed concrete surface.
2. Furnish ties that, when removed, will leave holes no larger than 1 inch in diameter in concrete surface.
3. Furnish ties with integral water-barrier plates to walls indicated to receive dampproofing or waterproofing.

2.2 STEEL REINFORCEMENT

A. Reinforcing Bars: ASTM A 615/A 615M, Grade 60, deformed.

B. Epoxy-Coated Reinforcing Bars: ASTM A 615/A 615M, Grade 60, deformed bars, ASTM A 775/A 775M or ASTM A 934/A 934M, epoxy coated, with less than 2 percent damaged coating in each 12-inch bar length.

C. Plain-Steel Welded Wire Reinforcement: ASTM A 1064/A 1064M, plain, fabricated from as-drawn steel wire into flat sheets.

2.3 REINFORCEMENT ACCESSORIES

A. Joint Dowel Bars: ASTM A 615/A 615M, Grade 60, plain-steel bars, cut true to length with ends square and free of burrs.

B. Epoxy-Coated Joint Dowel Bars: ASTM A 615/A 615M, Grade 60, plain-steel bars, ASTM A 775/A 775M epoxy coated.

C. Epoxy Corrective Coating: Liquid, two-part, epoxy corrective coating; compatible with epoxy coating on reinforcement and complying with ASTM A 775/A 775M.

D. Bar Supports: Bolsters, chairs, spacers, and other devices for spacing, supporting, and fastening reinforcing bars and welded wire reinforcement in place. Manufacture bar supports from steel wire, plastic, or precast concrete according to CRSI's "Manual of Standard Practice," of greater compressive strength than concrete and as follows:

1. For exterior concrete, use galvanized wire or dielectric-polymer-coated wire bar supports.
2. For epoxy-coated reinforcement, use epoxy-coated or other dielectric-polymer-coated wire bar supports.

2.4 CONCRETE MATERIALS

A. Cementitious Material: Use the following cementitious materials, of the same type, brand, and source, throughout Project:

1. Portland Cement: ASTM C 150, Type I or Type II. Supplement with the following (optional):

a. Fly Ash: ASTM C 618, Class F or C.
b. Ground Granulated Blast-Furnace Slag: ASTM C 989, Grade 100 or 120.

2. Blended Hydraulic Cement: ASTM C 595 – Type IL, portland limestone; Type IS, portland blast-furnace slag; Type IP, portland-pozzolan; Type I (PM), pozzolan-modified portland; or Type I (SM), slag-modified portland cement.

B. Normal-Weight Aggregates:

1. Provide aggregates from a single source.

2. ASTM C 33, Class 3S coarse aggregate or better, graded.

3. ASTM C 33, Class 4S coarse aggregate or better, graded, for exterior concrete.

4. Maximum Coarse-Aggregate Size:

a. Slabs on Grade: 1-1/2 inches nominal.
b. All Other Concrete: 1 inch nominal.

5. Fine Aggregate: ASTM C 33. Free of materials with deleterious reactivity to alkali in cement.

C. Lightweight Aggregate: ASTM C 330, 1-inch nominal maximum aggregate size.

D. Water: ASTM C 1602/C 1602M and potable.

2.5 ADMIXTURES

A. Air-Entraining Admixture: ASTM C 260.

B. Chemical Admixtures: Provide admixtures certified by manufacturer to be compatible with other admixtures and that will not contribute water-soluble chloride ions exceeding those permitted in hardened concrete. Do not use calcium chloride or admixtures containing chlorides.

1. Water-Reducing Admixture: ASTM C 494/C 494M, Type A.
2. Retarding Admixture: ASTM C 494/C 494M, Type B.
3. Accelerating Admixture: ASTM C 494/C 494M, Type C.
4. Water-Reducing and Retarding Admixture: ASTM C 494/C 494M, Type D.
5. Water-Reducing and Accelerating Admixture: ASTM C 494/C 494M, Type E.
6. Mid-Range, Water-Reducing Admixture: ASTM C 494/C 494M, Type A or Type F. Water content reduction to be greater than 7%.
7. High-Range, Water-Reducing Admixture: ASTM C 494/C 494M, Type F.
8. High-Range, Water-Reducing and Retarding Admixture: ASTM C 494/C 494M, Type G.
9. Plasticizing and Retarding Admixture: ASTM C 1017/C 1017M, Type II.

2.6 FIBER REINFORCEMENT

A. Synthetic Macro-Fiber: Polyolefin macro-fibers (containing no reprocessed olefin materials) engineered and designed for use as secondary reinforcing in concrete, complying with ASTM C 1116/C 1116M, Type III, 1 1/4 to 2-1/4 inches long, varying fiber thickness, and no water absorption.

1. Products: Subject to compliance with requirements, available products that may be incorporated into the Work include, but are not limited to, the following:

   a. 3M; Scotchcast Polyolefin Fibers 2".
   b. Master Builders Solutions US LLC; “MasterFiber MAC” Series.
   c. Euclid Chemical Company (The), an RPM company; Tuf-Strand SF.
   d. FORTA Corporation; FORTA FERRO.
   e. GCP Applied Technologies Inc.; Strux 90/40.
   f. Nycon, Inc.; XL.
   g. Sika Corporation; Fibermesh 650.

B. Synthetic Micro-Fiber: Polyolefin micro-fibers (containing no reprocessed olefin materials) engineered and designed for use as secondary reinforcing in concrete, complying with ASTM C 1116/C 1116M, Type III, 1/2 to 3/4 inches long, varying fiber thickness, and no water absorption.

1. Products: Subject to compliance with requirements, available products that may be incorporated into the Work include, but are not limited to, the following:

   a. Master Builders Solutions US LLC; “MasterFiber M 100” Series
   b. Euclid Chemical Company (The), an RPM company; PSI Fiberstrand 150.
   c. FORTA Corporation; MIGHTY MONO.
   d. GCP Applied Technologies Inc.; SINTA M2219

2.7 WATERSTOPS

A. Self-Expanding Butyl Strip Waterstops: Manufactured rectangular or trapezoidal strip, butyl rubber with sodium bentonite or other hydrophilic polymers, for adhesive bonding to concrete, 3/4 by 1 inch.

1. Products: Subject to compliance with requirements, available products that may be incorporated into the Work include, but are not limited to, the following:

   a. Carlisle Coatings & Waterproofing, Inc.; MiraSTOP BW.
   b. CETCO; Volclay Waterstop-RX 101.
   c. Sika Corporation; Swellstop.
   d. JP Specialties, Inc.; Earth Shield Type 20.

2.8 VAPOR BARRIER

A. Vapor Barrier: Water-vapor transmission rate (permeance) less than 0.015 perms (gr/ft^2/hr/in-Hg), in accordance with ASTM E 1745. The product must meet water-vapor transmission rate (0.01 perms) requirement for both the new material and the ASTM E 1745 mandatory conditioning tests (ASTM E 1745; paragraphs 7.12 through 7.15.) Provide all manufacturers' accessories required for complete installation including mastic and seam tape. Seam tape to be provided with a water-vapor transmission rate of 0.3 perms or lower.

1. Products: Subject to compliance with requirements, provide one of the following:

   a. Layfield Construction Materials; VaporFlex 15.
   b. Reef Industries, Inc.; Griffolyn Vaporguard.
   c. Stego Industries, LLC; Stego Wrap 15 mil Class A.

2.9 CURING MATERIALS

A. Moisture-Retaining Cover: ASTM C 171, polyethylene film or white burlap–polyethylene sheet.
B. Clear, Waterborne, Membrane-Forming Curing Compound: ASTM C 309, Type 1-D, Class B, dissipating, with fugitive dye.
C. Evaporation Retarder: Waterborne, monomolecular film forming, manufactured for application to fresh concrete.

2.10 RELATED MATERIALS

A. Expansion- and Isolation-Joint-Filler Strips: ½-inch rigid, extruded polystyrene insulation (at exterior walls,) ASTM D 1751, asphalt-saturated cellulosic fiber, or ASTM D 1752, cork or self-expanding cork.

B. Interior Slab Control Joint Sealer: Two-component, self-leveling, flexible, 100 percent solids, epoxy resin and adhesive with a Type A shore durometer hardness of 80 per ASTM D 2240 and conforming to ACI 302.1R (5.12-Joint Materials).

1. Products: Subject to compliance with requirements, available products that may be incorporated into the Work include, but are not limited to, the following:

   a. Chem Masters; PolyTops 480.
   b. Euclid Chemical Company (The); DURAL 340 SL
   c. Sika Corporation; Sikadur 51 SL.

C. Penetrating, Silane Sealer: Single component, minimum 40% silane, waterbased slab sealer that forms chemical bond to the concrete. VOC compliant.

1. Products: Subject to compliance with requirements, available products that may be incorporated into the Work include, but are not limited to, the following:

   a. Master Builders Solutions US LLC; MasterProtect H 400.
   b. Chem Masters; Aquanil Plus 40.
   c. Dayton Superior Corporation; Weather Worker 40% J29.

D. Bond breakers: Waterborne, VOC compliant form release agent.

E. Bonding Agent: ASTM C 882/C 882M, liquid bonding agent specifically designed to bond fresh cementitious materials to a variety of substrates for interior and exterior applications and provide an anti-corrosion coating for reinforcing steel.

1. Products: Subject to compliance with requirements, available products that may be incorporated into the Work include, but are not limited to, the following:

a. BASF Construction Chemicals; MasterEmaco P 124.
b. Euclid Chemical Company (The); DURAL LPL MV.
c. Sika Corporation; Sika Armatec 110 EpoCem.

F. Non-Shrink Grout: ASTM C 1107, factory-packaged, shrinkage-resistant, nonmetallic aggregate grout, noncorrosive and nonstaining, mixed with water to consistency suitable for application and a 30-minute working time.

G. Chemical Anchor Adhesives: Heavy duty, two component injectable adhesive designed to be dispensed using double chamber gun with mixing nozzle. Adhesives in capsule form will not be accepted.

1. Products: Subject to compliance with requirements, available products that may be incorporated into the Work include, but are not limited to, the following:

a. DeWalt.; AC200+
b. Hilti, Inc.; Hit-HY 200A; Hit-HY 200R; Hit-Ice
c. ITW Redhead; A7+.

2.11 RECONSTRUCTION AND CORRECTIVE MATERIALS

A. Corrective Mortar (Industry name is Repair Mortar): Site-mixed Portland-cement mix for vertical and overhead surfaces. Mix dry-pack corrective mortar, consisting of one part shrinkage-compensating, Portland cement to two and one-half parts fine aggregate passing a No. 16 sieve by damp, loose volume, using only enough water for handling and placing.

B. Thin Coat Patching Mortar: Polymer modified, Portland cement, suitable for interior and exterior applications. Featheredge up to 3/16 inch. For thicker applications manufacturer's recommendations to extend mix with an aggregate may apply.

1. Products: Subject to compliance with requirements, available products that may be incorporated into the Work include, but are not limited to, the following:

a. BASF Construction Chemicals; MasterTop 115FC.
b. ChemMasters, Inc.; Thin Patch
c. Euclid Chemical Company (The); Duraltop Flowable Mortar.

C. Corrective Overlayment (Industry name is Repair Overlayment): Cement-based, polymer-modified, self-leveling product that can be applied in thicknesses from 1/4 inch and that can be filled in over a scarified surface to match adjacent floor elevations. For thicker applications manufacturer's recommendations to extend mix with an aggregate may apply.

1. Cement Binder: ASTM C 150, portland cement or hydraulic or blended hydraulic cement as defined in ASTM C 219.
2. Primer: Product of topping manufacturer recommended for substrate, conditions, and application.
3. Aggregate: Well-graded, washed gravel, 1/8 to 1/4 inch or coarse sand as recommended by topping manufacturer.
4. Compressive Strength: Not less than 5000 psi at 28 days when tested according to ASTM C 109/C 109M.

2.12 CONCRETE MIXTURES, GENERAL

A. Prepare design mixtures for each type and strength of concrete, proportioned on the basis of laboratory trial mixture or field test data, or both, according to ACI 301.

1. Use a qualified independent testing agency for preparing and reporting proposed mixture designs based on laboratory trial mixtures.

B. Cementitious Materials: Limit percentage, by weight, of cementitious materials other than Portland cement in concrete as follows:

1. Fly Ash: 25 percent, but if used, a minimum of 15 percent.

a. In slabs to receive Flooring Treatment limit fly ash to a maximum 5 percent by weight of the total cementitious materials.

2. Combined Fly Ash and Pozzolan: 25 percent.

a. In slabs to receive Flooring Treatment limit combined fly ash and pozzolan to a maximum 5 percent by weight of the total cementitious materials.

3. Ground Granulated Blast-Furnace Slag: 50 percent.

4. Combined Fly Ash or Pozzolan and Ground Granulated Blast-Furnace Slag: 50 percent portland cement minimum, with fly ash or pozzolan not exceeding 25 percent.

C. Limit water-soluble, chloride-ion content in hardened concrete to 0.15 percent by weight of cement.

D. Admixtures: Use admixtures according to manufacturer's written instructions.

1. Use water-reducing, high-range water-reducing or plasticizing admixture in all concrete. Design mix for optimum placement and workability.

2. Use water-reducing and retarding admixture when required by high temperatures, low humidity, or other adverse placement conditions.

3. Use a mid-range, water-reducing admixture in pumped concrete, all concrete slabs (including concrete walks), concrete required to be watertight, and concrete with a water-cementitious materials ratio below 0.50.

2.13 CONCRETE MIXTURES FOR BUILDING ELEMENTS

A. Footings, Piers, Foundation Walls, Grade Beams, Building Walls, or Frame Members: Proportion normal-weight concrete mixture as follows:

1. Minimum Compressive Strength: 4000 psi at 28 days.

2. Maximum Water-Cementitious Materials Ratio: 0.50.

3. Slump Limit: 4 inches, plus or minus 1 inch; or 8 inches for concrete with verified slump of 2 to 4 inches before adding high-range water-reducing admixture or plasticizing admixture, plus or minus 1 inch.

4. Air Content: 6 percent, plus or minus 1.5 percent at point of delivery for 1-inch nominal maximum aggregate size.

B. Interior Slabs-on-Grade: Proportion normal-weight concrete mixture as follows:

1. Minimum Compressive Strength: 4000 psi at 28 days.
2. Maximum Water-Cementitious Materials Ratio: 0.50.
3. Minimum Cementitious Materials Content: 470 lb/cu. yd..
4. Slump Limit: 4 inches, plus or minus 1 inch.
5. Air Content: Do not allow air content of trowel-finished floors to exceed 3 percent.
6. Synthetic Macro-Fiber: Uniformly disperse in concrete mixture, at concrete batch facility, at manufacturer's recommended rate, but not less than 3.0 lb/cu. yd..

C. Interior Suspended Slabs: Proportion normal-weight concrete mixture as follows:

1. Minimum Compressive Strength: 4000 psi at 28 days.
2. Minimum Cementitious Materials Content: 520 lb/cu. yd..
3. Slump Limit: 4 inches, plus or minus 1 inch.
4. Air Content: Do not allow air content of trowel-finished floors to exceed 3 percent.
5. Maximum Water-Cementitious Materials Ratio: 0.50.
6. Synthetic Micro-Fiber: Uniformly disperse in concrete mixture, at concrete batch facility, at manufacturer's recommended rate, but not less than 1.5 lb/cu. yd..

D. Interior Suspended Slabs: Proportion structural lightweight concrete mixture as follows:

1. Minimum Compressive Strength: 4000 psi at 28 days.
2. Maximum Water-Cementitious Materials Ratio: 0.50.
3. Calculated Equilibrium Unit Weight: 115 lb/cu. ft., plus or minus 3 lb/cu. ft. as determined by ASTM C 567.
4. Slump Limit: 4 inches, plus or minus 1 inch.
5. Air Content: Do not allow air content of trowel-finished floors to exceed 3 percent.
6. Synthetic Micro-Fiber: Uniformly disperse in concrete mixture, at concrete batch facility, at manufacturer's recommended rate, but not less than 1.5 lb/cu. yd..

2.14 CONCRETE MIXTURES FOR EXTERIOR CONCRETE

A. Exterior Slabs (concrete pads, walks and curbs): Proportion normal-weight concrete mixture as follows:

1. Minimum Compressive Strength: 4500 psi at 28 days.

2. Maximum Water-Cementitious Materials Ratio: 0.45.

3. Slump Limit: 4 inches, plus or minus 1 inch; or 8 inches for concrete with verified slump of 2 to 4 inches before adding high-range water-reducing admixture or plasticizing admixture, plus or minus 1 inch.

4. Air Content: 5.5 percent, plus or minus 1.5 percent at point of delivery for 1-1/2-inch nominal maximum aggregate size.

5. Synthetic Macro-Fiber: Uniformly disperse in concrete mixture, at concrete batch facility, at manufacturer's recommended rate, but not less than 3.0 lb/cu. yd..

2.15 FABRICATING REINFORCEMENT

A. Fabricate steel reinforcement according to CRSI's "Manual of Standard Practice."

2.16 CONCRETE MIXING

A. Ready-Mixed Concrete: Measure, batch, mix, and deliver concrete according to ASTM C 94/C 94M and ASTM C 1116/C 1116M, and furnish batch ticket information.

1. When air temperature is between 85 and 90 deg F, reduce mixing and delivery time from 1-1/2 hours to 75 minutes; when air temperature is above 90 deg F, reduce mixing and delivery time to 60 minutes.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Verify that subgrade conditions are satisfactory prior to forming or pouring concrete. Owner’s Testing Agency shall inspect slab and footing subgrade prior to placing concrete.
B. Verify that reinforcing, including masonry dowels, is properly in place prior to pouring concrete.
C. Verify that formwork is complete and properly secured prior to placing concrete.
D. Proceed with installation only after unsatisfactory conditions have been corrected.
E. Beginning installation constitutes Contractor’s acceptance of substrates and conditions.

3.2 FORMWORK

A. Design, erect, shore, brace, and maintain formwork, according to ACI 301, to support vertical, lateral, static, and dynamic loads, and construction loads that might be applied, until structure can support such loads.

B. Construct formwork so concrete members and structures are of size, shape, alignment, elevation, and position indicated, within tolerance limits of ACI 117.

C. Limit concrete surface irregularities, designated by ACI 347 as abrupt or gradual, as follows:

1. Class A, 1/8 inch for smooth-formed finished surfaces.
2. Class B, 1/4 inch for rough-formed finished surfaces to receive parging.
3. Class C, 1/2 inch for rough-formed finished surfaces without additional finish, permanently exposed.
4. Class D, 1 inch for concealed, rough-formed finished surfaces.

D. Construct forms tight enough to prevent loss of concrete mortar.

E. Fabricate forms for easy removal without hammering or prying against concrete surfaces. Provide crush or wrecking plates where stripping may damage cast concrete surfaces. Provide top forms for inclined surfaces steeper than 1.5 horizontal to 1 vertical.

1. Install keyways, reglets, recesses, and the like, for easy removal.

F. Set edge forms, bulkheads, and intermediate screed strips for slabs to achieve required elevations and slopes in finished concrete surfaces. Provide and secure units to support screed strips; use strike-off templates or compacting-type screeds.

G. Provide temporary openings for cleanouts and inspection ports where interior area of formwork is inaccessible. Close openings with panels tightly fitted to forms and securely braced to prevent loss of concrete mortar. Locate temporary openings in forms at inconspicuous locations.

H. Chamfer exterior corners and edges of permanently exposed concrete.

I. Form openings, chases, offsets, sinkages, keyways, reglets, blocking, screeds, and bulkheads required in the Work. Determine sizes and locations from trades providing such items.

J. Clean forms and adjacent surfaces to receive concrete. Remove chips, wood, sawdust, dirt, and other debris just before placing concrete.

K. Retighten forms and bracing before placing concrete, as required, to prevent mortar leaks and maintain proper alignment.

L. Coat contact surfaces of forms with form-release agent, according to manufacturer's written instructions, before placing reinforcement.

3.3 EMBEDDED ITEMS

A. Place and secure anchorage devices and other embedded items required for adjoining work that is attached to or supported by cast-in-place concrete. Use setting drawings, templates, diagrams, instructions, and directions furnished with items to be embedded.

1. Install anchor rods, accurately located, to elevations required and complying with tolerances in Section 7.5 of AISC's "Code of Standard Practice for Steel Buildings and Bridges."

2. Install leveling plates, bearing plates, railing sleeves, brackets, and all other embedded steel items shown on Drawings.

3. Install reinforcing steel required for attachment of masonry to concrete structures.

4. Install sleeves for pipe, conduit and other items passing through cast-in-place structural concrete. Coordinate with other trades for sleeve details, invert elevations, locations, and sizes.

3.4 REMOVING AND REUSING FORMS

A. General: Formwork for sides of beams, walls, and similar parts of the Work that does not support weight of concrete may be removed after cumulatively curing at not less than 50 deg F for 24 hours after placing concrete. Concrete has to be hard enough to not be damaged by form-removal operations and curing and protection operations need to be maintained.

1. Leave formwork for slabs,structural elements that supports weight of concrete in place until concrete has achieved at least 75 percent of its 28-day design compressive strength.
2. Remove forms only if shores have been arranged to permit removal of forms without loosening or disturbing shores.

B. Clean and provide corrective work to surfaces of forms to be reused in the Work. Split, frayed, delaminated, or otherwise damaged form-facing material will not be acceptable for exposed surfaces. Apply new form-release agent.

C. When forms are reused, clean surfaces, remove fins and laitance, and tighten to close joints. Align and secure joints to avoid offsets. Do not use patched forms for exposed concrete surfaces unless approved by Architect.

3.5 VAPOR BARRIERS

A. Place, protect, and correct vapor barrier according to ASTM E 1643 and manufacturer's written instructions.

1. Lap joints 6 inches and seal with manufacturer's recommended tape.

3.6 STEEL REINFORCEMENT

A. General: Comply with CRSI's "Manual of Standard Practice" for placing reinforcement.

1. Do not cut or puncture vapor barrier. Correct damage and reseal vapor barrierbefore placing concrete.

B. Clean reinforcement of loose rust and mill scale, earth, ice, and other foreign materials that would reduce bond to concrete.

C. Accurately position, support, and secure reinforcement against displacement. Locate and support reinforcement with bar supports to maintain minimum concrete cover. Do not tack weld crossing reinforcing bars.

1. Weld reinforcing bars according to AWS D1.4/D 1.4M, where indicated.

D. Set wire ties with ends directed into concrete, not toward exposed concrete surfaces.

E. Install welded wire reinforcement in longest practicable lengths on bar supports spaced to minimize sagging. Lap edges and ends of adjoining sheets at least one mesh spacing. Offset laps of adjoining sheet widths to prevent continuous laps in either direction. Lace overlaps with wire.

F. Epoxy-Coated Reinforcement: Correct cut and damaged epoxy coatings with epoxy corrective coating according to ASTM D 3963/D 3963M. Use epoxy-coated steel wire ties to fasten epoxy-coated steel reinforcement.

G. Field bending or straightening of bars partially embedded in concrete is permitted only where shown on the Drawings.

H. All openings in concrete walls with a dimension of one foot or greater are to have two #5 bars on all sides of opening, unless noted otherwise.

3.7 JOINTS

A. General: Construct joints true to line with faces perpendicular to surface plane of concrete.

B. Construction Joints: Install so strength and appearance of concrete are not impaired, at locations indicated or as approved by Architect.

1. Place joints perpendicular to main reinforcement. Continue reinforcement across construction joints unless otherwise indicated. Do not continue reinforcement through sides of strip placements of floors and slabs.

2. Form keyed joints as indicated. Embed keys at least 1-1/2 inches into concrete.

3. Locate joints for suspended slabs in the middle third of spans. Offset joints in girders a minimum distance of twice the beam width from a beam-girder intersection.

4. Roughen surface of hardened concrete, wet surface, and immediately pour fresh concrete against wet surface.

C. Control joints in Slabs-on-Grade: Form weakened-plane control joints, sectioning concrete into areas as indicated. Construct control joints for a depth equal to at least one-fourth of concrete thickness as follows:

1. Sawed Joints: Form control joints with power saws equipped with shatterproof abrasive or diamond-rimmed blades. Cut 1/8-inch-wide joints into concrete when cutting action will not tear, abrade, or otherwise damage surface and before concrete develops random contraction cracks. Space joints as shown on Drawings or, if not indicated, at 12 feet average spacing and not exceeding 15 feet. Locate joints at column centerlines where possible.

D. Isolation Joints in Slabs-on-Grade: Install joint-filler strips at slab junctions with vertical surfaces, such as column pedestals, foundation walls, grade beams, and other locations, as indicated.

1. Extend joint-filler strips full width and depth of joint, terminating flush with finished concrete surface unless otherwise indicated.

2. Terminate full-width joint-filler strips not less than 1/2 inch or more than 1 inch below finished concrete surface where joint sealants, specified in Division 07 Section "Joint Sealants," are indicated.

3. Install joint-filler strips in lengths as long as practicable. Where more than one length is required, lace or clip sections together.

E. Doweled Joints: Install dowel bars and support assemblies at joints where indicated. Lubricate or asphalt coat one-half of dowel length to prevent concrete bonding to one side of joint.

3.8 CONCRETE PLACEMENT

A. Before placing concrete, verify that installation of formwork, reinforcement, and embedded items is complete and that required inspections have been performed.

B. Before test sampling and placing concrete, water may be added at Project site, subject to limitations of ACI 301, (4.3.2.1 Slump Adjustment.)

1. With each concrete mixture submittal, indicate amounts of mixing water to be withheld for later addition at Project site.

2. Water added must not increase the water-cement ratio past the approved mix design ratio.

3. Add additional water reducer or plasticizer to mix instead of adding water to achieve flowable, workable concrete. Do not add water to concrete after adding these admixtures to mixture.

4. Do not add water after truck is more than half empty.

C. Deposit concrete continuously in one layer or in horizontal layers of such thickness that no new concrete will be placed on concrete that has hardened enough to cause seams or planes of weakness. If a section cannot be placed continuously, provide construction joints as indicated. Deposit concrete to avoid segregation.

1. Deposit concrete in horizontal layers of depth to not exceed formwork design pressures and in a manner to avoid inclined construction joints.

2. Consolidate placed concrete with mechanical vibrating equipment according to ACI 301.

3. Do not use vibrators to transport concrete inside forms. Insert and withdraw vibrators vertically at uniformly spaced locations to rapidly penetrate placed layer and at least 6 inches into preceding layer. Do not insert vibrators into lower layers of concrete that have begun to lose plasticity. At each insertion, limit duration of vibration to time necessary to consolidate concrete and complete embedment of reinforcement and other embedded items without causing mixture constituents to segregate.

D. Deposit and consolidate concrete for floors and slabs in a continuous operation, within limits of construction joints, until placement of a panel or section is complete.

1. Consolidate concrete during placement operations so concrete is thoroughly worked around reinforcement and other embedded items and into corners.

2. Maintain reinforcement in position on chairs during concrete placement.

3. Screed slab surfaces with a straightedge and strike off to correct elevations.

4. Slope surfaces uniformly to drains where required.

5. Begin initial floating using bull floats or darbies to form a uniform and open-textured surface plane, before excess bleedwater appears on the surface. Do not further disturb slab surfaces before starting finishing operations.

E. Cold-Weather Placement: Comply with ACI 306.1 and as follows. Protect concrete work from physical damage or reduced strength that could be caused by frost, freezing actions, or low temperatures.

1. When average high and low temperature is expected to fall below 40 deg F for three successive days, maintain delivered concrete mixture temperature within the temperature range required by ACI 301.

2. Do not use frozen materials or materials containing ice or snow. Do not place concrete on frozen subgrade or on subgrade containing frozen materials.

3. Do not use calcium chloride, salt, or other materials containing antifreeze agents or chemical accelerators unless otherwise specified and approved in mixture designs.

F. Hot-Weather Placement: Comply with ACI 301 and ACI 305R and as follows:

1. Maintain concrete temperature below 90 deg F at time of placement. Chilled mixing water or chopped ice may be used to control temperature, provided water equivalent of ice is calculated to total amount of mixing water. Using liquid nitrogen to cool concrete is Contractor's option.

2. Fog-spray forms, steel reinforcement, and subgrade just before placing concrete. Keep subgrade uniformly moist without standing water, soft spots, or dry areas.

3.9 FINISHING FORMED SURFACES

A. Rough-Formed Finish: As-cast concrete texture imparted by form-facing material with tie holes and defects corrected and patched. Remove fins and other projections that exceed specified limits on formed-surface irregularities.

1. Apply to concrete surfaces not exposed to public view.

B. Related Unformed Surfaces: At tops of walls, horizontal offsets, and similar unformed surfaces adjacent to formed surfaces, strike off smooth and finish with a texture matching adjacent formed surfaces. Continue final surface treatment of formed surfaces uniformly across adjacent unformed surfaces unless otherwise indicated.

3.10 FINISHING FLOORS AND SLABS

A. General: Comply with ACI 302.1R recommendations for screeding, restraightening, and finishing operations for concrete surfaces. Do not wet concrete surfaces.

B. Float Finish: Consolidate surface with power-driven floats or by hand floating if area is small or inaccessible to power driven floats. Restraighten, cut down high spots, and fill low spots. Repeat float passes and restraightening until surface is left with a uniform, smooth, granular texture.

1. Apply float finish to surfaces to receive trowel finish and to receive broom finish.

C. Trowel Finish: After applying float finish, apply first troweling and consolidate concrete by hand or power-driven trowel. Continue troweling passes and restraighten until surface is free of trowel marks and uniform in texture and appearance. Grind smooth any surface defects that would telegraph through applied coatings or floor coverings.

1. Apply a trowel finish to surfaces exposed to view or to be covered with resilient flooring, ceramic or quarry tile set over a cleavage membrane, paint, or another thin-film-finish coating system.

a. For fiber reinforced concrete, to provide consolidation and bury surface fibers, open slab surfaces to be struck off with a vibrating screed or laser screed. Where a laser screed is used, adjust the magnitude of vibration and control the speed of the refracting leveling head to ensure adequate consolidation of the concrete and embedment of the fibers. Magnesium floats in the form of a bullfloat, channel radius float, or highway straightedge to be used to establish a surface and close tears or open areas. Do not use wood floats.

b. For slabs to receive Flooring Treatment, provide a power trowelled finish, do not hand trowel.

2. Flatness and Levelness: Finish surfaces to the following tolerances, according to ASTM E 1155, for a randomly trafficked floor surface:

a. Conventional: Specified overall values of flatness, F(F) 20; and of levelness, F(L) 15; with minimum local values of flatness, F(F) 15; and of levelness, F(L) 10; for thickset tile finishes and all other floor finishes not noted below.

b. Moderately Flat: Specified overall values of flatness, F(F) 25; and of levelness, F(L) 20; with minimum local values of flatness, F(F) 17; and of levelness, F(L) 15; for slabs to receive vinyl composition tile,.

c. Flat for Slabs on Grade: Specified overall values of flatness, F(F) 35; and of levelness, F(L) 25; with minimum local values of flatness, F(F) 24; and of levelness, F(L) 17; for slabs to receive resilient wood flooring, and .

3. Finish and measure surface so gap at any point between concrete surface and an unleveled, freestanding, 10-ft.-long straightedge resting on two high spots and placed anywhere on the surface does not exceed 1/4 inch.

4. For all floor finish classifications, also measure floor finish tolerances after slab has cured and dried out, within 2 weeks before installation of floor finish materials to establish compliance with flooring manufacturer's tolerance requirements and to determine if corrective leveling is required.

D. Trowel and Fine-Broom Finish: Apply a first trowel finish to surfaces to receive vinyl composition tile. While concrete is still plastic, slightly scarify surface with a fine broom.

1. Comply with flatness and levelness tolerances for trowel-finished floor surfaces.

E. Broom Finish: Apply a broom finish to exterior concrete walks, slabs, platforms, steps, ramps, and elsewhere as indicated.

1. Immediately after float finishing, slightly roughen trafficked surface by brooming with fiber-bristle broom perpendicular to main traffic route. Coordinate required final finish with Architect before application. For synthetic fiber reinforced concrete, pull broom in a single direction and do not excessively overlap previously textured concrete.

F. Exposed Architectural Concrete Surfaces: Use the same finish procedure for all pours. All pours to be done in similar weather conditions. Use breathable sealer after set to prevent efflorescence.

G. Exterior Concrete Walks and Slabs: Apply penetrating, silane sealer per manufacturer's instructions.

3.11 MISCELLANEOUS CONCRETE ITEMS

A. Filling In: Fill in holes and openings left in concrete structures after work of other trades is in place unless otherwise indicated. Mix, place, and cure concrete, as specified, to blend with in-place construction. Provide other miscellaneous concrete filling indicated or required to complete the Work.

B. Curbs: Provide monolithic finish to interior curbs by stripping forms while concrete is still green and by steel-troweling surfaces to a hard, dense finish with corners, intersections, and terminations slightly rounded.

C. Equipment Bases and Foundations:

1. Coordinate sizes and locations of concrete bases with actual equipment provided.

2. Construct concrete bases 4 inches high unless otherwise indicated; and extend base not less than 6 inches in each direction beyond the maximum dimensions of supported equipment unless otherwise indicated or unless required for seismic anchor support.

3. Minimum Compressive Strength: 4000 psi at 28 days.

4. Install dowel rods to connect concrete base to concrete floor. Unless otherwise indicated, install dowel rods on 18-inch centers around the full perimeter of concrete base.

5. For supported equipment, install epoxy-coated anchor bolts that extend through concrete base, and anchor into structural concrete substrate.

6. Prior to pouring concrete, place and secure anchorage devices. Use setting drawings, templates, diagrams, instructions, and directions furnished with items to be embedded.

7. Cast anchor-bolt insert into bases. Install anchor bolts to elevations required for proper attachment to supported equipment.

D. Steel Pan Stairs: Provide concrete fill for steel pan stair treads, landings, and associated items. Cast-in inserts and accessories as shown on Drawings. Screed, tamp, and trowel finish concrete surfaces.

3.12 CONCRETE PROTECTING AND CURING

A. General: Protect freshly placed concrete from premature drying and excessive cold or hot temperatures. Comply with ACI 306.1 for cold-weather protection and ACI 301 and 305R for hot-weather protection during curing.

B. Slabs: Protect slabs within building from precipitation accumulation. Immediately remove water, snow or ice from surface of slabs within building regardless if source is from precipitation, construction activities, etc.

C. Evaporation Retarder: Apply evaporation retarder to unformed concrete surfaces if hot, dry, or windy conditions cause moisture loss approaching 0.2 lb/sq. ft. x h before and during finishing operations. Apply according to manufacturer's written instructions after placing, screeding, and bull floating or darbying concrete, but before float finishing.

D. Formed Surfaces: Cure formed concrete surfaces, including underside of beams, supported slabs, and other similar surfaces. If forms remain during curing period, moist cure after loosening forms. If removing forms before end of curing period, continue curing for the remainder of the curing period.

E. Unformed Surfaces: Begin curing immediately after finishing concrete. Cure unformed surfaces, including floors and slabs, concrete floor toppings, and other surfaces. Protect all slabs from precipitation accumulation.

F. Cure concrete according to ACI 308.1, by one of the following methods:

1. Moisture-Retaining-Cover Curing: Cover concrete surfaces with moisture-retaining cover for curing concrete, placed in widest practicable width, with sides and ends lapped at least 12 inches, and sealed by waterproof tape or adhesive. Cure for not less than seven days. Immediately correct any holes or tears during curing period using cover material and waterproof tape.

   a. Use moisture-retaining covers to cure all interior slabs on grade.

2. Curing Compound: Apply uniformly in continuous operation by power spray or roller according to manufacturer's written instructions. Recoat areas subjected to heavy rainfall within three hours after initial application. Maintain continuity of coating and correct damage during curing period.

   a. Ensure compatibility of curing compounds with finish flooring and adhesives, prior to use, otherwise provide curing method such as continuous sprinkling, or remove curing compound through blast-tracking or similar method prior to installation of flooring.

3.13 JOINT SEALING

A. Prepare, clean, and install slab control joint sealer according to manufacturer's written instructions.

1. Defer joint sealing until concrete has aged at least one month(s). Do not seal joints until construction traffic has permanently ceased.

B. Remove dirt, debris, saw cuttings, curing compounds, and sealers from joints; leave contact faces of joint clean and dry.

C. Install semirigid joint sealer full depth in saw-cut joints and at least 2 inches deep in formed joints. Overfill joint and trim joint sealer flush with top of joint after hardening.

3.14 CONCRETE SURFACE CORRECTIVE WORK

A. Defective Concrete: Correct and patch defective areas when approved by Architect. Remove and replace concrete that cannot be corrected and patched to Architect's approval.

B. Correcting Formed Surfaces: Surface defects include color and texture irregularities, cracks, spalls, air bubbles, honeycombs, rock pockets, fins, exposed or otherwise visible fiber reinforcement, and other projections on the surface, and stains and other discolorations that cannot be removed by cleaning.

1. Immediately after form removal, cut out honeycombs, rock pockets, and voids more than 1/2 inch in any dimension to solid concrete. Limit cut depth to 3/4 inch. Make edges of cuts perpendicular to concrete surface. Remove exposed or otherwise visible fiber reinforcement from the concrete surface. Clean, dampen with water, and brush-coat holes and voids with bonding agent. Fill and compact with corrective mortar before bonding agent has dried. Fill form-tie voids with corrective mortar or cone plugs secured in place with bonding agent.

2. Correct defects on surfaces exposed to view by blending white Portland cement and standard Portland cement so that, when dry, corrective mortar will match surrounding color. Patch a test area 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.

3. Correct defects on concealed formed surfaces that affect concrete's durability and structural performance as determined by Architect.

C. Correcting Unformed Surfaces: Test unformed surfaces, such as floors and slabs, for finish and verify surface tolerances specified for each surface. Correct low and high areas. Test surfaces sloped to drain for trueness of slope and smoothness; use a sloped template.

1. Correct finished surfaces containing defects. Surface defects include spalls, popouts, honeycombs, rock pockets, crazing and cracks in excess of 0.01 inch wide or that penetrate to reinforcement or completely through unreinforced sections regardless of width, and other objectionable conditions such as exposed or otherwise visible fiber reinforcement.

2. After concrete has cured at least 14 days, correct high areas by grinding.

3. Remove exposed or otherwise visible fiber reinforcement from the concrete surface. If concrete surface is damaged by the process of fiber removal, correct surface as described by the remainder of this section.

4. Correct localized low areas during or immediately after completing surface finishing operations by cutting out low areas and replacing with thin coat patching mortar. Finish corrected areas to blend into adjacent concrete.

5. Correct other low areas scheduled to remain exposed with a corrective overlayment. Cut out low areas to ensure a minimum corrective overlayment depth of 1/4 inch to match adjacent floor elevations. Prepare, mix, and apply corrective overlayment and primer according to manufacturer's written instructions to produce a smooth, uniform, plane, and level surface.

6. Correct defective areas, except random cracks and single holes 1 inch or less in diameter, by cutting out and replacing with fresh concrete. Remove defective areas with clean, square cuts and expose steel reinforcement with at least a 3/4-inch clearance all around. Dampen concrete surfaces in contact with patching concrete and apply bonding agent. Mix patching concrete of same materials and mixture as original concrete except without coarse aggregate. Place, compact, and finish to blend with adjacent finished concrete. Cure in same manner as adjacent concrete.

7. Correct random cracks and single holes 1 inch or less in diameter with corrective overlayment. Groove top of cracks and cut out holes to sound concrete and clean off dust, dirt, and loose particles. Dampen cleaned concrete. Place corrective overlayment before surface has dried. Finish to match adjacent concrete. Keep patched area continuously moist for at least 72 hours.

D. Perform structural reconstruction of existing concrete according to the Drawings.

3.15 FIELD QUALITY CONTROL

A. Testing and Inspecting: Owner will engage a special inspector and qualified testing and inspecting agency to perform field tests and inspections and prepare test reports, except where noted.

B. Contractor to supply all batch tickets to Owner's testing agency. Batch tickets to note w/c ratio and amount of water allowed to be added at Project site.

C. Inspections:

1. Steel reinforcement placement.

   a. Installation of masonry wall reinforcement dowels prior to pouring of elevated slabs.

2. Steel reinforcement welding.

3. Chemical Anchors: Test 5% of all chemical anchors in tension, randomly selected but in varied locations. Testing to be in accordance with ASTM E 488 to the approved manufacturer's allowable loads. Concrete must cure a minimum of 3 days prior to testing. Do not test anchors until after the anchor manufacturer's recommended curing time. If an anchor fails during this test additional anchors may be requested to be tested as directed by the Architect.

4. Headed bolts and studs.

5. Verification of use of required design mixture.

6. Concrete placement, including conveying and depositing.

7. Curing procedures and maintenance of curing temperature.

8. Verification of concrete strength before removal of shores and forms from beams and slabs.

9. Vapor barrier inspection after installation. To be performed by the vapor barrier manufacturer. Verify correct installation according to specifications and details. To be performed no more than 48 hours prior to slab pour.

D. Concrete Tests: Testing of composite samples of fresh concrete obtained according to ASTM C 172 shall be performed according to the following requirements:

1. Testing Frequency: Obtain at least one composite sample for each 100 cu. yd. or fraction thereof of each concrete mixture placed each day, nor less than once per each 5000 square foot of surface area of walls or slabs.

   a. When frequency of testing will provide fewer than five compressive-strength tests for each concrete mixture, testing shall be conducted from at least five randomly selected batches or from each batch if fewer than five are used.

2. Include corresponding concrete mix batch tickets with each test report.

3. Indicate amount of water added to batch at Project site.

4. Slump: ASTM C 143/C 143M; one test at point of placement for each composite sample, but not less than one test for each day's pour of each concrete mixture. Perform additional tests when concrete consistency appears to change. Measure after slump adjustment. Pumped concrete is to be tested at point of placement, with an additional slump test taken at point of delivery.

5. Air Content: ASTM C 231, pressure method, for normal-weight concrete; ASTM C 173/C 173M, volumetric method, for structural lightweight concrete; one test for each composite sample, but not less than one test for each day's pour of each concrete mixture.

6. Concrete Temperature: ASTM C 1064/C 1064M; one test hourly when air temperature is 40 deg F and below and when 80 deg F and above, and one test for each composite sample.

7. Density (Unit Weight): ASTM C 138/C 138M, fresh unit weight of concrete. Two tests per truck load; one at beginning of pour and near end of pour.

8. Unit Weight: ASTM C 567, fresh unit weight of structural lightweight concrete; one test for each composite sample, but not less than one test for each day's pour of each concrete mixture.

9. Compression Test Specimens: ASTM C 31/C 31M.

   a. Cast and standard cure six (6) cylinder specimens for each composite sample.
   b. Cast and field cure two (2) standard cylinder specimens for each composite sample.
   c. Autoclave curing and oven-drying of test specimens containing synthetic fiber is not permitted.

10. Compressive-Strength Tests: ASTM C 39/C 39M;

   a. Test two standard cured specimens at 7 days, three specimens at 28 days, and retain one specimen for testing at 56 days as deemed necessary by Architect.

   b. Test two field-cured specimens at 28 days.

   c. A compressive-strength test shall be the average compressive strength from a set of two specimens obtained from same composite sample and tested at age indicated.

   d. If one specimen in the test shows evidence of improper sampling, molding or testing, discard the specimen and consider the strength of the remaining cylinders to be the test result. If more than one specimen in a test shows any defects, discard the entire test.

11. Test for workability and air content of each synthetic fiber reinforced concrete mixture composite sample taken according to ASTM C172 (except that wet-sieving is not permitted) and whenever consistency of concrete appears to vary, according to ASTM C 1116.

12. When strength of field-cured cylinders is less than 85 percent of companion laboratory-cured cylinders, Contractor shall evaluate operations and provide corrective procedures for protecting and curing in-place concrete.

13. Strength of each concrete mixture will be satisfactory if every average of any three consecutive compressive-strength tests equals or exceeds specified compressive strength and no compressive-strength test value falls below specified compressive strength by more than 500 psi.

14. Test results shall be reported in writing to Architect, concrete manufacturer, and Contractor within 48 hours of testing. Reports of compressive-strength tests shall contain Project identification name and number, date of concrete placement, name of concrete testing and inspecting agency, location of concrete batch in Work, design compressive strength at 28 days, concrete mixture proportions and materials, compressive breaking strength, and type of break for both 7- and 28-day tests.

15. Nondestructive Testing: Impact-echo, ultrasonic methods, or other nondestructive methods may be permitted by Architect but will not be used as sole basis for approval or rejection of concrete.

16. Additional Tests: Testing and inspecting agency shall make additional tests of concrete when test results indicate that slump, air entrainment, compressive strengths, or other requirements have not been met, as directed by Architect. Testing and inspecting agency may conduct tests to determine adequacy of concrete by cored cylinders complying with ASTM C 42/C 42M or by other methods as directed by Architect.

17. Additional testing and inspecting, at Contractor's expense, will be performed to determine compliance of replaced or additional work with specified requirements.

18. Correct deficiencies in the Work that test reports and inspections indicate do not comply with the Contract Documents.

E. Measure floor and slab flatness and levelness for “Flat” floor classifications to receive resilient wood flooring, according to ASTM E 1155 within 72 hours of finishing.

END OF SECTION 03 30 00

SECTION 04 01 20.19 - UNIT MASONRY RESTORATION

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. Repointing joints with mortar.

1.3 DEFINITIONS

A. Rebuilding (Setting) Mortar: Mortar used to set and anchor masonry in a structure, distinct from pointing mortar installed after masonry is set in place.

1.4 SEQUENCING AND SCHEDULING

A. Work Sequence: Perform unit masonry restoration work in the following sequence, which includes work specified in this and other Sections:

1. Rake out mortar from joints to be repointed.
2. Point mortar joints.
3. After reconstruction and repointing have been completed and cured, perform a final cleaning to remove residues from this work.

1.5 SUBMITTALS, GENERAL

A. General: Submit all action submittals and informational submittals required by this Section concurrently.

1.6 ACTION SUBMITTALS

A. Product Data: For each type of product indicated.

1. Face brick.
2. Building brick.
3. Portland cement.

1.7 INFORMATIONAL SUBMITTALS

A. Qualification Data: For unit masonry restoration specialist including field supervisors and workers.
B. Repointing program.
C. Quality-control program.

1.8 QUALITY ASSURANCE

A. Unit Masonry Restoration Specialist Qualifications: Engage an experienced unit masonry restoration firm to perform work of this Section. Firm shall have completed work similar in material, design, and extent to that indicated for this Project with a record of successful in-service performance. Experience in only installing masonry is insufficient experience for masonry restoration work.

1. Field Supervision: Unit masonry restoration specialist firm shall maintain experienced full-time supervisors on Project site during times that unit masonry restoration work is in progress.

2. Workers: Persons who are experienced in unit masonry restoration work of types they will be performing.

3. At Contractor's option, work may be divided between two specialist firms: one for cleaning work and one for reconstruction/repointing work.

B. Repointing Program: Prepare a written repointing program that describes repointing process in detail, including materials, methods, and equipment to be used; and protection of surrounding materials.

C. Quality-Control Program: Prepare a written quality-control program for this Project to systematically demonstrate the ability of personnel to properly follow methods and use materials and tools without damaging masonry. Include provisions for supervising performance and preventing damage.

1.9 DELIVERY, STORAGE, AND HANDLING

A. Deliver packaged materials to Project site in manufacturer's original and unopened containers, labeled with manufacturer's name and type of products.
B. Store cementitious materials on elevated platforms, under cover, and in a dry location. Do not use cementitious materials that have become damp.
C. Store hydrated lime in manufacturer's original and unopened containers. Discard lime if containers have been damaged or have been opened for more than two days.
D. Store sand where grading and other required characteristics can be maintained and contamination avoided.

1.10 FIELD CONDITIONS

A. For manufactured reconstruction materials, perform work within the environmental limits set by each manufacturer.

PART 2 - PRODUCTS

2.1 MORTAR MATERIALS

A. Portland Cement: ASTM C150/C150M, Type I or Type II, except Type III may be used for cold-weather construction; white or gray, or both where required for color matching of mortar.

1. Provide cement containing not more than 0.60 percent total alkali when tested according to ASTM C114.

B. Hydrated Lime: ASTM C207, Type S.

C. Mortar Sand: ASTM C144.

1. Exposed Mortar: Match size, texture, color, and gradation of existing mortar sand as closely as possible. Blend several sands if necessary to achieve suitable match.

D. Water: Potable.

2.2 MORTAR MIXES

A. Measurement and Mixing: Measure cementitious materials and sand in a dry condition by volume or equivalent weight. Do not measure by shovel; use known measure. Mix materials in a clean, mechanical batch mixer.

1. Mixing Pointing Mortar: Thoroughly mix cementitious materials and sand together before adding any water. Then mix again, adding only enough water to produce a damp, unworkable mix that retains its form when pressed into a ball. Maintain mortar in this dampened condition for 15 to 30 minutes. Add remaining water in small portions until mortar reaches desired consistency. Use mortar within one hour of final mixing; do not retemper or use partially hardened material.

B. Mortar: Produce mortar of color required by using specified ingredients. Do not alter specified proportions without Architect's approval.

C. Do not use admixtures in mortar unless otherwise indicated.

D. Mixes: Mix mortar materials in the following proportions:

1. Pointing Mortar:

a. By Type: ASTM C270, Proportion Specification, Type N unless otherwise indicated; with cementitious material limited to Portland cement and lime.

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.
B. Use the gentlest means to perform the Work and take the greatest of care to ensure materials are not damaged in the course of the Work.
C. Proceed with installation only after unsatisfactory conditions have been corrected.
D. Beginning installation constitutes Contractor's acceptance of substrates and conditions.

3.2 MASONRY REPOINTING, GENERAL

A. Appearance Standard: Repointed surfaces are to have a uniform appearance as viewed from 20 feet away by Architect.

3.3 REPOINTING

A. Rake out and repoint joints to the following extent:

1. All joints in areas indicated.

2. Joints indicated as sealant-filled joints.

3. Joints at locations of the following defects:

a. Holes and missing mortar.
b. Cracks that can be penetrated 1/4 inch or more by a knife blade 0.027 inch thick.
c. Cracks 1/8 inch or more in width and of any depth.
d. Hollow-sounding joints when tapped by metal object.
e. Eroded surfaces 1/4 inch or more deep.
f. Deterioration to point that mortar can be easily removed by hand, without tools.
g. Joints filled with substances other than mortar.

B. Do not rake out and repoint joints where not required.

C. Rake out joints as follows, according to procedures demonstrated in approved mockup:

1. Remove mortar from joints to depth of joint width plus 1/8 inch, but not less than 1/2 inch and not less than that required to expose sound, unweathered mortar. Do not remove unsound mortar more than 2 inches deep; consult Architect for direction.

2. Remove mortar from brick and other masonry surfaces within raked-out joints to provide reveals with square backs and to expose masonry for contact with pointing mortar. Brush, vacuum, or flush joints to remove dirt and loose debris.

3. Do not spall edges of brick or other masonry units or widen joints. Replace or patch damaged brick or other masonry units as directed by Architect.

a. Cut out mortar by hand with chisel and resilient mallet. Do not use power-operated grinders without Architect's written approval.

D. Notify Architect of unforeseen detrimental conditions including voids in mortar joints, cracks, loose masonry units, rotted wood, rusted metal, and other deteriorated items.

E. Pointing with Mortar:

1. Rinse joint surfaces with water to remove dust and mortar particles. Time rinsing application so, at time of pointing, joint surfaces are damp but free of standing water. If rinse water dries, dampen joint surfaces before pointing.

2. Apply pointing mortar first to areas where existing mortar was removed to depths greater than surrounding areas. Apply in layers not greater than 3/8 inch until a uniform depth is formed. Fully compact each layer and allow it to become thumbprint hard before applying next layer.

3. After deep areas have been filled to same depth as remaining joints, point joints by placing mortar in layers not greater than 3/8 inch. Fully compact each layer and allow to become thumbprint hard before applying next layer. Where existing masonry units have worn or rounded edges, slightly recess finished mortar surface below face of masonry to avoid widened joint faces. Take care not to spread mortar beyond joint edges onto exposed masonry surfaces or to featheredge the mortar.

4. When mortar is thumbprint hard, tool joints to match original appearance of joints as demonstrated in approved mockup. Remove excess mortar from edge of joint by brushing.

5. Cure mortar by maintaining in thoroughly damp condition for at least 72 consecutive hours, including weekends and holidays.

6. Hairline cracking within mortar or mortar separation at edge of a joint is unacceptable. Completely remove such mortar and repoint.

3.4 FINAL CLEANING

A. After mortar has fully hardened, thoroughly clean exposed masonry surfaces of excess mortar and foreign matter; use wood scrapers, stiff-nylon or -fiber brushes, and clean water applied by low-pressure spray.

1. Do not use metal scrapers or brushes.
2. Do not use acidic or alkaline cleaners.

B. Clean adjacent nonmasonry surfaces. Use detergent and soft brushes or cloths.

C. Remove masking materials, leaving no residues that could trap dirt.

D. Sweep and rake adjacent pavement and grounds to remove mortar and debris. Where necessary, pressure wash pavement surfaces to remove mortar, dust, dirt, and stains.

3.5 FIELD QUALITY CONTROL

A. Architect's Project Representatives: Architect will assign Project representatives to help carry out Architect's responsibilities at the site, including observing progress and quality of portion of the Work completed. Allow Architect's Project representatives use of lift devices and scaffolding, as needed, to observe progress and quality of portion of the Work completed.

B. Notify Architect's Project representatives in advance of times when lift devices and scaffolding will be relocated. Do not relocate lift devices and scaffolding until Architect's Project representatives have had reasonable opportunity to make inspections and observations of work areas at lift device or scaffold location.

END OF SECTION 04 01 20.19

SECTION 04 20 00 - UNIT MASONRY

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. Concrete masonry units.
2. Concrete building brick.
3. Face brick.
4. Mortar and grout.
5. Steel reinforcing bars.
6. Masonry-joint reinforcement.
7. Ties and anchors.
8. Embedded flashing.
9. Miscellaneous masonry accessories.

B. Products Installed but not Furnished under This Section:

1. Steel lintels in unit masonry.
2. Cavity wall insulation.

1.3 DEFINITIONS

A. CMU(s): Concrete masonry unit(s).
B. NRC: Noise Reduction Coefficient.
C. Reinforced Masonry: Masonry containing reinforcing steel in grouted cells.

1.4 PREINSTALLATION MEETINGS

A. Preinstallation Conference: Conduct conference at Project site.

1.5 SUBMITTALS, GENERAL

A. General: Submit all action submittals (except Samples for Verification) and informational submittals required by this Section concurrently.

1.6 ACTION SUBMITTALS

A. Product Data: For each type of product indicated.

1. CMUs.
2. Concrete building brick.
3. Face brick.
4. Portland cement.
5. Colored cement products.
6. Aggregate for mortar.
7. Masonry-joint reinforcement for single-wythe masonry.
8. Masonry-joint reinforcement for multiwythe masonry.
9. Individual wire ties.
10. Anchors for connecting CMU to existing masonry.
11. Adjustable anchors for connecting to structural steel framing.
12. Joint stabilization anchors.
13. Adjustable masonry-veneer anchors.
14. Top-of-wall wind clips.
15. Top-of-wall concealed wind anchors.
16. Adhesives, primers, and seam tapes for flashings.
17. Proprietary cleaner.

B. As-Specified Data: If the product to be incorporated into Project is as specified by manufacturer name and product designation in Part 2 of this Specification Section, submit the "**As-Specified Verification Form**" (attached to Division 01 Section "Submittal Procedures") for each item listed below, otherwise submit full Product Data for the following:

1. Face brick.
2. Water-repellent admixture.
3. Flexible flashing.
4. Drip plate flashing.
5. Termination bars for flexible flashing.
6. Compressible filler.
7. Preformed control-joint gaskets.
8. Weep/cavity vent products.
9. Cavity drainage material.

C. Shop Drawings: For the following:

1. Reinforcing Steel: Detail bending, lap lengths, and placement of unit masonry reinforcing bars. Comply with ACI 315. Show elevations of reinforced walls. Show all anchorage and top-of-wall wind clips and concealed wind anchors.

2. Concrete Masonry Control Joint Layout Plans: Show all concrete masonry unit control joint locations, at minimum 1/8 inch = 1 ft. scale.

   a. For each joint, indicate type of control joint; i.e., at columns, indicate if joint is provided by the masonry grouted into the column web, or by a joint-stabilization anchor.

b. Indicate control joint location and type in accordance with the typical masonry plan details shown on the Drawings and as specified.

D. Samples for Initial Selection:

1. Face brick, in the form of portable display panels.
2. Colored mortar.

E. Samples for Verification: For each type and color of the following:

1. Face brick, in the form of straps of five or more bricks.
2. Pigmented mortar. Make Samples using same sand and mortar ingredients to be used on Project.

1.7 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 brick, include size-variation data verifying that actual range of sizes falls within specified tolerances.
c. For exposed brick, include test report for efflorescence according to ASTM C67.
d. For masonry units, include data and calculations establishing average net-area compressive strength of units.

2. Cementitious materials. Include name of manufacturer, brand name, and type.

3. Preblended, dry mortar mixes. Include description of type and proportions of ingredients.

4. Grout mixes. Include description of type and proportions of ingredients.

5. Reinforcing bars.

6. Low-alloy steel reinforcing bars.

7. Joint reinforcement.

8. 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, according to ASTM C1019, 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.

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. Store cementitious materials on elevated platforms, under cover, and in a dry location. Do not use cementitious materials that have become damp.

C. Store aggregates where grading and other required characteristics can be maintained and contamination avoided.

D. 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.

E. 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 down both sides of walls, and hold cover securely in place.

2. Where one wythe of multiwythe masonry walls is completed in advance of other wythes, secure cover a minimum of 24 inches down face next to unconstructed wythe, and hold cover 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.

1. Cold-Weather Cleaning: Use liquid cleaning methods only when air temperature is 40 deg F 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.

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 PERFORMANCE REQUIREMENTS

A. Provide unit masonry that develops indicated net-area compressive strengths at 28 days.

1. Determine net-area compressive strength of masonry from average net-area compressive strengths of masonry units and mortar types (unit-strength method) according to TMS 602.

2.3 UNIT MASONRY, GENERAL

A. Masonry Standard: Comply with TMS 602, 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 20 feet vertically and horizontally of a walking surface.

C. Fire-Resistance Ratings: Comply with requirements for fire-resistance-rated assembly designs indicated.

1. Where fire-resistance-rated construction is indicated, units shall be listed and labeled by a qualified testing agency acceptable to authorities having jurisdiction.

2.4 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. CMUs: ASTM C90.

1. Unit Compressive Strength: Provide units with minimum average net-area compressive strength of 2800 psi.
2. Density Classification: Lightweight unless otherwise indicated.
3. Size (Width): Manufactured to dimensions 3/8 inch less than nominal dimensions.
4. Exposed Faces: Provide uniform fine texture units suitable for painting.
5. Faces to Receive Plaster: Where units are indicated to receive a direct application of plaster, provide textured-face units made with gap-graded aggregates.

C. Concrete Building Brick: ASTM C55.

1. Unit Compressive Strength: Provide units with minimum average net-area compressive strength of 2800 psi.
2. Density Classification: Lightweight.
3. Size (Actual Dimensions): 3-5/8 inches wide by 2-1/4 inches high by 7-5/8 inches long.

2.5 MASONRY 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.

2.6 BRICK

A. General: Provide shapes indicated and as follows, with exposed surfaces matching finish and color of exposed faces of adjacent units:

1. For ends of sills and caps and for similar applications that would otherwise expose unfinished brick surfaces, provide units without cores or frogs and with exposed surfaces finished.

2. Provide special shapes for applications where stretcher units cannot accommodate special conditions, including those at corners, movement joints, bond beams, sashes, and lintels.

3. Provide special shapes for applications requiring brick of size, form, color, and texture on exposed surfaces that cannot be produced by sawing.

4. Provide special shapes for applications where shapes produced by sawing would result in sawed surfaces being exposed to view.

B. Face Brick: Facing brick complying with ASTM C216.

1. Basis-of-Design Product: Subject to compliance with requirements, provide Glen-Gery Lawrenceville Brick Driftwood.
2. Grade: SW.
3. Type: FBS.
4. Initial Rate of Absorption: Less than 30 g/30 sq. in. per minute when tested according to ASTM C67.
5. Efflorescence: Provide brick that has been tested according to ASTM C67 and is rated "not effloresced."
6. Application: Use where brick is exposed unless otherwise indicated.
7. Where shown to "match existing" provide face brick matching color range, texture, and size of existing adjacent brickwork.

C. Building (Common) Brick: ASTM C62, Grade SW.

1. Size: Match size of face brick.
2. Application: Use where brick is indicated for concealed locations.

2.7 MORTAR AND GROUT MATERIALS

A. Portland Cement: ASTM C150/C150M, 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 C114.

B. Hydrated Lime: ASTM C207, Type S.

C. Portland Cement-Lime Mix: Packaged blend of Portland cement and hydrated lime containing no other ingredients.

D. Mortar Pigments: Natural and synthetic iron oxides and chromium oxides, compounded for use in mortar mixes and complying with ASTM C979/C979M. Use only pigments with a record of satisfactory performance in masonry mortar.

E. Colored Cement Products: Packaged blend made from Portland cement and hydrated lime and mortar pigments, all complying with specified requirements, and containing no other ingredients.

1. Formulate blend as required to produce color indicated.

a. Color: As selected from manufacturer’s standard colors.

2. Pigments shall not exceed 10 percent of Portland cement by weight.

F. Aggregate for Mortar: ASTM C144.

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 thick, use aggregate graded with 100 percent passing the No. 16 sieve.
3. White-Mortar Aggregates: Natural white sand or crushed white stone.
4. Colored-Mortar Aggregates: Natural sand or crushed stone of color necessary to produce required mortar color.

G. Aggregate for Grout: ASTM C404.

H. Water-Repellent Admixture: Liquid water-repellent mortar admixture intended for use with CMUs containing integral water repellent from same manufacturer.

1. Products: Subject to compliance with requirements, available products that may be incorporated in the Work, include, but are not limited to:

a. GCP Applied Technologies, Inc.; Dry-Block Mortar Admixture.
b. Master Builders Solutions Admixtures US, LLC; MasterPel 240MA.

I. Water: Potable.

2.8 REINFORCEMENT

A. Uncoated-Steel Reinforcing Bars: ASTM A615/A615M or ASTM A996/A996M, Grade 60.

B. Low-Alloy Steel Reinforcing Bars: Where reinforcement is to be welded, provide reinforcing bars meeting ASTM A706/A706M, deformed.

C. 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 (9 gage) steel wire, hot-dip galvanized after fabrication. Provide units designed for number of bars indicated.

1. Products: Subject to compliance with requirements, available products that may be incorporated into the Work include, but are not limited to, the following:

a. Heckmann Building Products Inc., Div. of Mechanical Plastics Corp.; Wire Rebar Positioner (376).
b. Hohmann & Barnard, Inc.; RB Rebar Positioners or RB-Twin Rebar Positioners.
c. Wire-Bond; Figure 8 Rebar Positioners.

D. Masonry-Joint Reinforcement, General: ASTM A951/A951M.

1. Interior Walls: Hot-dip galvanized carbon steel.
2. Exterior Walls: Stainless steel.
3. Wire Size for Side Rods: 0.148-inch diameter (9 gage).
4. Wire Size for Cross Rods: 0.148-inch diameter (9 gage).
5. Wire Size for Veneer Ties: 0.187-inch diameter.
6. Spacing of Cross Rods, Tabs, and Cross Ties: Not more than 16 inches o.c.
7. Provide in lengths of not less than 10 feet, with prefabricated corner and tee units.

E. Masonry-Joint Reinforcement for Single-Wythe Masonry: Horizontal ladder or truss type with single pair of side rods.

1. Products: Subject to compliance with requirements, available products that may be incorporated into the Work include, but are not limited to, the following:

a. Heckmann Building Products Inc., Div. of Mechanical Plastics Corp.; Ladder-Type Masonry Wall Reinforcement (1100).
b. Hohmann & Barnard, Inc.; 220 Ladder Mesh Reinforcement or 120 Truss-Mesh.
c. Wire-Bond; Series 200 Ladder Mesh or 300 Truss Mesh 2 Wire.

F. Masonry-Joint Reinforcement for Multiwythe Masonry:

1. Products: Subject to compliance with requirements, available products that may be incorporated into the Work include, but are not limited to, the following:

a. Hohmann & Barnard, Inc.; 270 Ladder or 170 Truss Eye-Wire.
b. Wire-Bond; Series 800 Ladder or 900 Truss Level-Eye (Hook & Eye).

2. Adjustable (two-piece) type, ladder or truss design, with one side rod at each face shell of backing wythe and with separate adjustable ties with pintle-and-eye connections having a maximum horizontal play of 1/16 inch and maximum vertical adjustment of 1-1/4 inches. Size ties to extend at least halfway through facing wythe but with at least 5/8-inch cover on outside face.

2.9 TIES AND ANCHORS

A. General: Ties and anchors shall extend at least 1-1/2 inches into veneer but with at least a 5/8-inch 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 A82/A82M, with ASTM A153/A153M, Class B-2 coating.
2. Stainless Steel Wire: ASTM A580/A580M, Type 304.
3. Steel Sheet, Galvanized after Fabrication: ASTM A1008/A1008M, Commercial Steel, with ASTM A153/A153M, Class B coating.
4. Stainless Steel Sheet: ASTM A240/A240M or ASTM A666, Type 304.
5. Steel Plates, Shapes, and Bars: ASTM A36/A36M.

C. Individual Wire Ties: Rectangular units with closed ends and not less than 4 inches wide.

1. Products: Subject to compliance with requirements, available products that may be incorporated into the Work include, but are not limited to, the following:

a. Heckmann Building Products Inc., Div. of Mechanical Plastics Corp.; Double Eye Rod Anchor (262) and Double Pintle Tie (263).
b. Hohmann & Barnard, Inc.; Adjustable Wall Ties (Pintles & Eyes).

2. Where wythes do not align or are of different materials, use adjustable ties with pintle-and-eye connections having a maximum adjustment of 1-1/4 inches.

3. Wire: Fabricate from 3/16-inch-diameter, hot-dip galvanized steel wire.

D. Anchors for Connecting CMU to Existing Masonry: Corrugated strips formed from 0.060-inch-thick (16 gage) steel sheet, hot-dip galvanized after fabrication, 1-1/4 inch wide, with 1-1/2 inch bend.

1. Products: Subject to compliance with requirements, available products that may be incorporated into the Work include, but are not limited to, the following:

a. Heckmann Building Products Inc., Div. of Mechanical Plastics Corp.; #187 Hole-Type Brick Veneer Anchor.
b. Wire-Bond; #2501 Veneer Anchor Corrugated.

E. Adjustable Anchors for Connecting to Structural Steel Framing: Provide anchors that allow vertical or horizontal adjustment but resist tension and compression forces perpendicular to plane of wall.

1. Products: Subject to compliance with requirements, available products that may be incorporated into the Work include, but are not limited to, the following:

a. Hohmann & Barnard, Inc.; 359-C - Weld-On Ties and VBT – Vee Byna-Ties.
b. Wire-Bond; #1000C Type I Continuous Weld-On Anchors and #1100 Triangular Ties.

2. Anchor Section for Welding to Steel Frame: Crimped 1/4-inch-diameter, hot-dip galvanized steel wire.

3. Tie Section: Triangular-shaped wire tie made from 0.187-inch-diameter, hot-dip galvanized steel wire.

F. Joint Stabilization Anchors: Provide anchors that bond masonry walls across expansion and control joints while allowing lateral movement, made from hot-dip galvanized-steel.

1. Products: Subject to compliance with requirements, available products that may be incorporated into the Work include, but are not limited to, the following:

a. Heckmann Building Products Inc., Div. of Mechanical Plastics Corp.; Control Joint Anchor (353).
b. Hohmann & Barnard, Inc.; Slip-Set Stabilizer.
c. Wire-Bond; #1700 Control Joint Anchor.

G. Adjustable Masonry-Veneer Anchors:

1. General: Provide anchors that allow vertical adjustment but resist a 100-lbf load in both tension and compression perpendicular to plane of wall without deforming or developing play in excess of 1/16 inch.

2. Fabricate wire ties from 0.187-inch- diameter, stainless steel wire unless otherwise indicated.

3. Screw-Attached, Thermally-Isolated, Masonry-Veneer Anchors: Wire tie and a corrosion-resistant, self-drilling, barrel screw designed to receive wire tie. Barrel has gasketed washer head that covers hole in insulation.

a. Products: Subject to compliance with requirements, available products that may be incorporated into the Work include, but are not limited to, the following:

1) Heckmann Building Products Inc., Div. of Mechanical Plastics Corp.; Original Pos-I-Tie Veneer Anchoring Clip (75), Pos-I-Tie ThermalClip (75TC), and Pintle Wire Tie for ThermalClip (282-N).

2) Hohmann & Barnard, Inc.; Thermal 2-Seal Wing Nut Anchor and Adjustable Wall Ties (pintle).

3) Wire-Bond; #4522 SureTie WS, #4590 Thermal Grip Washer, and #4515 SureTie Double Hook.

H. Top-of-Wall Wind Clips: Provide bent, galvanized steel plate clips as detailed on Drawings.

I. Top-of-Wall Concealed Wind Anchors: Provide hot dip galvanized steel anchors with a deflection sleeve as detailed on Drawings.

1. Products: Subject to compliance with requirements, available products that may be incorporated into the Work include, but are not limited to, the following:

a. Heckmann Building Products Inc., Div. of Mechanical Plastics Corp.; #419 Pin Type Stabilizing Wall Anchor (419) with Plastic Tube (421).
b. Hohmann & Barnard, Inc.; Partition Top Anchor, PTA 420 HS with PTA Tube.
c. Wire-Bond; PTA #4301 Partition Top Anchor with PTA tube.

2.10 EMBEDDED FLASHING MATERIALS

A. Flexible Flashing: Use the following unless otherwise indicated:

1. Copper-Laminated Flashing: 7-oz./sq. ft. copper sheet bonded between two layers of glass-fiber cloth/polymer fabric; non-asphaltic type. Use only where flashing is fully concealed in masonry.

a. Products: Subject to compliance with requirements, available products that may be incorporated into the Work include, but are not limited to, the following:

1) Advanced Building Products, Inc.; Copper Sealtite 2000.
2) Wire-Bond; Copper Seal (Copper Fabric Flashing) #4140.
3) York Manufacturing, Inc.; Multi-Flash 500.

B. Drip Plate Flashing: Fabricate from copper to shape indicated, including inside corners, outside corners, and end dams. Provide hemmed edge drip plate flashing materials with foam seal and adhesive strip as follows:

1. Basis-of-Design Product: Subject to compliance with requirements, provide Hohmann & Barnard, Inc.; FTS Series Drip Plate or comparable product.
2. Width: Not less than 3 inches.
3. Copper: 16-oz./sq. ft.

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.

D. Termination Bars for Flexible Flashing: Stainless steel bars not less than 1/8 inch by 1 inch.

1. Products: Subject to compliance with requirements, available products that may be incorporated into the Work include, but are not limited to, the following:

a. Heckmann Building Products Inc., Div. of Mechanical Plastics Corp.; Termination Bar (1050).
b. Hohmann & Barnard, Inc.; T1 - Termination Bar.
c. Wire-Bond; #4200 Termination Bar.

2.11 MISCELLANEOUS MASONRY ACCESSORIES

A. Compressible Filler: Premolded filler strips complying with ASTM D1056, Grade 2A1; compressible up to 35 percent; of width and thickness indicated; formulated from neoprene.

1. Products: Subject to compliance with requirements, available products that may be incorporated into the Work include, but are not limited to, the following:

a. Hohmann & Barnard, Inc.; NS – Closed Cell Neoprene Sponge.
b. Wire-Bond; #3300 Expansion Joint.

B. Preformed Control-Joint Gaskets: Made from styrene-butadiene-rubber compound, complying with ASTM D2000, Designation M2AA-805 and designed to fit standard sash block and to maintain lateral stability in masonry wall; size and configuration as indicated.

1. Products: Subject to compliance with requirements, available products that may be incorporated into the Work include, but are not limited to, the following:

a. Hohmann & Barnard, Inc.; RS Series – Rubber Control Joint.
b. Wire-Bond; Rubber Control Joint.

C. Weep/Cavity Vent Products: Use the following unless otherwise indicated:

1. Cellular Plastic Weep/Vent: One-piece, flexible extrusion made from UV-resistant polypropylene copolymer, full height and width of head joint and depth 1/8 inch less than depth of outer wythe, in color selected from manufacturer's standard.

a. Products: Subject to compliance with requirements, available products that may be incorporated into the Work include, but are not limited to, the following:

1) Advanced Building Products, Inc.; Mortar Maze Weep Vents.
2) Heckmann Building Products Inc., Div. of Mechanical Plastics Corp.; Cell Vent (85).
3) Hohmann & Barnard, Inc.; QV – Quadro-Vent.
4) Wire-Bond; #3601 Cell Vent.

D. Cavity Drainage Material: Free-draining mesh, made from polymer strands that will not degrade within the wall cavity.

1. Products: Subject to compliance with requirements, available products that may be incorporated into the Work include, but are not limited to, the following:

a. Hohmann & Barnard, Inc.; Mortar Trap or Mortar Web.
b. Mortar Net Solutions; WallDefender.
c. Wire-Bond; Cavity Net DT or Cavity Net.

2. Configuration: Provide one of the following:

a. Strips, full depth of cavity and 10 inches high, with dovetail-shaped notches 7 inches deep that prevent clogging with mortar droppings.

b. Strips, not less than 3/4 inch thick and 10 inches high, with dimpled surface designed to catch mortar droppings and prevent weep holes from clogging with mortar.

2.12 MASONRY CLEANERS

A. Proprietary 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 cleaner manufacturer and manufacturer of masonry units being cleaned.

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. Prosoco, Inc.

2.13 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.

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 C270, Proportion Specification. Provide the following types of mortar for applications stated unless another type is indicated.

1. For concrete masonry unit backup in exterior walls, masonry bearing walls, shear walls and masonry below grade or in contact with earth, use Type S. Not for use in masonry veneer construction.

2. Use Type N mortar in all masonry veneer construction and in all masonry construction other than noted in the requirements for Type S mortar above.

D. Pigmented Mortar: Use colored cement product.

1. Application: Use pigmented mortar for exposed mortar joints with the following units:

a. Decorative CMUs.
b. Pre-faced CMUs.
c. Face brick.

E. Grout for Unit Masonry: Comply with ASTM C476.

1. Use grout of type indicated or, if not otherwise indicated, of type (fine or coarse) that will comply with TMS 602 for dimensions of grout spaces and pour height.
2. Proportion grout in accordance with ASTM C476, Table 1 or paragraph 4.2.2 for specified 28-day compressive strength indicated, but not less than 2000 psi.
3. At new walls – Provide grout with a slump of 8 to 11 inches as measured according to ASTM C143/C143M.
4. At existing interior walls – Provide grout with a slump of 10 to 11 inches as measured in accordance with ASTM C143/C143M.

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. Verify that foundations are within tolerances specified.
2. Verify that reinforcing dowels are properly placed.
3. Verify that substrates are free of substances that impair mortar bond.

B. Before installation, examine rough-in and built-in construction for piping systems to verify actual locations of piping connections.

C. Proceed with installation only after unsatisfactory conditions have been corrected.

D. Beginning installation constitutes Contractor’s acceptance of substrates and conditions.

3.2 INSTALLATION, GENERAL

A. Thickness: Build cavity and composite walls and other masonry construction to full thickness shown. Build single-wythe walls to actual widths of masonry units, using units of widths indicated.

B. Build chases and recesses to accommodate items specified in this and other Sections.

C. Leave openings for equipment to be installed before completing masonry. After installing equipment, complete masonry to match construction immediately adjacent to opening.

D. 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.

E. Select and arrange units for exposed unit masonry to produce a uniform blend of colors and textures. Mix units from several pallets or cubes as they are placed.

F. Matching Existing Masonry: Match coursing, bonding, color, and texture of existing masonry.

G. Wetting of Brick: Wet brick before laying if initial rate of absorption exceeds 30 g/30 sq. in. per minute when tested according to ASTM C67. Allow units to absorb water so they are damp but not wet at time of laying.

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 or minus 1/4 inch.
2. For location of elements in plan, do not vary from that indicated by more than plus or minus 1/2 inch.
3. For location of elements in elevation, do not vary from that indicated by more than plus or minus 1/4 inch in a story height or 1/2 inch 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, or 1/2-inch 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, 1/4 inch in 20 feet, or 1/2-inch maximum.

3. For vertical lines and surfaces, do not vary from plumb by more than 1/4 inch in 10 feet, 3/8 inch in 20 feet, or 1/2-inch 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, 1/4 inch in 20 feet, or 1/2-inch maximum.

5. For lines and surfaces, do not vary from straight by more than 1/4 inch in 10 feet, 3/8 inch in 20 feet, or 1/2-inch maximum.

6. For vertical alignment of exposed head joints, do not vary from plumb by more than 1/4 inch in 10 feet or 1/2-inch maximum.

7. For faces of adjacent exposed masonry units, do not vary from flush alignment by more than 1/16 inch except due to warpage of masonry units within tolerances specified for warpage of units.

C. Joints:

1. For bed joints, do not vary from thickness indicated by more than plus or minus 1/8 inch, with a maximum thickness limited to 1/2 inch.

2. For exposed bed joints, do not vary from bed-joint thickness of adjacent courses by more than 1/8 inch.

3. For head and collar joints, do not vary from thickness indicated by more than plus 3/8 inch or minus 1/4 inch.

4. For exposed head joints, do not vary from thickness indicated by more than plus or minus 1/8 inch. Do not vary from adjacent bed-joint and head-joint thicknesses by more than 1/8 inch.

5. For exposed bed joints and head joints of stacked bond, do not vary from a straight line by more than 1/16 inch from one masonry unit to the next.

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 horizontal face dimensions at corners or jambs.

C. Lay concealed masonry with all units in a wythe in running bond or bonded by lapping not less than 2 inches. Bond and interlock each course of each wythe at corners. Do not use units with less-than-nominal 4-inch horizontal face dimensions at corners or jambs.

D. 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.

E. Built-in Work: As construction progresses, build in items specified in this and other Sections. Fill in solidly with masonry around built-in items.

F. Fill space between steel frames and masonry solidly with mortar unless otherwise indicated.

G. 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.

H. Fill cores in hollow CMUs with grout 24 inches under bearing plates, beams, lintels, posts, and similar items unless otherwise indicated.

I. 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 top-of-wall wind clips or concealed wind anchors to structure above. Grout cells of CMUs solidly and space clips or anchors four feet on center maximum or as indicated on Drawings.

3. At fire-rated partitions, treat joint between top of partition and underside of structure above to comply with Division 07 Section "Joint Firestopping."

3.5 MORTAR BEDDING AND JOINTING

A. Lay 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.
5. Fully bed units and fill cells with mortar at anchors and ties as needed to fully embed anchors and ties in mortar.

B. Lay solid masonry units 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. Tool exposed joints slightly concave when thumbprint hard, using a jointer larger than joint thickness unless otherwise indicated.

D. Cut joints flush for masonry walls to receive plaster or other direct-applied finishes (other than paint) unless otherwise indicated.

E. Cut joints flush where indicated to receive air barriers unless otherwise indicated.

3.6 COMPOSITE MASONRY

A. Bond wythes of composite masonry together as follows:

1. Masonry-Joint Reinforcement: Installed in horizontal mortar joints.

a. Use adjustable-type (two-piece-type) reinforcement.

B. Collar Joints: Solidly fill collar joints by parging face of first wythe that is laid and shoving units of other wythe into place.

C. Corners: Provide interlocking masonry unit bond in each wythe and course at corners unless otherwise indicated.

1. Provide continuity with masonry-joint reinforcement at corners by using prefabricated L-shaped units as well as masonry bonding.

D. Intersecting and Abutting Walls: Unless vertical expansion or control joints are shown at juncture, bond walls together as follows:

1. Provide continuity with masonry-joint reinforcement by using prefabricated T-shaped units.

3.7 CAVITY WALLS

A. Bond wythes of cavity walls together using one of the following methods:

1. Masonry-Joint Reinforcement: Installed in horizontal mortar joints.

a. Use adjustable-type (two-piece-type) reinforcement.

2. Adjustable Masonry-Veneer Anchors: Comply with requirements for anchoring masonry veneers.

B. Keep cavities clean of mortar droppings and other materials during construction. Bevel beds away from cavity, to minimize mortar protrusions into cavity.

C. Install air barrier system to comply with Division 07 Section “Fluid-Applied Membrane Air Barriers.”

D. Installing Cavity Wall Insulation: Place small dabs of adhesive, spaced approximately 12 inches o.c. both ways, on inside face of insulation boards, or attach with plastic fasteners designed for this purpose. Fit courses of insulation between wall ties and other confining obstructions in cavity, with edges butted tightly both ways. Press units firmly against inside wythe of masonry or other construction as shown.

1. Fill cracks and open gaps in insulation with crack sealer compatible with insulation, air barrier, and masonry.

3.8 ANCHORED MASONRY VENEERS

A. Anchor masonry veneers to wall framing and masonry backup with masonry-veneer anchors to comply with the following requirements:

1. Fasten screw-attached anchors through sheathing to wall framing and masonry backup with metal fasteners of type indicated. Use two fasteners unless anchor design only uses one fastener.

2. Embed tie sections in masonry joints.

3. Locate anchor sections to allow maximum vertical differential movement of ties up and down.

4. Space anchors as indicated, but not more than 16 inches o.c. vertically and 16 inches o.c. horizontally, with not less than one anchor for each 2 sq. ft. of wall area. Install additional anchors within 12 inches of openings and at intervals, not exceeding 8 inches, around perimeter.

B. Provide not less than 2 inches of airspace between back of masonry veneer and face of insulation.

1. Keep airspace clean of mortar droppings and other materials during construction. Bevel beds away from airspace, to minimize mortar protrusions into airspace.

3.9 MASONRY-JOINT REINFORCEMENT

A. General: Install entire length of longitudinal side rods in mortar with a minimum cover of 5/8 inch on exterior side of walls, 1/2 inch elsewhere. Lap reinforcement a minimum of 6 inches.

1. Space reinforcement not more than 16 inches o.c.
2. Space reinforcement not more than 8 inches o.c. in parapet walls.
3. Provide reinforcement not more than 8 inches above and below wall openings and extending 12 inches beyond openings in addition to continuous reinforcement.

B. Interrupt joint reinforcement at control and expansion joints unless otherwise indicated.

C. Provide continuity at wall intersections by using prefabricated T-shaped units.

D. Provide continuity at corners by using prefabricated L-shaped units.

E. Cut and bend reinforcing units as directed by manufacturer for continuity at returns, offsets, column fireproofing, pipe enclosures, and other special conditions.

3.10 ANCHORING MASONRY TO STRUCTURAL STEEL AND CONCRETE

A. Anchor masonry to structural steel and concrete, where masonry abuts or faces structural steel or concrete, to comply with the following:

1. Provide an open space not less than 2 inches wide between masonry and structural steel or concrete unless otherwise indicated. Keep open space free of mortar and other rigid materials.

2. Anchor masonry with anchors embedded in masonry joints and attached to structure.

3. Space anchors as indicated, but not more than 16 inches o.c. vertically and 16 inches o.c. horizontally.

3.11 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.

1. Locate joints as indicated on Drawings; if not indicate, locate vertical joints not more than 20 feet o.c. for expansion joints in masonry veneer and 24 feet o.c. for control joints in concrete masonry.

B. Form control joints in concrete masonry as follows:

1. Install preformed control-joint gaskets designed to fit standard sash block.
2. At steel columns, construct control-joint according to Drawings.

C. Form expansion joints in brick as follows:

1. Build in compressible joint fillers where indicated.

2. Form open joint full depth of brick wythe and of width indicated, but not less than 3/8 inch for installation of sealant and backer rod specified in Division 07 Section "Joint Sealants."

3.12 LINTELS

A. Install steel lintels where indicated.

B. Provide masonry lintels where shown and where openings of more than 12 inches for brick-size units and 24 inches for block-size units are shown without structural steel or other supporting lintels.

C. Provide minimum bearing of 8 inches at each jamb unless otherwise indicated.

3.13 FLASHING, WEEP HOLES, AND CAVITY VENTS

A. General: Install embedded flashing and weep holes in masonry at shelf angles, lintels, ledges, other obstructions to downward flow of water in wall, and where indicated. Install cavity vents at shelf angles, ledges, and other obstructions to upward flow of air in cavities, and 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.

2. At multiwythe masonry walls, including cavity walls, extend flashing through outer wythe, turned up a minimum of 12 inches, and at least 6 inches above the top of cavity drainage material or to height as recommended by cavity drainage material manufacturer. Fasten upper edge of flexible flashing to inner wythe through termination bar.

3. At masonry-veneer walls, extend flashing through veneer, across airspace behind veneer, and up face of sheathing at least 12 inches, and at least 6 inches above the top of the cavity drainage material or to height as recommended by cavity drainage material manufacturer. Fasten upper edge of flexible flashing to sheathing through termination bar.

4. Apply a continuous bead of compatible sealant to the top of the termination bar.

5. At lintels, extend flashing a minimum of 6 inches into masonry at each end. At heads and sills, extend flashing 6 inches at ends and turn up not less than 2 inches to form end dams.

6. Install metal drip plate flashing beneath flexible flashing at exterior face of wall as recommended by manufacturer. Stop flexible flashing 1/2 inch back from outside face of wall and adhere flexible flashing to top of metal drip plate flashing.

C. Install weep holes in exterior wythes and veneers in head joints of first course of masonry immediately above embedded flashing.

1. Use specified weep/cavity vent products to form weep holes.
2. Space weep holes 24 inches o.c. unless otherwise indicated.

D. Place cavity drainage material in airspace behind veneers to comply with configuration requirements for cavity drainage material in "Miscellaneous Masonry Accessories" Article.

E. Install cavity vents in head joints in exterior wythes at 24 inches o.c. unless otherwise indicated. Use specified weep/cavity vent products to form cavity vents.

1. Close cavities off vertically and horizontally with blocking in manner indicated. Install through-wall flashing and weep holes above horizontal blocking.

3.14 REINFORCED UNIT MASONRY

A. Temporary Formwork and Shores: Construct formwork and shores as needed to support reinforced masonry elements during construction.

1. Construct formwork to provide shape, line, and dimensions of completed masonry as indicated. Make forms sufficiently tight to prevent leakage of mortar and grout. Brace, tie, and support forms to maintain position and shape during construction and curing of reinforced masonry.

2. Do not remove forms and shores until reinforced masonry members have hardened sufficiently to carry their own weight and that of other loads that may be placed on them during construction.

B. Placing Reinforcement: Comply with requirements in TMS 602.

C. Grouting: Do not place grout until entire height of masonry to be grouted has attained enough strength to resist grout pressure (minimum of 4 hours).

1. Comply with requirements in TMS 602 for cleanouts and for grout placement, including minimum grout space and maximum pour height.
2. At new walls – Limit height of vertical grout pours to not more than 60 inches.
3. At existing walls – Limit height of vertical grout pours to not more than 12.67 ft.

3.15 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: Special inspections according to Level 3 in TMS 402.

1. Begin masonry construction only after inspectors have verified proportions of site-prepared mortar.
2. Place grout only after inspectors have verified compliance of grout spaces and of grades, sizes, and locations of reinforcement.
3. Place grout only after inspectors have verified proportions of site-prepared grout.

C. Testing Prior to Construction: One set of tests.

D. Testing Frequency: One set of tests for each 5000 sq. ft. of wall area or portion thereof.

E. Clay Masonry Unit Test: For each type of unit provided, according to ASTM C67 for compressive strength.

F. Concrete Masonry Unit Test: For each type of unit provided, according to ASTM C140 for compressive strength.

G. Mortar Aggregate Ratio Test (Proportion Specification): For each mix provided, according to ASTM C780.

H. Grout Test (Compressive Strength): For each mix provided, according to ASTM C1019.

I. Reinforcement Inspections: Inspect reinforcement for size and placement.

J. Grout and Mortar Inspection: Inspect grout and mortar mixing operations to ensure mix proportions and procedures comply with specified requirements.

K. Tie and Anchor Inspections: Inspect ties and anchors for type, spacing, and proper installation.

L. Flashing and Accessories Inspections: Inspect flashing and accessories for type and proper installation.

M. Cold-Weather and Hot-Weather Inspections: Inspect masonry construction operations for compliance with specified cold-weather and hot-weather procedures.

3.16 CORRECTING, 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 brick by bucket-and-brush hand-cleaning method described in BIA Technical Notes 20.

6. Clean concrete masonry by applicable cleaning methods indicated in NCMA TEK 8-4A.

7. Clean masonry with a proprietary cleaner applied according to manufacturer's written instructions.

END OF SECTION 04 20 00

SECTION 05 12 00 - STRUCTURAL STEEL FRAMING

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. Structural steel.
2. Fiberglass reinforced polymer (FRP) fabrications
3. Primer.
4. Non-Shrink Grout.

1.3 DEFINITIONS

A. Structural Steel: Elements of structural-steel frame, as classified by AISC 303, "Code of Standard Practice for Steel Buildings and Bridges."

B. Architecturally Exposed Structural Steel: Structural steel designated as "architecturally exposed structural steel" or "AESS" on Drawings.

C. Demand Critical Welds: Those welds, the failure of which would result in significant degradation of the strength and stiffness of the Seismic-Load-Resisting System and which are indicated as "Demand Critical" or "Seismic Critical" on Drawings.

1.4 PERFORMANCE REQUIREMENTS

A. Delegated Design: Provide details of simple shear connections required by the Documents to be selected or completed by structural-steel fabricator, including comprehensive engineering design by a qualified professional engineer (licensed in the State of New York), to withstand loads indicated, comply with other information and restrictions indicated, and certifying that the design is in compliance with the Building Code of New York.

1.5 SUBMITTALS

A. Action Submittals:

1. Product Data: For each type of product indicated.

   a. High-strength bolts, nuts and washers
   b. Direct-tension indicators

c. Zinc-coated high strength bolts, nuts and washers
d. Tension-control, high-strength bolt-nut-washer assemblies
e. Zinc-coated tension-control, high-strength bolt-nut-washer assemblies
f. Shear stud connectors
g. Unheaded anchor rods
h. Headed anchor rods
i. Threaded rods
j. Post-installed Anchors
k. Eye Bolts and nuts
l. Fiberglass reinforced polymer structural shapes
m. Galvanizing repair paint
n. Non-Shrink Grout

2. Shop Drawings: Show fabrication of structural-steel components.

a. Include FRP structural shapes with structural steel shop drawings.

b. Anchor Rod/Embedded Item Layout Plans and Details: Show anchor rod layout, dimensions, elevation, orientation and details of anchor rods, leveling plates and other items embedded in concrete.

1) Submit anchor rod/embedded item plans and obtain Architect's approval prior to submitting erection plans.

c. Erection Plans and Details: Include member layout, dimensions, elevations, member sizes, erection details, and all information required for erection.

1) Submit erection plans and obtain Architect's approval prior to submitting fabrication details.

d. Fabrication Details: Submit drawings indicating all details necessary for shop fabrication and erection of each individual steel member.

1) For all connections detailed, submit a delegated design submittal with, or prior to, the submission of the fabrication details. Calculations to be performed using LRFD.

2) Detail simple shear connections to withstand loads indicated and comply with other information and restrictions indicated.

a) Select and complete connections using AISC 360 and LRFD.

b) Provide connections, at a minimum, sized for beam end reactions shown on Drawings and per Tables 10-1, 10-2, 10-3 or 10-4, AISC Steel Construction Manual. Unless otherwise noted, beam end reactions are given at factored load level.

3) Include details of cuts, connections, splices, camber, holes, and other pertinent data.

4) Indicate welds by standard AWS symbols, distinguishing between shop and field welds, and show size, length, and type of each weld. Show backing bars that are to be removed and supplemental fillet welds where backing bars are to remain.

5) Indicate type, size, and length of bolts, distinguishing between shop and field bolts. Identify pretensioned and slip-critical high-strength bolted connections.

6) Identify demand critical welds.

3. Delegated Design Submittal: Connection design calculations, using LRFD method.

a. Select and complete connections using AISC 360 and LRFD.

b. Provide connections, at a minimum, sized for beam end reactions shown on Drawings and per Tables 10-1, 10-2, 10-3 or 10-4, AISC Steel Construction Manual. Unless otherwise noted, beam end reactions are given at factored load level.

c. Provide calculations for checking of all beam copes, blocks, or cuts. Provide reinforcement and calculations for reinforcement where required by design.

d. Provide individual designs for other connections such as: splices, tension connections, and truss connections.

e. Connections labeled on Drawings as “Fully Detailed” require no further design. Provide such connections exactly as detailed.

f. Include cover letter.

1) List of all fabrication details sheets reviewed.

2) Statement indicating fabrication details sheets have been reviewed and connections provided are capable of supporting end reactions noted on Documents.

g. Complete attached “Connection Design Table.”

h. All documents to be stamped and signed by the qualified professional engineer responsible for their preparation.

B. Informational Submittals:

1. Welding Procedure Specifications (WPSs) and Procedure Qualification Records (PQRs): Provide according to AWS D1.1/D1.1M, "Structural Welding Code - Steel," for each welded joint whether prequalified or qualified by testing, including the following:

a. Power source (constant current or constant voltage).
b. Electrode manufacturer and trade name, for demand critical welds.

2. Mill test reports for structural steel, including chemical and physical properties.

3. Product Test Reports: For the following:

   a. Bolts, nuts, and washers including mechanical properties and chemical analysis.
   b. Direct-tension indicators.
   c. Tension-control, high-strength bolt-nut-washer assemblies.
   d. Shear stud connectors.
   e. Fiberglass reinforced polymer structural shapes.
   f. Non-shrink grout.

1.6 QUALITY ASSURANCE

A. Fabricator Qualifications: A qualified fabricator that participates in the AISC Quality Certification Program and is designated an AISC-Certified Plant, Category STD is preferred. At least 10 projects completed of a similar size and scope to Project.

   1. If fabricator is not designated an AISC-Certified Plant, see Source Quality Control Article for Contractor responsibilities.

   2. A qualified manufacturer of FRP material that is certified to the ISO-9001:2000 standard and with a minimum of five years' experience in the manufacture of FRP structural shapes.

B. A qualified fabricator of FRP material with a minimum of five years' experience in the fabrication of FRP structural shapes. Installer Qualifications: At least 10 projects completed of similar size and scope.

C. Welding Qualifications: Qualify procedures and personnel according to AWS D1.1/D1.1M, "Structural Welding Code - Steel."

   1. Welders and welding operators performing work on bottom-flange, demand-critical welds shall pass the supplemental welder qualification testing, as required by AWS D1.8. FCAW-S and FCAW-G shall be considered separate processes for welding personnel qualification.

D. Comply with applicable provisions of the following specifications and documents:

   1. AISC 303.
   2. AISC 341 and AISC 341s1.
   3. AISC 360.
   4. RCSC's "Specification for Structural Joints Using ASTM A325 or A490 Bolts."

E. Structural Preconstruction Conference: Attend conference at Project site.

1.7 DELIVERY, STORAGE, AND HANDLING

A. Store materials to permit easy access for inspection and identification. Keep steel members off ground and spaced by using pallets, dunnage, or other supports and spacers. Protect steel members and packaged materials from corrosion and deterioration.

1. Do not store materials on structure in a manner that might cause distortion, damage, or overload to members or supporting structures. Repair or replace damaged materials or structures as directed.

B. Store fasteners in a protected place in sealed containers with manufacturer's labels intact.

1. Fasteners may be repackaged provided Owner's testing and inspecting agency observes repackaging and seals containers.
2. Clean and relubricate bolts and nuts that become dry or rusty before use.
3. Comply with manufacturers' written recommendations for cleaning and lubricating ASTM F 1852 fasteners and for retesting fasteners after lubrication.

1.8 COORDINATION

A. Coordinate installation of anchorage items to be embedded in or attached to other construction without delaying the Work. Provide setting diagrams, sheet metal templates, instructions, and directions for installation.

PART 2 - PRODUCTS

2.1 STRUCTURAL-STEEL MATERIALS

A. W-Shapes: ASTM A 992/A 992M.
B. Channels and Angles: ASTM A 572/A 572M, Grade 50.
C. Plate and Bar: ASTM A 36/A 36M.
D. Cold-Formed Hollow Structural Sections: ASTM A 500, Grade B, structural tubing.
E. Steel Pipe: ASTM A 53/A 53M, Type E or S, Grade B.
F. Steel Castings: ASTM A 216/A 216M, Grade WCB with supplementary requirement S11.
G. Steel Forgings: ASTM A 668/A 668M.
H. Welding Electrodes: Comply with AWS requirements.

2.2 BOLTS, CONNECTORS, AND ANCHORS

A. High-Strength Bolts, Nuts, and Washers: ASTM F3125, Grade A325, Type 1, heavy-hex steel structural bolts, 3/4-inch diameter unless noted otherwise on Drawings; ASTM A 563, Grade C, heavy-hex carbon-steel nuts; and ASTM F 436, Type 1, hardened carbon-steel washers; all with plain finish.

1. Direct-Tension Indicators: ASTM F 959, Type 325, compressible-washer type with plain finish.

B. High-Strength Bolts, Nuts, and Washers: ASTM F3125, Grade A490, Type 1, heavy-hex steel structural bolts or tension-control, bolt-nut-washer assemblies with splined ends; ASTM A 563, Grade DH, heavy-hex carbon-steel nuts; and ASTM F 436, Type 1, hardened carbon-steel washers with plain finish.

1. Direct-Tension Indicators: ASTM F 959, Type 490, compressible-washer type with plain finish.

C. Zinc-Coated High-Strength Bolts, Nuts, and Washers: ASTM F3125, Grade A325, Type 1, heavy-hex steel structural bolts; ASTM A 563, Grade DH heavy-hex carbon-steel nuts; and ASTM F 436, Type 1, hardened carbon-steel washers. For exposed exterior structural steel and structural steel in moist environments connections only.

1. Finish: Hot-dip or mechanically deposited zinc coating.
2. Direct-Tension Indicators: ASTM F 959, Type 325, compressible-washer type with mechanically deposited zinc coating finish.

D. Tension-Control, High-Strength Bolt-Nut-Washer Assemblies: ASTM F3125, Grade F1852, Type 1, heavy-hex head assemblies consisting of steel structural bolts with splined ends, ASTM A563, Grade DH heavy-hex carbon-steel nuts, and ASTM F436, Type 1, hardened carbon-steel washers with plain finish.

E. Zinc-Coated Tension-Control, High-Strength Bolt-Nut-Washer Assemblies: ASTM F3125, Grade F1852, Type 1, heavy-hex head assemblies consisting of steel structural bolts with splined ends, ASTM A563, Grade DH heavy-hex carbon-steel nuts, and ASTM F436, Type 1 hardened carbon-steel washers. For exposed exterior structural steel and structural steel in moist environments connections only.

1. Finish: Hot-dip or mechanically deposited zinc coating.

F. Headed Anchor Rods: ASTM F 1554, Grade 36, straight.

1. Nuts: ASTM A 563 heavy-hex carbon steel.
2. Plate Washers: ASTM A 36/A 36M carbon steel.
3. Washers: ASTM F 436, Type 1, hardened carbon steel.
4. Finish: Plain.

G. Threaded Rods: ASTM A 36/A 36M.

1. Nuts: ASTM A 563 heavy-hex carbon steel.
2. Washers: ASTM F 436, Type 1, hardened carbon steel.
3. Finish: Plain.

H. Post-installed Anchors: chemical anchors.

1. Material for Interior Locations: Carbon-steel components zinc plated to comply with ASTM B 633 or ASTM F 1941, Class Fe/Zn 5 unless otherwise indicated.

2. Material for Exterior Locations and Where Stainless Steel Is Indicated: Alloy Group 2 stainless-steel bolts, ASTM F 593, and nuts, ASTM F 594.

3. Chemical Anchor Adhesives: Heavy duty, two component injectable adhesive designed to be dispensed using double chamber gun with mixing nozzle. Adhesives in capsule form will not be accepted.

   a. Products for anchoring into concrete and grout-filled masonry: Subject to compliance with requirements, available products that may be incorporated into the Work include, but are not limited to, the following:

1) DeWalt; AC200+.
2) Hilti, Inc.; HIT-HY 200R; HIT-HY 200A; HIT-ICE.
3) ITW Redhead; A7+.

b. Products for anchoring into masonry other than grout-filled masonry: Subject to compliance with requirements, available products that may be incorporated into the Work include, but are not limited to, the following:

1) DeWalt; AC200+.
2) Hilti, Inc.; HIT-HY 270.
3) ITW Redhead; A7+.

I. Eye Bolts and Nuts: Made from cold-finished carbon steel bars, ASTM A 108, Grade 1030.

2.3 FIBERGLASS REINFORCED POLYMER STRUCTURAL SHAPES

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. Fibergrate Composite Structures, Inc.
2. Southwell Corporation.
3. Strongwell Corporation.
4. Structural Fiberglass, Inc.

B. General Material Properties:

1. All materials are to be manufactured by the pultrusion process with a glass content minimum of 45 percent, maximum of 55 percent by weight.

2. Fiberglass reinforcement shall be a combination of continuous roving, continuous strand mat, and surfacing veil in sufficient quantities as needed by the application and/or physical properties required.

3. Resins shall be non-fire retardant isophthalic polyester with chemical formulation necessary to provide the corrosion resistance, strength and other physical properties as required.

4. All finished surfaces of FRP shapes shall be smooth, resin rich, free of voids and without dry spots, cracks, crazes or unreinforced areas. All glass fibers shall be well covered with resin to protect against their exposure due to wear or weathering.

5. All material shall be further protected from ultraviolet (UV) attack with integral UV inhibitors in the resin and a synthetic surfacing veil to produce a resin rich surface.

C. Structural Properties: FRP material to meet the following minimum longitudinal mechanical properties:

Property	**ASTM Method**	**Value**
Tensile Strength	D 638	20,000 psi
Tensile Modulus	D 638	1.8×10^6 psi
Flexural Strength	D 790	24,000 psi
Flexural Modulus	D 790	2.0×10^6 psi
Coefficient of Thermal Expansion	D 696	8.0×10^{-6} in/in/deg F
Flame Spread	E 84	25 or less

2.4 PRIMER

A. VOC Content: Products shall comply with VOC limits of authorities having jurisdiction.

B. Provide primers that comply with Division 09 Section "High Performance Coatings" and the following:

1. Interior Structural Steel: Refer to First Coat for Steel, Structural Steel in Interior High-Performance Coating Schedule: General Use.

2. Interior Structural Steel in Moist Environment: Refer to First Coat for Steel, Galvanized-Metal, and Non-Ferrous Metal Substrates in Interior High-Performance Coating Schedule: Pool/Bus Wash Environments.

3. Exposed Exterior Structural Steel: Refer to First Coat for Steel Substrates in Exterior High-Performance Coating Schedule.

C. Galvanizing Repair Paint: High-zinc-dust-content paint complying with SSPC-Paint 20 and compatible with paints specified to be used over it and meeting ASTM A 780.

2.5 NON-SHRINK GROUT

A. Nonmetallic, Shrinkage-Resistant Grout: ASTM C 1107, factory-packaged, shrinkage-resistant, nonmetallic aggregate grout, noncorrosive and non-staining, mixed with water to consistency suitable for application and a 30-minute working time.

2.6 FABRICATION

A. Structural Steel: Fabricate and assemble in shop to greatest extent possible. Fabricate according to AISC's "Code of Standard Practice for Steel Buildings and Bridges" and AISC 360.

1. Camber structural-steel members where indicated.

2. Fabricate beams with rolling camber up.
3. Identify high-strength structural steel according to ASTM A 6/A 6M and maintain markings until structural steel has been erected.
4. Mark and match-mark materials for field assembly.
5. Complete structural-steel assemblies, including welding of units, before starting shop-priming operations.

B. Thermal Cutting: Perform thermal cutting by machine to greatest extent possible.

1. Plane thermally cut edges to be welded to comply with requirements in AWS D1.1/D1.1M.

C. Bolt Holes: Cut, drill, or punch standard bolt holes perpendicular to metal surfaces. Holes to be standard holes unless shown otherwise on Drawings.

D. Finishing: Accurately finish ends of columns and other members transmitting bearing loads.

E. Cleaning: Clean and prepare steel surfaces that are to remain unpainted according to SSPC-SP 3, "Power Tool Cleaning."

F. Shear Connectors: Prepare steel surfaces as recommended by manufacturer of shear connectors. Use automatic end welding of headed-stud shear connectors according to AWS D1.1/D1.1M and manufacturer's written instructions.

G. Holes: Provide holes required for securing other work to structural steel and for other work to pass through steel framing members.

1. Cut, drill, or punch holes perpendicular to steel surfaces. Do not thermally cut bolt holes or enlarge holes by burning.
2. Baseplate Holes: Cut, drill, mechanically thermal cut, or punch holes perpendicular to steel surfaces.
3. Weld threaded nuts to framing and other specialty items indicated to receive other work.

H. Architecturally Exposed Structural Steel: Fabricate to the requirements of AISC 303, "Code of Standard Practice for Steel Buildings and Bridges."

I. FRP Structural Shapes:

1. Measurements: Structural Shapes supplied shall meet the minimum dimensional requirements as shown or specified. The Contractor shall provide and/or verify measurements in field for work fabricated to fit field conditions as required by manufacturer to complete the work. Determine correct size and locations of required holes or coping from field dimensions before structural shape fabrication.

2. Sealing: All shop fabricated cuts or drilling shall be coated with vinyl ester resin to provide maximum corrosion resistance.

3. All finished surfaces of FRP items and fabrications shall be smooth, resin rich, free of voids and without dry spots, cracks, crazes or unreinforced areas.

2.7 SHOP CONNECTIONS

A. High-Strength Bolts: Shop install high-strength bolts according to RCSC's "Specification for Structural Joints Using ASTM A 325 or A 490 Bolts" for type of bolt and type of joint specified.

1. Joint Type: Snug tightened or pretensioned and slip critical where indicated on Drawings.

B. Weld Connections: Comply with AWS D1.1/D1.1M for tolerances, appearances, welding procedure specifications, weld quality, and methods used in correcting welding work.

1. Assemble and weld built-up sections by methods that will maintain true alignment of axes without exceeding tolerances in AISC 303 for mill material.

2.8 SHOP PRIMING

A. Shop prime the following structural steel members only:

1. Interior structural steel exposed to view, and interior lintels.
2. Structural steel in exterior walls and lintels in exterior walls.
3. Exposed exterior structural steel.
4. Structural steel in moist environments.
5. Structural steel to receive exposed intumescent mastic fire-resistive coatings.

B. For members to receive primer leave following locations unprimed:

1. Surfaces embedded in concrete or mortar. Extend priming of partially embedded members to a depth of 2 inches.
2. Surfaces to be field welded.
3. Surfaces to be high-strength bolted with slip-critical connections.
4. Surfaces to receive sprayed fire-resistive materials (applied fireproofing) except at moist environments.
5. Galvanized surfaces unless noted to be primed.

C. Surface Preparation: Clean surfaces to be painted. Remove loose rust and mill scale and spatter, slag, or flux deposits. Prepare surfaces according to Division 09 Section “High Performance Coatings”.

1. ASTM D 6386, “Standard Practice for Preparation of Zinc (Hot-Dip Galvanized) Coated Iron and Steel Product and Hardware Surfaces for Painting,” for galvanized surfaces noted to be painted.

D. Priming:

1. Immediately after surface preparation, apply one coat of primer according to manufacturer's written instructions and at rate recommended by SSPC to provide a minimum dry film thickness as listed below. Use priming methods that result in full coverage of joints, corners, edges, and exposed surfaces.

2. Stripe paint corners, crevices, bolts, welds, and sharp edges.

3. Apply two coats of shop paint to surfaces that are inaccessible after assembly or erection. Change color of second coat to distinguish it from first.

2.9 GALVANIZING

A. Hot-Dip Galvanized Finish: Apply zinc coating by the hot-dip process to structural steel according to ASTM A 123/A 123M.

1. Fill vent and drain holes that will be exposed in the finished Work unless they will function as weep holes, by plugging with zinc solder and filing off smooth.

2.10 SOURCE QUALITY CONTROL

A. Testing Agency: If fabricator is not designated an AISC-Certified Plant then the Contractor shall engage an independent testing and inspecting agency to perform shop tests and inspections and prepare test reports.

1. Provide testing agency with access to places where structural-steel work is being fabricated or produced to perform tests and inspections.

B. Correct deficiencies in Work that test reports and inspections indicate does not comply with the Contract Documents.

C. Bolted Connections: Shop-bolted connections shall be tested and inspected according to RCSC's "Specification for Structural Joints Using ASTM A 325 or A 490 Bolts."

D. Welded Connections: Shop welds will be visually inspected according to AWS D1.1/D1.1M.

1. In addition to visual inspection, shop welds will be tested and inspected according to AWS D1.1/D1.1M and the following inspection procedures, at testing agency's option:

a. Liquid Penetrant Inspection: ASTM E 165.
b. Magnetic Particle Inspection: ASTM E 709; performed on root pass and on finished weld. Cracks or zones of incomplete fusion or penetration will not be accepted.
c. Ultrasonic Inspection: ASTM E 164.
d. Radiographic Inspection: ASTM E 94.

E. In addition to visual inspection, shop-welded shear connectors shall be tested and inspected according to requirements in AWS D1.1/D1.1M for stud welding and as follows:

1. Bend tests shall be performed if visual inspections reveal either a less-than-continuous 360-degree flash or welding repairs to any shear connector.
2. Tests shall be conducted on additional shear connectors if weld fracture occurs on shear connectors already tested, according to requirements in AWS D1.1/D1.1M.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Verify, with steel Erector present, elevations of concrete- and masonry-bearing surfaces and locations of anchor rods, bearing plates, and other embedments for compliance with requirements.

1. Prepare a certified survey of bearing surfaces, anchor rods, bearing plates, and other embedments showing dimensions, locations, angles, and elevations.

B. Proceed with installation only after unsatisfactory conditions have been corrected.

C. Beginning installation constitutes Contractor's acceptance of substrates and conditions.

3.2 PREPARATION

A. Provide temporary shores, guys, braces, and other supports during erection to keep structural steel secure, plumb, and in alignment against temporary construction loads and loads equal in intensity to design loads. Remove temporary supports when permanent structural steel, connections, and bracing are in place unless otherwise indicated.

1. Do not remove temporary shoring supporting composite deck construction until cast-in-place concrete has attained its design compressive strength.

3.3 ERECTION

A. Set structural steel accurately in locations and to elevations indicated and according to AISC 303 and AISC 360.

B. Base Bearing and Leveling Plates: Clean concrete- and masonry-bearing surfaces of bond-reducing materials, and roughen surfaces prior to setting plates. Clean bottom surface of plates.

1. Set plates for structural members on wedges, shims, or setting nuts as required.

2. Weld plate washers to top of baseplate.

3. Snug-tighten anchor rods after supported members have been positioned and plumbed. Do not remove wedges or shims but, if protruding, cut off flush with edge of plate before packing with non-shrink grout.

4. Promptly pack non-shrink grout solidly between bearing surfaces and plates so no voids remain. Neatly finish exposed surfaces; protect non-shrink grout and allow to cure. Comply with manufacturer's written installation instructions for non-shrink grouts.

C. Column Base Plates and Anchor Bolts: Not designed to resist lateral loads and overturning during erection; base plates and anchor bolts are designed only to comply with the minimum requirements of the OSHA "Safety Standards for Steel Erection".

D. Maintain erection tolerances of structural steel within AISC's "Code of Standard Practice for Steel Buildings and Bridges."

E. Align and adjust various members that form part of complete frame or structure before permanently fastening. Before assembly, clean bearing surfaces and other surfaces that will be in permanent contact with members. Perform necessary adjustments to compensate for discrepancies in elevations and alignment.

1. Level and plumb individual members of structure.

F. Splice members only where indicated.

G. Do not use thermal cutting during erection.

H. Do not enlarge unfair holes in members by burning or using drift pins. Ream holes that must be enlarged to admit bolts.

I. Architecturally Exposed Structural Steel: Erect to the requirements of AISC 303, "Code of Standard Practice for Steel Buildings and Bridges."

J. FRP Structural Shapes:

1. Provide anchorage devices and fasteners for securing FRP fabrications as shown on Drawings.

2. Perform cutting, drilling and fitting required for installation of FRP fabrications. Set FRP fabrication accurately in location, alignment and elevation; with edges and surfaces level, plumb, true and free of rack; measured from established lines and levels.

3.4 FIELD CONNECTIONS

A. High-Strength Bolts: Install high-strength bolts according to RCSC's "Specification for Structural Joints Using ASTM A 325 or A 490 Bolts" for type of bolt and type of joint specified.

1. Joint Type: Snug tightened or pretensioned and slip critical where indicated on Drawings.

B. Weld Connections: Comply with AWS D1.1/D1.1M for tolerances, appearances, welding procedure specifications, weld quality, and methods used in correcting welding work.

1. Comply with AISC 303 and AISC 360 for bearing, alignment, adequacy of temporary connections, and removal of paint on surfaces adjacent to field welds.

2. Assemble and weld built-up sections by methods that will maintain true alignment of axes without exceeding tolerances in AISC's "Code of Standard Practice for Steel Buildings and Bridges" for mill material.

3.5 PREFABRICATED BUILDING COLUMNS

A. Install prefabricated building columns to comply with AISC 360, manufacturer's written recommendations, and requirements of testing and inspecting agency that apply to the fire-resistance rating indicated.

3.6 FIELD QUALITY CONTROL

A. Testing Agency: Owner will engage a qualified independent testing and inspecting agency to perform tests and inspections as described below.

B. Bolted Connections: Bolted connections will be inspected according to RCSC's "Specification for Structural Joints Using ASTM A 325 or A 490 Bolts."

C. Welded Connections: Field welds will be visually inspected according to AWS D1.1/D1.1M.

1. In addition to visual inspection, field welds will be tested and inspected according to AWS D1.1/D1.1M and the following inspection procedures, at testing agency's option:

a. Liquid Penetrant Inspection: ASTM E 165.

b. Magnetic Particle Inspection: ASTM E 709; performed on root pass and on finished weld. Cracks or zones of incomplete fusion or penetration will not be accepted.

c. Ultrasonic Inspection: ASTM E 164.

d. Radiographic Inspection: ASTM E 94.

D. Post-installed Chemical Anchors: Test 5% of all chemical anchors in tension, randomly selected but in varied locations. Testing to be in accordance with ASTM E 488 to the approved manufacturer’s allowable loads. Concrete or masonry wall must cure a minimum of 3 days prior to testing. Do not test anchors until after the anchor manufacturer’s recommended curing time. If an anchor fails during this test additional anchors may be requested to be tested as directed by the Architect.

E. Record position and alignment of erected steel. Compare with required tolerances.

F. Verify compliance with details shown on approved drawings such as bracing, stiffening, member location, and proper application of joint details at each connection.

G. Correct deficiencies in Work that test reports and inspections indicate does not comply with the Contract Documents.

3.7 REPAIRS AND PROTECTION

A. Field Corrections: Do not field correct any framing member or connection without prior approval of Architect. Submit detail of proposed field correction to Architect including component sizes, dimensions, weld sizes, cut locations, etc.

B. Galvanized Surfaces: Clean areas where galvanizing is damaged or missing and repair galvanizing to comply with ASTM A 780.

C. FRP Structural Shape Sealing:

1. All field fabricated cuts or drilling shall be coated with vinyl ester resin to provide maximum corrosion resistance in accordance with the manufacturer's instructions.

END OF SECTION 05 12 00

Attachment: Connection Design Table

TETRA TECH
ARCHITECTS & ENGINEERS

CONNECTION DESIGN TABLE

Project Name: Additions/Alterations to Waverly Jr/Sr HS

Tt Project #:339070-22003

Contractor Information	Steel Fabricator Information	Connection Engineer Information
Name: Address: Phone:	Name: Address: Phone:	Name: Address: Phone: PE License Number:

Note: List all fabrication detail sheets in numerical order. For each sheet list all beam piece numbers in numerical order.		Left End Connection Information					Right End Connection Information				
				State if specific connection design calculations are provided for connection or if standard connection from AISC LRFD connection Tables 10-1 through 10-3, and Tables 10-9a, 10-10, and 10-11 is used. Note: Multiple Tables may apply.					State if specific connection design calculations are provided for connection or if standard connection from AISC LRFD connection Tables 10-1 through 10-3, and Tables 10-9a, 10-10, and 10-11 is used. Note: Multiple Tables may apply.		
Fabrication Detail Sheet No.	Beam Piece No.	Beam Size	Capacity of Connection	**Specific design** calc sheet No.	**AISC Connection** AISC Table No.	If copes, cuts, or blocks are present at this end of beam, Note Calc sheet no. showing calcs for check of such (if none are present indicate NA)	Beam Size	Capacity of Connection	**Specific design** calc sheet No.	**AISC Connection** AISC Table No.	If copes, cuts, or blocks are present at this end of beam, Note Calc sheet no. showing calcs for check of such (if none are present indicate NA)

SECTION 05 21 00 - STEEL JOIST FRAMING

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. K-series steel joists.
2. KCS-type K-series steel joists.
3. LH- series long-span steel joists.
4. Special “SP” joists.
5. Custom profile joists.
6. Joist accessories.

1.3 DEFINITIONS

A. SJI's "Specifications": Steel Joist Institute's "Standard Specifications, Load Tables and Weight Tables for Steel Joists and Joist Girders."

B. Special Joists, SP Joists: Steel joists or joist girders requiring modification by manufacturer to support non-uniform, unequal, or special loading conditions that invalidate load tables in SJI's "Specifications."

1.4 PERFORMANCE REQUIREMENTS

A. Delegated Design: Provide special joists and/or custom profile joists and connections capable of withstanding design loads indicated. Design and fabricate to match top chord profile and web member configuration as shown on Drawings.

1. Design special joists and/or custom profile joists to support special loading conditions including non-uniform loads, concentrated loads and end moments as shown on Drawings with live-load deflections no greater than the following:

   a. Floor Joists: Vertical deflection of 1/360 of the span, unless otherwise noted.
   b. Roof Joists: Vertical deflection of 1/240 of the span, unless otherwise noted.

2. Design joists and bridging for net uplift pressureas shown on Drawings.

1.5 SUBMITTALS

A. Action Submittals:

1. Product Data: For each type of joist, accessory, and product.

   a. Submit description of shop primer.

2. Shop Drawings:

   a. Include layout, designation, number, type, sizes, location, and spacing of joists.

   b. Include joining and anchorage details, bracing, bridging, and joist accessories; splice and connection locations and details; and attachments to other construction.

   c. LH-Series: Submit drawings indicating joist profile including size of top and bottom chord members and size and location of web members.

   d. Custom Profile Joists: Submit drawings indicating loading used to design joists including non-uniform loads, concentrated loads and end moments as shown on Contract Drawings. Submit drawings indicating joist profile including size of top and bottom chord members and size and location of web members.

   e. Special Joists or SP Joists: Submit drawings indicating special loading used to design joists including non-uniform loads, concentrated loads and end moments as shown on Drawings. Submit drawings indicating joist profile including size of top and bottom chord members and size and location of web members.

3. Delegated Design Submittal: Comprehensive engineering analysis of special joists and/or custom profile joists signed and sealed by the qualified professional engineer (licensed in the State of New York) responsible for its preparation certifying that the design is in compliance with the Building Code of New York. To include, but not limited to, the following:

   a. Description of design criteria.
   b. Structural analysis depicting stress and deflection requirements for each framing application.
   c. Selection of framing components and accessories.
   d. Design and verification of connection.

B. Informational Submittals

1. Mill Certificates: For each type of bolt.

1.6 QUALITY ASSURANCE

A. Manufacturer Qualifications: A manufacturer certified by SJI to manufacture joists complying with applicable standard specifications and load tables in SJI's "Specifications." Fabricator and Erector to have at least 5 years experience with projects of similar size and scope.

1. Manufacturer's responsibilities include providing professional engineering services for designing Special Joists and/or Custom Profile Joists to comply with performance requirements.

B. Welding Qualifications: Qualify field-welding procedures and personnel according to AWS D1.1/D1.1M, "Structural Welding Code - Steel."

C. Structural Preconstruction Conference: Attend conference at Project site.

1.7 DELIVERY, STORAGE, AND HANDLING

A. Deliver, store, and handle joists as recommended in SJI's "Specifications."
B. Protect joists from corrosion, deformation, and other damage during delivery, storage, and handling.
C. Store joist bundles off the ground.
D. Do not place joist bundles on un-braced structural frame.

PART 2 - PRODUCTS

2.1 K-SERIES STEEL JOISTS

A. Manufacture steel joists of type indicated according to "Standard Specifications for Open Web Steel Joists, K-Series" in SJI's "Specifications," with steel-angle top- and bottom-chord members, underslung ends, and parallel top chord.

1. Joist Type: K-series steel joists and KCS-type K-series steel joists.

B. Steel Joist Substitutes: Manufacture according to "Standard Specifications for Open Web Steel Joists, K-Series" in SJI's "Specifications," with steel-angle or -channel members.

C. Provide holes in chord members where shown on Drawings for securing other items to steel joists and deduct area of holes from chord when calculating member strength.

D. Top-Chord Extensions: Extend top chords of joists with SJI's Type S top-chord extensions where indicated, complying with SJI's "Specifications".

E. Extended Ends: Extend bearing ends of joists with SJI's Type R extended ends where indicated, complying with SJI's "Specifications".

F. Do not camber joists.

G. Camber joists according to SJI's "Specifications." unless noted otherwise.

H. Equip bearing ends of joists with manufacturer's standard beveled ends or sloped shoes if joist slope exceeds 1/4 inch per 12 inches.

2.2 LONG-SPAN STEEL JOISTS

A. Manufacture steel joists according to "Standard Specifications for Longspan Steel Joists, LH-Series and Deep Longspan Steel Joists, DLH-Series" in SJI's "Specifications," with steel-angle top- and bottom-chord members; of joist type and end and top-chord arrangements as follows:

1. Joist Type: LH-series steel joists.
2. End Arrangement: Underslung, unless otherwise indicated on Drawings.
3. Top-Chord Arrangement: As indicated on Drawings.

B. Provide holes in chord members where shown on Drawings for securing other items to steel joists and deduct area of holes from chord when calculating member strength.

C. Camber long-span steel joists according to SJI's "Specifications", except as follows:

1. Maximum camber to be limited to amount of deflection produced by 2/3 of the total dead load.

D. Equip bearing ends of joists with manufacturer's standard beveled ends or sloped shoes if joist slope exceeds 1/4 inch per 12 inches.

2.3 PRIMERS

A. VOC Content: Products shall comply with VOC limits of authorities having jurisdiction.

B. Standard Primer: SSPC-Paint 15, or manufacturer's standard shop primer complying with performance requirements in SSPC-Paint 15.

C. Exposed Exterior Steel Joists: Provide primer with the following characteristics:

1. Aromatic urethane, zinc-rich, minimum 60 percent solids by volume, minimum 80 percent zinc by weight in dried film by volume, red color.
2. Adhesion: ASTM D 4541 Type II and Type V.
3. Exterior Exposure: ASTM D 1014 Exposure at 45 degrees facing south.
4. Humidity: ASTM D 4585.
5. Prohesion: ASTM G 85.
6. Salt Spray: ASTM B 117.
7. Static Fatigue (Slip Coefficient and Tension Creep): AISC RCSC, Appendix A, Section 4.1.

D. Steel Joists to Receive Intumescent Mastic Fire-resistive Coatings: Provide primer with the following characteristics:

1. Phenolic alkyd, non-lead, non-chromate, minimum 55 percent solids by volume, red color.
2. Abrasion: ASTM D 4060 CS17 Wheel 500 grams load.
3. Adhesion: ASTM D 4541.
4. Exterior Exposure: Exposure at 45 deg. south wind.
5. Hardness: ASTM D 3363.
6. Humidity: ASTM D 4585.
7. Salt Spray: Method ASTM B 117.

2.4 JOIST ACCESSORIES

A. Bridging: Provide bridging anchors and number of rows of horizontal or diagonal bridging of material, size, and type required by SJI's "Specifications" for type of joist, chord size, spacing, and span. Furnish additional erection bridging if required for stability.

1. Provide bridging anchors for ends of bridging lines terminating at walls or beams.
2. Provide additional bridging as required to stabilize joists when net uplift pressure is indicated on Drawings.

B. Carbon-Steel Bolts and Threaded Fasteners: ASTM A 307, Grade A, carbon-steel, hex-head bolts and threaded fasteners; carbon-steel nuts; and flat, unhardened steel washers, complying with ANSI B27.2, Type B.

1. Finish: Plain, uncoated, unless noted otherwise.

C. High-Strength Bolts, Nuts, and Washers: ASTM A 325, Type 1, heavy hex steel structural bolts; ASTM A 563 heavy hex carbon-steel nuts; and ASTM F 436 hardened carbon-steel washers.

1. Finish: Plain.

D. Welding Electrodes: Comply with AWS standards.

E. Furnish miscellaneous accessories including splice plates and bolts required by joist manufacturer to complete joist assembly.

2.5 CLEANING AND SHOP PAINTING

A. Shop prime all steel joist members.

B. For members to receive primer leave following locations unprimed:

1. Surfaces to be field welded.
2. Surfaces to be high-strength bolted with slip-critical connections.
3. Surfaces to receive sprayed fire-resistive materials (applied fireproofing) except at moist environments.

C. Surface Preparation: Remove loose scale, heavy rust and other foreign materials from fabricated joists and accessories. Prepare surfaces according to the following specifications and standards:

1. SSPC-SP 3, "Power Tool Cleaning," unless noted otherwise below.

2. SSPC-SP 6/NACE No. 3, "Commercial Blast Cleaning," for:

a. Exposed exterior steel joists.

3. ASTM D 6386, “Standard Practice for Preparation of Zinc (Hot-Dip Galvanized) Coated Iron and Steel Product and Hardware Surfaces for Painting,” for galvanized surfaces noted to be painted.

D. Priming:

1. Immediately after surface preparation, apply one coat of primer according to manufacturer's written instructions and at rate recommended by SSPC to provide a minimum dry film thickness as listed below. Use priming methods that result in full coverage of joints, corners, edges, and exposed surfaces.

   a. Steel Joists to Receive Standard Primer: 1.0 mils.
   b. Exposed Exterior Steel Joists: 2.5 to 3.5 mils.
   c. Steel Joists in Moist Environments: 2.5 to 3.5 mils.
   d. Steel Joists to Receive Exposed Intumescent Mastic Fire-resistive Coatings: 2 to 3.5 mils.

2. Stripe paint corners, crevices, bolts, welds, and sharp edges.

3. Apply two coats of shop paint to surfaces that are inaccessible after assembly or erection. Change color of second coat to distinguish it from first.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine supporting substrates, embedded bearing plates, and abutting structural framing for compliance with requirements for installation tolerances and other conditions affecting performance.

B. Proceed with installation only after unsatisfactory conditions have been corrected.

C. Beginning installation constitutes Contractor’s acceptance of substrates and conditions.

3.2 INSTALLATION

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 according to approved shop drawings and to SJI's "Specifications," 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.
   4. Delay rigidly connecting bottom-chord extensions to columns or supports until dead loads are applied.

C. Field weld joists to supporting steel bearing plates and/or framework. 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. Bolt joists to supporting steel framework in accordance with AISC and SJI specifications for type of joists used. Bolt joists to supporting steel framework using high-strength structural bolts. Comply with Research Council on Structural Connection's "Specification for Structural Joints Using ASTM A 325 or ASTM A 490 Bolts" for high-strength structural bolt installation and tightening requirements.

E. Install and connect bridging concurrently with joist erection, before construction loads are applied. Anchor ends of bridging lines at top and bottom chords if terminating at walls or beams.

F. Field Modifications: Notify Architect if it becomes evident that field modifications to joists, joist girders and accessories are required during erection. Submit field modification proposed by joist manufacturer to Architect for review.

G. Touchup Painting: After installation, promptly clean, prepare, and prime or re-prime field connections, rust spots, and abraded surfaces of prime-painted joists and accessories.

1. Clean and prepare surfaces by SSPC-SP11, "Power Tool Cleaning to Bare Metal," for:

a. Exposed exterior steel joists.

H. Provide final protection and maintain conditions, in a manner acceptable to manufacturer and Installer that ensure that joists and accessories are without damage or deterioration at time of Substantial Completion.

3.3 FIELD QUALITY CONTROL

A. Testing Agency: Owner will engage a qualified independent testing and inspecting agency to inspect joist materials, inspect field welds and bolted connections, and prepare test and inspection reports.

B. Material Inspection: Inspect joists, joist girders and accessories for dents, bends and other damage that may compromise the structural integrity of the member.

1. Contractor to remove, replace or repair joists found to be damaged to the satisfaction of the Architect at no additional cost to Owner.

C. Visually inspect field welds according to AWS D1.1/D1.1M.

D. Visually inspect bolted connections.

E. Correct deficiencies in Work that test and inspection reports have indicated are not in compliance with specified requirements. Contractor is responsible for cost of corrective action and repeated inspection caused by deficient work or materials.

END OF SECTION 05 21 00

SECTION 05 31 00 - STEEL DECKING

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. Roof deck.
2. Acoustical roof deck.
3. Composite floor deck.
4. Accessories.

1.3 SUBMITTALS, GENERAL

A. General: Submit all action submittals and informational submittals required by this Section concurrently.

1.4 ACTION SUBMITTALS

A. Product Data: Submit manufacturer's specifications and installation instructions for each type of deck, accessory, and product indicated.

1. Deck Primer Test Reports: Provide documentation of primer compatibility with finish paint.

B. Shop Drawings:

1. Deck Placement Drawings: Include layout and types of deck panels, support locations, anchorage details, dimensions, panel lengths, edge of deck or pour stop distance and each condition requiring closure panels, reinforcing channels, cut deck openings, special jointing, accessories including rubber flute closure locations, and attachments to other construction.

1.5 INFORMATIONAL SUBMITTALS

A. Product Certificates: For each type of steel deck.

B. Product Test Reports: Based on evaluation of comprehensive tests performed by a qualified testing agency, indicating that each of the following complies with requirements:

1. Power-actuated mechanical fasteners.
2. Acoustical roof deck.

1.6 QUALITY ASSURANCE

A. Welding Qualifications: Qualify procedures and personnel according to AWS D1.3, "Structural Welding Code - Sheet Steel."

B. Qualifications:

1. Fabricator:

a. Submit documentation showing at least 5 completed projects of similar size and scope.
b. Submit documentation showing current membership with Steel Deck Institute (SDI).

2. Installer:

a. Submit documentation showing at least 5 completed projects of similar size and scope.

1.7 DELIVERY, STORAGE, AND HANDLING

A. Protect steel deck from corrosion, deformation, and other damage during delivery, storage, and handling.

B. Stack steel deck off the ground on platforms or pallets and slope to provide drainage. Protect with a waterproof covering and ventilate to avoid condensation.

1. Protect and ventilate acoustical cellular roof deck with factory-installed insulation to maintain insulation free of moisture.

C. Do not place deck bundles on unbolted structural steel frames, or on unattached or unbridged joists. Do not place bundles on unbraced structural frame.

PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

A. AISI Specifications: Comply with calculated structural characteristics of steel deck according to AISI's "North American Specification for the Design of Cold-Formed Steel Structural Members."

B. Fire-Resistance Ratings: Comply with ASTM E 119; testing by a qualified testing agency. Identify products with appropriate markings of applicable testing agency.

1. Indicate design designations from UL's "Fire Resistance Directory" or from the listings of another qualified testing agency.

2.2 ROOF DECK

A. Roof Deck: Design and fabricate panels, without top-flange stiffening grooves, to comply with "SDI Specifications and Commentary for Steel Roof Deck," in SDI Publication No. 31, and with the following:

1. Galvanized-Steel Sheet: ASTM A 653/A 653M, Structural Steel (SS), Grade 33, G60 at interior spaces or G90 at canopy zinc coating.

2. Galvanized and Shop-Primed Steel Sheet: ASTM A 653/A 653M, Structural Steel (SS), Grade 33, G60 zinc coating; cleaned, pretreated, and primed with baked-on, rust-inhibitive primer.

   a. Remove grease and oil residue from galvanized sheet metal fabricated from coil stock by mechanical methods to produce clean, lightly etched surfaces that promote adhesion of subsequently applied paints.

   b. Primer to be compatible with finish paint. Primer to be approved for use with finish paint or be tested prior to use.

   c. Color: Manufacturer's standard.

3. Galvanized and Shop-Primed Steel Sheet: ASTM A 653/A 653M, Structural Steel (SS), Grade 33; G90 zinc coating;cleaned, pretreated, and primed with manufacturer’s special, high performance baked-on, rust-inhibitive primer compatible with galvanized coating.

   a. Remove grease and oil residue from galvanized sheet metal fabricated from coil stock by mechanical methods to produce clean, lightly etched surfaces that promote adhesion of subsequently applied paints.

   b. Primer to be compatible with finish paint. Primer to be approved for use with finish paint or be tested prior to use.

   c. Color: Manufacturer's standard.

4. Deck Profile: Type WR, wide rib .

5. Profile Depth: As indicated on Drawings.

6. Design Uncoated-Steel Thickness: As indicated on Drawings.

7. Design Uncoated-Steel Thicknesses; Cellular Roof Deck Unit/Bottom Plate: As indicated on Drawings.

8. Span Condition: Triple span or more, unless otherwise shown on Drawings.

9. Side Laps: Flat overlapped, except at areas where deck is exposed to public view, provide interlocking seam.

2.3 ACOUSTICAL ROOF DECK

A. Acoustical Roof Deck: Fabricate panels, without top-flange stiffening grooves, to comply with "SDI Specifications and Commentary for Steel Roof Deck," in SDI Publication No. 31, and with the following:

1. Galvanized and Shop-Primed Steel Sheet: ASTM A 653/A 653M, Structural Steel (SS), Grade 33, G60 zinc coating; cleaned, pretreated, and primed with baked-on, rust-inhibitive primer.

    a. Remove grease and oil residue from galvanized sheet metal fabricated from coil stock by mechanical methods to produce clean, lightly etched surfaces that promote adhesion of subsequently applied paints.

    b. Primer to be compatible with finish paint. Primer to be approved for use with finish paint or be tested prior to use.

    c. Color: Manufacturer's standard.

2. Deck Profile: Type DR, deep rib.

3. Profile Depth: As indicated on Drawings.

4. Design Uncoated-Steel Thickness: As indicated on Drawings.

5. Design Uncoated-Steel Thicknesses; Cellular Roof Deck Unit/Bottom Plate: As indicated on Drawings.

6. Span Condition: Triple span or more, unless otherwise shown on Drawings.

7. Side Laps: Interlocking seam.

8. Acoustical Perforations: Deck units with manufacturer's standard perforated vertical webs.

9. Sound-Absorbing Insulation: Manufacturer's standard premolded roll or strip of glass or mineral fiber.

    a. Factory install sound-absorbing insulation into cells of cellular deck.

10. Acoustical Performance: NRC [**0.65**] [**0.75**] [**0.80**] [**0.85**] [**0.90**], tested according to ASTM C 423.

2.4 COMPOSITE FLOOR DECK

A. Composite Floor Deck: Fabricate panels, with integrally embossed or raised pattern ribs and interlocking side laps, to comply with "SDI Specifications and Commentary for Composite Steel Floor Deck," in SDI Publication No. 31, with the minimum section properties indicated, and with the following:

1. Galvanized-Steel Sheet: ASTM A 653/A 653M, Structural Steel (SS), Grade 33, G90 zinc coating.
2. Profile Depth: As indicated on Drawings.
3. Design Uncoated-Steel Thickness: As indicated on Drawings.
4. Span Condition: Triple span or more, unless otherwise shown on Drawings.

2.5 ACCESSORIES

A. General: Provide manufacturer's standard accessory materials for deck that comply with requirements indicated.

B. Mechanical Fasteners: Corrosion-resistant, low-velocity, carbon-steel, self-drilling, self-threading screws.

C. Side-Lap Fasteners: Corrosion-resistant, hexagonal washer head; self-drilling, carbon-steel screws, No. 10 minimum diameter.

D. Rubber Flute Closure Strips: Vulcanized, closed-cell, synthetic rubber to fit tightly between deck and supporting steel or wall.

E. Miscellaneous Sheet Metal Deck Accessories: Steel sheet, minimum yield strength of 33,000 psi, not less than 20 gauge (0.0359-inch design uncoated thickness, of same material and finish as deck; of profile indicated or required for application.

F. Pour Stops and Girder Fillers: Steel sheet, minimum yield strength of 33,000 psi, of same material and finish as deck, and of thickness and profile recommended by SDI Publication No. 31 for overhang and slab depth.

G. Column Closures, End Closures, Z-Closures, and Cover Plates: Steel sheet, of same material, finish, and thickness as deck unless otherwise indicated.

H. Galvanizing Repair Paint: ASTM A 780.

I. Repair Paint: Manufacturer's standard rust-inhibitive primer of same color as primer.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine supporting frame and field conditions for compliance with requirements for installation tolerances and other conditions affecting performance.
B. Proceed with installation only after unsatisfactory conditions have been corrected.
C. Beginning installation constitutes Contractor’s acceptance of substrates and conditions.

3.2 INSTALLATION, GENERAL

A. Install deck panels and accessories according to applicable specifications and commentary in SDI Publication No. 31, manufacturer's written instructions, approved deck placement shop drawings and requirements in this Section.

B. Locate deck bundles to prevent overloading of structural members.

C. Do not use deck units for storage or working platforms until permanently secured in position.

D. Place deck panels on supporting frame and adjust to final position with ends accurately aligned and bearing on supporting frame before being permanently fastened.

1. Align cellular deck panels over full length of cell runs and align cells at ends of abutting panels.

E. Place deck panels flat and square and fasten to supporting frame without warp or excessive deflection. Do not stretch or contract side lap interlocks.

F. Cut and neatly fit deck panels and accessories around openings and other work projecting through or adjacent to deck. Provide neat, square and trim cuts.

G. Comply with AWS requirements and procedures for manual shielded metal arc welding, appearance and quality of welds, and methods used for correcting welding work. Welding shall be in accordance with AWS D1.1 and D1.3.

3.3 ROOF-DECK INSTALLATION

A. Permanently fasten roof-deck panels to steel supporting members by arc spot (puddle) welds of the surface diameter indicated or arc seam welds with an equal perimeter that is not less than 1-1/2 inches long, and as follows:

1. Weld Diameter: 5/8 inch, nominal.

B. Side-Lap and Perimeter Edge Fastening:

1. Mechanically fasten with self-drilling, No. 10 diameter or larger, carbon-steel screws.

C. Fastening Spacing: Provide fasteners at no greater than maximum spacing listed in the table below. Weld intermediate and end supports of deck units with a minimum of two welds per deck unit at each support. Fasten side-laps at intervals not exceeding the lesser of 1/2 of the span or per the table below.

	Deck Designation	Intermediate Supports (inches)		End Supports (inches)	* Edge Supports (inches)	Side Laps (inches)
1.	WR…….	**12**	12	12	24	
2.	DR……..	8		8	24	12

D. End Bearing: Install deck ends over supporting frame with a minimum end bearing of 1-1/2 inches, with end joints as follows:

1. End Joints: Lapped 2 inches minimum for WR and DR deck.

E. Reinforcement at Openings: For openings less than 13 inches in any dimension not reinforced with supplemental structural framing, provide additional metal reinforcement and closure pieces as required for strength and continuity of decking, and support of other work.

1. Reinforce roof deck with flat sheet steel placed over opening and fastened to top of deck.

a. For openings up to 6 inches in diameter, no reinforcing is necessary.

b. For openings 6 inches to 8 inches in diameter, provide no less than nominal 0.045 inch (18 gauge) thick before coating, and at least 12 inches wider and longer than opening.

c. For openings 8 inches to 13 inches in diameter, provide no less than nominal 0.057 inch (16 gauge) thick before coating, and at least 12 inch wider and longer than opening.

2. Fasten using one No. 10 screw at each corner, at each up-flute and spaced not more than 12 inches along each side.

F. Miscellaneous Roof-Deck Accessories: Install ridge and valley plates, flat plates at change of deck direction, butt strips, finish strips, end closures, and reinforcing channels and all other miscellaneous shapes as shown on plans according to deck manufacturer's written instructions, and as required to provide suitable surface for application of roof insulation and roof covering. Fasten with No. 10 screws at 12 inches maximum to provide a complete deck installation.

G. Rubber Flute Closure Strips: Install flexible closure strips over partitions, walls, and where indicated. Install with adhesive according to manufacturer's written instructions to ensure complete closure.

H. Sound-Absorbing Insulation: Furnish insulation for insertion between flutes of all acoustical deck unless otherwise noted. Refer to Div 07 roofing specification for installation.

I. Roof Insulation Support: Provide and install metal accessories to provide suitable surface for application of insulation.

3.4 FLOOR-DECK INSTALLATION

A. Place deck units in straight alignment for entire length of run of cells and with close alignment between cells at ends of abutting units.

B. Fasten floor-deck panels to steel supporting members by arc spot (puddle) welds of the surface diameter indicated and as follows:

1. Weld Diameter: 3/4 inch, nominal. Where two units abut, fasten each unit to steel framing separately.

2. Weld Spacing: End and intermediate supports perpendicular to deck flutes: 12 inches o.c.

C. Side-Lap and Perimeter Edge Fastening: Fasten side laps and perimeter edges of panels between supports, at intervals not exceeding the lesser of half of the span or 36 inches, and as follows:

1. Mechanically fasten with self-drilling, No. 10 diameter or larger, carbon-steel screws.
2. Mechanically clinch or button punch.
3. Fasten with a minimum of 1-1/2-inch- long welds.

D. End Bearing: Install deck ends over supporting frame with a minimum end bearing of 1-1/2 inches, with butted end joints.

E. Pour Stops and Girder Fillers: Weld steel sheet pour stops and girder fillers to supporting structure according to SDI recommendations unless otherwise indicated.

F. Floor-Deck Closures: Weld steel sheet column closures, cell closures, and Z-closures to deck, according to SDI recommendations, to provide tight-fitting closures at open ends of ribs and sides of deck.

G. Deck Accessories to Supporting Members: Fasten in accordance with manufacturer's recommendations.

H. Deck Openings: Cut and reinforce all holes or openings in floor as shown on manufacturer's placement drawings.

3.5 FIELD QUALITY CONTROL

A. Testing Agency: Owner will engage a qualified testing agency to perform tests and inspections.

B. Field Inspections:

1. Material Inspection: Select six (6) random sheets for each type of deck used. Inspect for thickness, type and material.

2. Fastening Inspection: Inspect welds and side lap fasteners over entire deck area for size and spacing and weld quality.

3. Roof Deck Conditions Inspection: Before installation of roof insulation and roof covering, inspect the deck for tears, dents or other damage that may prevent the deck from supporting the required loads, or be visually objectionable in exposed deck areas. Report suspect areas to Architect to determine need for repair or replacement.

4. Floor Deck Conditions Inspection: Before concrete placement, inspect the deck for tears, dents or other damage that may prevent the deck from acting as a tight and substantial form. Inspect deck for dirt, ice, water, oils or other materials that could prevent or inhibit composite action forming between deck and hardened concrete. Report suspect areas to Architect to determine need for repair, replacement or cleaning.

C. Testing agency will report inspection results promptly and in writing to Contractor and Architect.

D. Remove and replace work that does not comply with specified requirements.

E. Additional inspecting, at Contractor's expense, will be performed to determine compliance of corrected work with specified requirements.

3.6 PROTECTION

A. Hanging Loads (All Contractors): Do not hang any concentrated loads from metal deck unless otherwise noted and detailed on Drawings.

B. Galvanizing Repairs: Prepare and repair damaged galvanized coatings on both surfaces of deck with galvanized repair paint according to ASTM A 780 and manufacturer's written instructions.

C. Repair Painting: Wire brush and clean rust spots, welds, and abraded areas on top surface of prime-painted deck immediately after installation, and apply repair paint.

1. Wire brushing, cleaning, and repair painting of bottom deck surfaces are included in Division 09 Section.

D. Provide final protection and maintain conditions to ensure that steel deck is without damage or deterioration at time of Substantial Completion.

E. Do not use deck units for storage or working platforms until permanently secured.

END OF SECTION 05 31 00

SECTION 05 40 00 - COLD-FORMED METAL FRAMING

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. This Section includes the following cold-formed metal framing ("CFMF") elements:

1. Exterior non-load-bearing wall framing.

1.3 PERFORMANCE REQUIREMENTS

A. Delegated Design: Engage a qualified professional engineer, as defined in Division 01 Section "Quality Requirements," to design cold-formed steel framing.

B. Structural Performance: Provide cold-formed metal framing capable of withstanding design loads and all combinations of these loads, as required by applicable codes and as specified on Drawings, within limits and under conditions indicated.

1. Design Loads: As indicated on Drawings.

   a. Dead Loads: Weights of materials and construction.

2. Deflection Limits: Design framing systems to withstand design loads without deflections greater than the following:

   a. Exterior Non-Load-Bearing Framing: Horizontal deflection of the wall height of 1/240 for metal wall panels 1/600 for masonry veneer.
   b. Ceiling Joist Framing: Vertical deflection of 1/360 of the span.

3. Design framing systems to provide for movement of framing members without damage or overstressing, sheathing failure, connection failure, undue strain on fasteners and anchors, or other detrimental effects when subject to a maximum ambient temperature change of 120 deg F.

4. Design framing system to maintain clearances at openings, to allow for construction tolerances, and to accommodate live load deflection of primary building structure as follows:

   a. Upward and downward movement of 3/4 inch.

C. Cold-Formed Steel Framing, General: Design according to AISI's "Standard for Cold-Formed Steel Framing - General Provisions."

1. Headers: Design according to AISI's "Standard for Cold-Formed Steel Framing - Header Design."
2. Design exterior non-load-bearing wall framing to accommodate horizontal deflection without regard for contribution of sheathing materials.

D. Minimum Thickness and Maximum Spacing Requirements: Comply with the requirements of this specification for specific requirements for minimum thickness and maximum spacing for cold-formed metal framing components.

1.4 SUBMITTALS, GENERAL

A. General: Submit all action submittals and informational submittals required by this Section concurrently.

1.5 ACTION SUBMITTALS

A. Product Data: For each type of cold-formed metal framing product and accessory indicated.

B. Shop Drawings: Show layout, spacings, sizes, thicknesses, and types of cold-formed metal framing; fabrication; and fastening and anchorage details, including mechanical fasteners. Show reinforcing channels, opening framing, supplemental framing, strapping, bracing, bridging, splices, accessories, connection details, and attachment to adjoining work.

1. For cold-formed metal framing indicated to comply with design loads, include structural analysis data signed and sealed by the qualified professional engineer responsible for their preparation.

1.6 INFORMATIONAL SUBMITTALS

A. Product Test Reports: From a qualified testing agency, unless otherwise stated, indicating that each of the following complies with requirements, based on evaluation of comprehensive tests for current products:

1. Expansion anchors.
2. Power-actuated anchors.

1.7 QUALITY ASSURANCE

A. Engineering Responsibility: Preparation of Shop Drawings, design calculations, and other structural data by a qualified professional engineer (licensed in the State of New York) responsible for their preparation certifying that the design is in compliance with the Building Code of New York.

B. Cold-formed Metal Framing Installer Qualifications: At least 5 years experience in construction of cold-formed metal framing systems similar in scope to application shown on Documents with record of successful in-service performance for prior projects.

C. Product Tests: Mill certificates or data from a qualified independent testing agency indicating steel sheet complies with requirements, including base-metal thickness, yield strength, tensile strength, total elongation, chemical requirements, and metallic-coating thickness.

D. Welding: Qualify procedures and personnel according to AWS D1.1/D1.1M, "Structural Welding Code--Steel," and AWS D1.3, "Structural Welding Code--Sheet Steel."

E. AISI Specifications and Standards: Comply with AISI's "North American Specification for the Design of Cold-Formed Steel Structural Members" and its "Standard for Cold-Formed Steel Framing - General Provisions."

1. Comply with AISI's "Standard for Cold-Formed Steel Framing - Truss Design."
2. Comply with AISI's "Standard for Cold-Formed Steel Framing - Header Design."

F. Structural Preconstruction Conference: Attend conference at Project site.

G. Preinstallation Conference: Conduct conference at Project site to comply with requirements in Division 01 Section "Project Management and Coordination."

1.8 DELIVERY, STORAGE, AND HANDLING

A. Packing and Shipping: Deliver materials and components to Site in manufacturer's unopened packages, containers or bundles, fully identified with brand name, type, grade and identification of manufacturer or supplier.

B. Protect cold-formed metal framing from corrosion, deformation, and other damage during delivery, storage, and handling.

C. Store cold-formed metal framing, protect with a waterproof covering, and ventilate to avoid condensation.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Manufacturers: Subject to compliance with requirements, available manufacturers offering cold-formed metal framing that may be incorporated into the Work include, but are not limited to, the following:

1. AllSteel Products, Inc.
2. ClarkWestern Building Systems, Inc.
3. Dietrich Metal Framing; a Worthington Industries Company.
4. MarinoWare; a division of Ware Industries.
5. MBA Building Supplies, Inc.
6. Super Stud Building Products, Inc.

7. United Metal Products, Inc.
8. Telling Industries, LLC.

2.2 MATERIALS

A. Steel Sheet: ASTM A1003/A1003M, Structural Grade, Type H, metallic coated, of grade and coating weight as follows:

1. Grade: As required by structural performance.
2. Coating: G60, A60, AZ50, or GF30.

2.3 EXTERIOR NON-LOAD-BEARING WALL FRAMING

A. Steel Studs: Manufacturer's standard C-shaped steel studs, of web depths indicated, punched, with stiffened flanges, and as follows:

1. Minimum Base-Metal Thickness: 33 mils standard.
2. Minimum Flange Width: 1-5/8 inches.

B. Steel Track: Manufacturer's standard U-shaped steel track, of web depths indicated, unpunched, with unstiffened flanges, and as follows:

1. Minimum Base-Metal Thickness: 33 mils or at least matching steel studs.
2. Minimum Flange Width: 1-1/4 inches.

C. Single Deflection Track: Manufacturer's single, deep-leg, U-shaped steel track; unpunched, with unstiffened flanges, of web depth to contain studs while allowing free vertical movement, with flanges designed to support horizontal and lateral loads and transfer them to the primary structure, and as follows:

1. Minimum Base-Metal Thickness: 54 mils.
2. Flange Width: 1 inch plus the design gap for 1-story structures.

2.4 FRAMING ACCESSORIES

A. Fabricate steel-framing accessories from steel sheet, ASTM A1003/A1003M, Structural Grade, Type H, metallic coated, of same grade and coating weight used for framing members.

B. Provide accessories of manufacturer's standard thickness and configuration, unless otherwise indicated, as follows:

1. Supplementary framing.
2. Bracing, bridging, and solid blocking.
3. Web stiffeners.
4. Anchor clips.
5. End clips.
6. Stud kickers and knee braces.
7. Joist hangers and end closures.
8. Hole reinforcing plates.
9. Backer plates.

2.5 ANCHORS, CLIPS, AND FASTENERS

A. Steel Shapes and Clips: ASTM A1003/A1003M, Structural Grade, Type H, metallic coated, of grade and coating weight matching associated member.

B. Anchor Bolts: ASTM F1554, Grade 36, threaded carbon-steel hex-headed bolts and carbon-steel nuts; and flat, hardened-steel washers; zinc coated by hot-dip process according to ASTM A153/A153M, Class C.

C. Expansion Anchors: Fabricated from corrosion-resistant materials, with capability to sustain, without failure, a load equal to 5 times design load, as determined by testing per ASTM E488 conducted by a qualified independent testing agency.

D. Power-Actuated Anchors: Fastener system of type suitable for application indicated, fabricated from corrosion-resistant materials, with capability to sustain, without failure, a load equal to 10 times design load, as determined by testing per ASTM E1190 conducted by a qualified independent testing agency.

E. Mechanical Fasteners: ASTM C1513, corrosion-resistant-coated, self-drilling, self-tapping steel drill screws.

   1. Head Type: Low-profile head beneath sheathing, manufacturer's standard elsewhere.

F. Welding Electrodes: Comply with AWS standards.

2.6 MISCELLANEOUS MATERIALS

A. Galvanizing Repair Paint: ASTM A780.

B. Nonmetallic, Nonshrink Grout: Premixed, nonmetallic, noncorrosive, nonstaining grout containing selected silica sands, portland cement, shrinkage-compensating agents, and plasticizing and water-reducing agents, complying with ASTM C1107, with fluid consistency and 30-minute working time.

C. Shims: Load bearing, high-density multimonomer plastic, nonleaching.

D. Sealer Gaskets: Closed-cell neoprene foam, 1/4 inch thick, selected from manufacturer's standard widths to match width of bottom track or rim track members.

2.7 FABRICATION

A. Fabricate cold-formed metal framing and accessories plumb, square, and true to line, and with connections securely fastened, according to referenced AISI specifications and standards, manufacturer's written instructions, and requirements in this Section.

   1. Fabricate framing assemblies using jigs or templates.

   2. Cut framing members by sawing or shearing; do not torch cut.

3. Fasten cold-formed metal framing members by welding, screw fastening, clinch fastening, or riveting as standard with fabricator. Wire tying of framing members is not permitted.

   a. Comply with AWS D1.3 requirements and procedures for welding, appearance and quality of welds, and methods used in correcting welding work.
   b. Locate mechanical fasteners and install according to Shop Drawings, with screw penetrating joined members by not less than three exposed screw threads.

4. Fasten other materials to cold-formed metal framing by welding, bolting, or screw fastening, according to Shop Drawings.

5. Splices in axially loaded members not acceptable.

B. Reinforce, stiffen, and brace framing assemblies to withstand handling, delivery, and erection stresses. Lift fabricated assemblies to prevent damage or permanent distortion.

C. Fabrication Tolerances: Fabricate assemblies level, plumb, and true to line to a maximum allowable tolerance variation of 1/8 inch in 10 feet and as follows:

1. Spacing: Space individual framing members no more than plus or minus 1/8 inch from plan location. Cumulative error shall not exceed minimum fastening requirements of sheathing or other finishing materials.

2. Squareness: Fabricate each cold-formed metal framing assembly to a maximum out-of-square tolerance of 1/8 inch.

D. Touch-up all welds with galvanizing primer.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine supporting substrates and abutting structural framing for compliance with requirements for installation tolerances and other conditions affecting performance.

1. Proceed with installation only after unsatisfactory conditions have been corrected.

B. Beginning installation constitutes Contractor's acceptance of substrates and conditions.

3.2 PREPARATION

A. Install load bearing shims or grout between the underside of wall bottom track or rim track and the top of foundation wall or slab at stud or joist locations to ensure a uniform bearing surface on supporting concrete or masonry construction.

B. Install sealer gaskets to isolate the underside of wall bottom track or rim track and the top of foundation wall or slab at stud or joist locations.

3.3 INSTALLATION, GENERAL

A. Cold-formed metal framing may be shop or field fabricated for installation, or it may be field assembled.

B. Install cold-formed metal framing according to AISI's "Standard for Cold-Formed Steel Framing - General Provisions", manufacturer's written instructions, Drawings, and approved Shop Drawings unless more stringent requirements are indicated.

C. Install shop- or field-fabricated, cold-formed framing and securely anchor to supporting structure.

   1. Screw, bolt, or weld wall panels at horizontal and vertical junctures to produce flush, even, true-to-line joints with maximum variation in plane and true position between fabricated panels not exceeding 1/16 inch.

D. Install cold-formed metal framing and accessories plumb, square, and true to line, and with connections securely fastened.

   1. Cut framing members by sawing or shearing; do not torch cut.

   2. Fasten cold-formed metal framing members by welding, screw fastening, clinch fastening, or riveting. Wire tying of framing members is not permitted.

      a. Comply with AWS D1.3 requirements and procedures for welding, appearance and quality of welds, and methods used in correcting welding work.
      b. Locate mechanical fasteners and install according to Shop Drawings, and complying with requirements for spacing, edge distances, and screw penetration.

E. Install framing members in one-piece lengths unless splice connections are indicated for track or tension members.

F. Install temporary bracing and supports to secure framing and support loads comparable in intensity to those for which structure was designed. Maintain braces and supports in place, undisturbed, until entire integrated supporting structure has been completed and permanent connections to framing are secured.

G. Install insulation, specified in Division 07 Section "Thermal Insulation," in built-up exterior framing members, such as headers, sills, boxed joists, and multiple studs at openings, that are inaccessible on completion of framing work.

H. Fasten hole reinforcing plate over web penetrations that exceed size of manufacturer's standard punched openings.

I. Erection Tolerances: Install cold-formed metal framing level, plumb, and true to line to a maximum allowable tolerance variation of 1/8 inch in 10 feet and as follows:

   1. Space individual framing members no more than plus or minus 1/8 inch from plan location. Cumulative error shall not exceed minimum fastening requirements of sheathing or other finishing materials.

3.4 EXTERIOR NON-LOAD-BEARING WALL INSTALLATION

A. Install continuous tracks sized to match studs. Align tracks accurately and securely anchor to supporting structure as indicated.

B. Fasten both flanges of studs to bottom track, unless otherwise indicated. Space studs as follows:

   1. Maximum Stud Spacing: 16 inches.

C. Set studs plumb, except as needed for diagonal bracing or required for nonplumb walls or warped surfaces and similar requirements.

D. Isolate non-load-bearing steel framing from building structure to prevent transfer of vertical loads while providing lateral support.

   1. Install single deflection tracks and anchor to building structure. Do not fasten studs to deflection track.
   2. Install double deep-leg deflection tracks and anchor outer track to building structure. Do not fasten tracks together.

E. Install headers and sills for wall openings wider than stud spacing. Locate headers and sills at openings as indicated. Fabricate headers of compound shapes indicated or required to transfer load to supporting studs, complete with clip-angle connectors, web stiffeners, or gusset plates.

   1. Frame wall openings with not less than a double stud at each jamb of frame as indicated on approved Shop Drawings. Fasten jamb members together to uniformly distribute loads.

   2. Install runner tracks and jack studs above and below wall openings. Anchor tracks to jamb studs with clip angles or by welding, and space jack studs same as full-height wall studs.

F. Install horizontal bridging in wall studs, spaced in rows indicated on Shop Drawings but not more than 48 inches apart. Fasten at each stud intersection.

   1. Top Bridging for Single Deflection Track: Install row of horizontal bridging within 12 inches of single deflection track. Install a combination of flat, taut, steel sheet straps of width and thickness indicated and stud or stud-track solid blocking of width and thickness matching studs. Fasten flat straps to stud flanges and secure solid blocking to stud webs or flanges.

      a. Install solid blocking at centers indicated on approved Shop Drawings.

   2. Bridging may be one of the following types:

      a. Cold-rolled steel channel, welded or mechanically fastened to webs of punched studs.

b. Combination of flat, taut, steel sheet straps of width and thickness indicated and stud-track solid blocking of width and thickness to match studs. Fasten flat straps to stud flanges and secure solid blocking to stud webs or flanges.

c. Proprietary bridging bars installed according to manufacturer's written instructions.

G. Install miscellaneous framing and connections, including stud kickers, web stiffeners, clip angles, continuous angles, anchors, fasteners, and stud girts, to provide a complete and stable wall-framing system.

3.5 FIELD QUALITY CONTROL

A. Testing: Owner will engage a qualified independent testing and inspecting agency to perform field tests and inspections and prepare test reports. Contractor to provide access to construction for inspections to verify conformance with provisions of Contract Documents and approved Shop Drawings. Inspections to include but not limited to, the following:

1. Verify member sizes, configuration and spacing.
2. Inspect screwed and welded connections.
3. Inspect weld quality.
4. Verify field welder’s certification.
5. Verify galvanizing primer has been applied to all welds and damaged galvanized surfaces.
6. Verify compliance with details shown on approved drawings such as bracing, stiffening, member location, and proper application of joint details at each connection.

B. Field and shop welds will be subject to testing and inspecting.

C. Testing agency will report test results promptly and in writing to Contractor and Architect.

D. Remove and replace work where test results indicate that it does not comply with specified requirements.

E. Additional testing and inspecting, at Contractor's expense, will be performed to determine compliance of replaced or additional work with specified requirements.

3.6 CORECTIONS AND PROTECTION

A. Galvanizing Repairs: Prepare and correct damaged galvanized coatings on fabricated and installed cold-formed metal framing with galvanized repair paint according to ASTM A 780 and manufacturer's written instructions.

B. Provide final protection and maintain conditions, in a manner acceptable to manufacturer and Installer, that ensure that cold-formed metal framing is without damage or deterioration at time of Substantial Completion.

END OF SECTION 05 40 00

SECTION 05 50 00 - 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. Steel framing and supports for overhead doors.
2. Steel framing and supports for mechanical and electrical equipment.
3. Steel framing and supports for applications where framing and supports are not specified in other Sections.
4. Metal ladders.
5. Metal ships' ladders.
6. Miscellaneous steel trim.

B. Products furnished, but not installed, under this Section:

1. Loose steel lintels.
2. Anchor bolts indicated to be cast into concrete or built into unit masonry.

1.3 PERFORMANCE REQUIREMENTS

A. Delegated Design: Design ladders, including comprehensive engineering analysis by a qualified professional engineer (licensed in the State of New York), using performance requirements and design criteria indicated and certifying that the design complies with the Building Code of New York.

B. 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.

C. 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.

1.4 SUBMITTALS, GENERAL

A. General: Submit all action submittals required by this Section concurrently.

1.5 ACTION SUBMITTALS

A. Product Data: For the following:

1. Slotted channel framing.
2. Grout.

B. Shop Drawings: Show fabrication and installation details for metal fabrications.

1. Include plans, elevations, sections, and details of metal fabrications and their connections. Show anchorage and accessory items.

C. Delegated-Design Submittal: For installed products indicated to comply with performance requirements and design criteria, including analysis data signed and sealed by the qualified professional engineer responsible for their preparation.

1.6 QUALITY ASSURANCE

A. Welding Qualifications: Qualify procedures and personnel according to the following:

1. AWS D1.1/D1.1M, "Structural Welding Code - Steel."
2. AWS D1.2/D1.2M, "Structural Welding Code - Aluminum."

1.7 COORDINATION

A. Coordinate installation of anchorages. Furnish setting drawings, templates, and directions for installing anchorages, including sleeves, concrete inserts, anchor bolts, and items with integral anchors, that are to be embedded in concrete or masonry. Deliver such items to Project site in time for installation.

PART 2 - PRODUCTS

2.1 METALS, GENERAL

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.

2.2 FERROUS METALS

A. Steel Channels and Angles: ASTM A 572/A 572M, Grade 50.

B. Steel Plates and Bars: ASTM A36/A36M.

C. Stainless-Steel Sheet, Strip, and Plate: ASTM A240/A240M or ASTM A666, Type 316L.

D. Stainless-Steel Bars and Shapes: ASTM A276, Type 304.

E. Rolled-Steel Floor Plate: ASTM A786/A786M, rolled from plate complying with ASTM A36/A36M or ASTM A283/A283M, Grade C or D.

F. Abrasive-Surface Floor Plate: Steel plate with abrasive granules rolled into surface or with abrasive material metallically bonded to steel.

1. Products: Subject to compliance with requirements, available products that may be incorporated into the Work include, but are not limited to, the following:

a. IKG Industries, a division of Harsco Corporation.
b. SlipNOT Metal Safety Flooring.

G. Steel Tubing: ASTM A500, cold-formed steel tubing.

H. Steel Pipe: ASTM A53/A53M, standard weight (Schedule 40) unless otherwise indicated.

I. Zinc-Coated Steel Wire Rope: ASTM A741.

1. Wire-Rope Fittings: Hot-dip galvanized-steel connectors with capability to sustain, without failure, a load equal to minimum breaking strength of wire rope with which they are used.

J. Slotted Channel Framing: Cold-formed metal box channels (struts) complying with MFMA-4.

1. Size of Channels: 1-5/8 by 1-5/8 inches or as indicated on drawings.
2. Material: Galvanized steel, ASTM A 653/A 653M, structural steel, Grade 33, with G90 coating; 0.108-inch nominal thickness.
3. Fasteners and Fittings: Appropriate to situation and as recommend by manufacturer.

2.3 NONFERROUS METALS

A. Aluminum Plate and Sheet: ASTM B209, Alloy 6061-T6.

B. Aluminum Extrusions:

1. ASTM B221, Alloy 6061-T6.
2. ASTM B221, Alloy 6063-T5.
3. ASTM B221, Alloy 6063-T6.

2.4 FASTENERS

A. General: Unless otherwise indicated, provide Type 304 stainless-steel fasteners for exterior use and zinc-plated fasteners with coating complying with ASTM B633 or ASTM F1941, Class Fe/Zn 5, at exterior walls. Select fasteners for type, grade, and class required.

B. Post-installed Anchors: Torque-controlled expansion anchors or.

1. Material for Interior Locations: Carbon-steel components zinc plated to comply with ASTM B633 or ASTM F1941, Class Fe/Zn 5 unless otherwise indicated.

2. Chemical Anchor Adhesives: Heavy duty, two component injectable adhesive designed to be dispensed using double chamber gun with mixing nozzle. Adhesives in capsule form will not be accepted.

a. Products for anchoring into concrete and grout-filled masonry: Subject to compliance with requirements, available products that may be incorporated into the Work include, but are not limited to, the following:

1) DeWalt; AC200+.
2) Hilti, Inc.; HIT-HY 200R; HIT-HY 200A; HIT-ICE.
3) ITW Redhead; A7+.

b. Products for anchoring into masonry other than grout-filled masonry: Subject to compliance with requirements, available products that may be incorporated into the Work include, but are not limited to, the following:

1) DeWalt; AC200+.
2) Hilti, Inc.; HIT-HY 270.
3) ITW Redhead; A7+.

2.5 MISCELLANEOUS MATERIALS

A. Welding Rods and Bare Electrodes: Select according to AWS specifications for metal alloy welded.

B. Primer:

1. VOC Content: Products shall comply with VOC limits of authorities having jurisdiction.

2. Provide primers that comply with Division 09 Section “High Performance Coatings” and the following:

a. Exposed Exterior Structural Steel: Refer to First Coat for Steel Substrates in Exterior High-Performance Coating Schedule.

C. Galvanizing Repair Paint: High-zinc-dust-content paint complying with ASTM A780/A780M and compatible with paints specified to be used over it.

D. Non-shrink, Nonmetallic Grout: Factory-packaged, non-staining, noncorrosive, nongaseous grout complying with ASTM C1107. Provide grout specifically recommended by manufacturer for interior and exterior applications.

E. Concrete: Comply with requirements in Division 03 Section "Cast-in-Place Concrete" for normal-weight, air-entrained, concrete with a minimum 28-day compressive strength of 3000 psi.

F. Isolation Barrier membrane: Self-adhering, high-temperature sheet, minimum 15 mils thick, consisting of cross-laminated polyethylene-film top surface laminated to layer of butyl adhesive, with release-liner backing; cold applied, in roll width to match or exceed width of area to be protected. Provide primer when recommended by membrane manufacturer.

1. Products: Subject to compliance with requirements, available products that may be incorporated into the Work include, but are not limited to, the following:

    a. Grace Construction Products, a unit of W. R. Grace & Co.; "Vycor Pro."
    b. Equivalents meeting requirements of specified products.

2.6 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 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.

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. Fabricate seams and other connections that will be exposed to weather in a manner to exclude water. Provide weep holes where water may accumulate.

H. Cut, reinforce, drill, and tap metal fabrications as indicated to receive finish hardware, screws, and similar items.

I. 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.

    1. Where units are indicated to be cast into concrete or built into masonry, equip with integrally welded steel strap anchors, 1/8 by 1-1/2 inches, with a minimum 6-inch embedment and 2-inch hook, not less than 8 inches from ends and corners of units and 24 inches o.c., unless otherwise indicated.

2.7 MISCELLANEOUS FRAMING AND SUPPORTS

A. General: Provide steel framing and supports not specified in other Sections as needed to complete the Work.

B. Fabricate units from steel shapes, plates, and bars of welded construction unless otherwise indicated. Fabricate to sizes, shapes, and profiles indicated and as necessary to receive adjacent construction.

1. Fabricate units from slotted channel framing where indicated.
2. Furnish inserts for units installed after concrete is placed.

C. Fabricate supports for operable partitions from continuous steel beams of sizes indicated with attached bearing plates, anchors, and braces as recommended by partition manufacturer. Drill or punch bottom flanges of beams to receive partition track hanger rods; locate holes where indicated on operable partition Shop Drawings.

2.8 METAL LADDERS

A. General:

1. Comply with ANSI A14.3 unless otherwise indicated.

B. Aluminum Ladders/Ships Ladders:

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. ACL Industries, Inc.
   b. Precision Ladders, LLC.
   c. Royalite Manufacturing, Inc.

2. Space siderails 24 inches apart unless otherwise indicated.

3. Siderails: Continuous extruded-aluminum channels or tubes, not less than 2-1/2 inches deep, 3/4 inch wide, and 1/8 inch thick.

4. Rungs: Extruded-aluminum tubes, not less than 3/4 inch deep and not less than 1/8 inch thick, with ribbed slip resistant tread surfaces.

5. Treads are 5-3/16″ x 1-1/4″ x 1/8″ extruded channel with deeply serrated surface to maximize traction.

6. Handrails are 1-1/4″ schedule 40 pipe.

7. Fit rungs in centerline of siderails; fasten by welding or with stainless-steel fasteners or brackets and aluminum rivets.

8. Provide platforms as indicated fabricated from extruded-aluminum plank grating, supported by extruded-aluminum framing.

9. Support each ladder at top and bottom and not more than 48 inches o.c. with welded or bolted aluminum brackets.

10. Provide minimum 72-inch-high, hinged security door with padlock hasp at foot of ladder to prevent unauthorized ladder use.

2.9 METAL SHIPS' LADDERS

A. Provide metal ships' ladders where indicated. Fabricate of open-type construction with channel or plate stringers and pipe and tube railings unless otherwise indicated. Provide brackets and fittings for installation.

1. Fabricate ships' ladders, including railings from steel.

2. Fabricate treads and platforms from welded or pressure-locked steel bar grating, with serrated surface, and with rolled-steel floor plate (checkered plate) nosing.

a. Products: Subject to compliance with requirements, available products that may be incorporated into the Work include, but are not limited to, the following:

1) McNichols Co.; Quality Stair Tread.

3. Fabricate treads from abrasive-surface floor plate.

4. Comply with applicable railing requirements in Division 05 Section "Tube Railings (Steel)."

2.10 MISCELLANEOUS STEEL TRIM

A. Unless otherwise indicated, fabricate units from steel shapes, plates, and bars of profiles shown with continuously welded joints and smooth exposed edges. Miter corners and use concealed field splices where possible.

B. Provide cutouts, fittings, and anchorages as needed to coordinate assembly and installation with other work.

1. Provide with integrally welded steel strap anchors for embedding in concrete or masonry construction.

2.11 LOOSE STEEL LINTELS

A. Fabricate loose steel lintels from steel angles and shapes of size indicated for openings and recesses in masonry walls and partitions at locations indicated. Fabricate in single lengths for each opening unless otherwise indicated. Weld adjoining members together to form a single unit where indicated.

B. Size loose lintels to provide bearing length at each side of openings equal to 1/12 of clear span but not less than 8 inches unless otherwise indicated.

2.12 STEEL WELD PLATES AND ANGLES

A. Provide steel weld plates and angles not specified in other Sections, for items supported from concrete construction as needed to complete the Work. Provide each unit with no fewer than two integrally welded steel strap anchors for embedding in concrete.

2.13 FINISHES, GENERAL

A. Comply with NAAMM's "Metal Finishes Manual for Architectural and Metal Products" for recommendations for applying and designating finishes.
B. Finish metal fabrications after assembly.
C. Finish exposed surfaces to remove tool and die marks and stretch lines, and to blend into surrounding surface.

2.14 STEEL AND IRON FINISHES

A. Surface Preparation: Clean surfaces to be painted. Remove loose rust and mill scale and spatter, slag, or flux deposits. Prepare surfaces according to Division 09 Section “High Performance Coatings.”

1. For galvanized surfaces noted to be painted, comply with ASTM D6386, “Standard Practice for Preparation of Zinc (Hot-Dip Galvanized) Coated Iron and Steel Product and Hardware Surfaces for Painting.”

B. Galvanizing: Hot-dip galvanize items as indicated to comply with ASTM A153/A153M for steel and iron hardware and with ASTM A123/A123M for other steel and iron products.

1. Do not quench or apply post galvanizing treatments that might interfere with paint adhesion.

C. Shop prime iron and steel items not indicated to be galvanized unless they are to be embedded in concrete, sprayed-on fireproofing, or masonry, or unless otherwise indicated.

1. Metal Fabrications: For all iron and steel items (except those noted below), shop prime with alkyd primer.
2. Exterior Wall Metal Fabrications: For all iron and steel items occurring in exterior walls, shop prime with urethane primer.
3. Exposed Exterior Metal Fabrications: For all iron and steel items exposed on the exterior, shop prime with zinc-rich primer.

D. Shop Priming: Immediately after surface preparation, apply one coat of primer according to manufacturer's written instructions and at rate recommended by SSPC to provide a minimum dry film thickness as listed below. Use priming methods that result in full coverage of joints, corners, edges, and exposed surfaces.

1. Stripe paint corners, crevices, bolts, welds, and sharp edges.
2. Apply two coats of shop paint to surfaces that are inaccessible after assembly or erection. Change color of second coat to distinguish it from first.

2.15 ALUMINUM FINISHES

A. Finish designations prefixed by AA comply with the system established by the Aluminum Association for designating aluminum finishes.

B. As-Fabricated Finish: AA-M10 (Mechanical Finish: as fabricated, unspecified).

PART 3 - EXECUTION

3.1 INSTALLATION, GENERAL

A. Beginning installation constitutes Contractor's acceptance of substrates and conditions.

B. Cutting, Fitting, and Placement: Perform cutting, drilling, and fitting required for installing metal fabrications. Set metal fabrications accurately in location, alignment, and elevation; with edges and surfaces level, plumb, true, and free of rack; and measured from established lines and levels.

C. Fit exposed connections accurately together to form hairline joints. Weld connections that are not to be left as exposed joints but cannot be shop welded because of shipping size limitations. Do not weld, cut, or abrade surfaces of exterior units that have been hot-dip galvanized after fabrication and are for bolted or screwed field connections.

D. Field Welding: Comply with the following requirements:

1. Use materials and methods that minimize distortion and develop strength and corrosion resistance of base metals.

2. Obtain fusion without undercut or overlap.

3. Remove welding flux immediately.

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.

E. Fastening to In-Place Construction: Provide anchorage devices and fasteners where metal fabrications are required to be fastened to in-place construction. Provide threaded fasteners for use with concrete and masonry inserts, toggle bolts, through bolts, lag screws, wood screws, and other connectors.

F. Provide temporary bracing or anchors in formwork for items that are to be built into concrete, masonry, or similar construction.

G. Corrosion Protection: Coat concealed surfaces of aluminum that will come into contact with grout, concrete, masonry, wood, or dissimilar metals with the following:

1. Extruded Aluminum: Isolation barrier membrane.

3.2 INSTALLING MISCELLANEOUS FRAMING AND SUPPORTS

A. General: Install framing and supports to comply with requirements of items being supported, including manufacturers' written instructions and requirements indicated on Shop Drawings.
B. Anchor supports for operable partitions securely to and rigidly brace from building structure.
C. Install slotted channel framing with manufacturer recommended fasteners and fittings and follow manufacturer recommended instructions.

3.3 INSTALLING BEARING AND LEVELING PLATES

A. Clean concrete and masonry bearing surfaces of bond-reducing materials, and roughen to improve bond to surfaces. Clean bottom surface of plates.

B. Set bearing and leveling plates on wedges, shims, or leveling nuts. After bearing members have been positioned and plumbed, tighten anchor bolts. Do not remove wedges or shims but, if protruding, cut off flush with edge of bearing plate before packing with grout.

1. Use non-shrink, nonmetallic grout in exposed locations unless otherwise indicated.
2. Pack grout solidly between bearing surfaces and plates to ensure that no voids remain.

3.4 ADJUSTING AND CLEANING

A. Touchup Painting: Cleaning and touchup painting of field welds, bolted connections, and abraded areas of shop paint are specified in Division 09 Section "High-Performance Coatings."
B. Galvanized Surfaces: Clean field welds, bolted connections, and abraded areas and restore galvanizing to comply with ASTM A780.

END OF SECTION 05 50 00

SECTION 05 52 16 - TUBE RAILINGS (STEEL)

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. Steel tube railings.
2. Steel fittings, brackets, and other railing accessories.

1.3 COORDINATION

A. Coordinate installation of anchorages for railings. Furnish setting drawings, templates, and directions for installing anchorages, including sleeves, concrete inserts, anchor bolts, and items with integral anchors, that are to be embedded in concrete or masonry. Deliver such items to Project site in time for installation.

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 SUBMITTALS, GENERAL

A. General: Submit all action submittals required by this Section concurrently.

1.5 ACTION SUBMITTALS

A. Product Data: For the following:

1. Woven-wire mesh infill panels.
2. Fasteners.
3. Railing brackets, flanges, fittings, and anchors.

B. Shop Drawings: Include plans, elevations, sections, details, and attachments to other work.

1.6 QUALITY ASSURANCE

A. Welding Qualifications: Qualify procedures and personnel according to the following:

1. AWS D1.1/D1.1M, "Structural Welding Code - Steel."

1.7 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 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 flange tapped for concealed anchorage to threaded hanger bolt and that provides minimum 1-1/2-inch clearance from inside face of handrail to finished wall surface.

2.2 STEEL AND IRON

A. Tubing: ASTM A 500 (cold formed) or ASTM A 513.
B. Plates, Shapes, and Bars: ASTM A 36/A 36M.
C. Cast Iron: Either gray iron, ASTM A 48/A 48M, or malleable iron, ASTM A 47/A 47M, unless otherwise indicated.
D. Woven-Wire Mesh Infill Panels: Intermediate-crimp, square pattern, 1-inch woven-wire mesh, made from not less than 0.134-inch-diameter steel wire complying with ASTM A510.

2.3 FASTENERS

A. General: Provide the following:

1. Ungalvanized-Steel Railings: Plated steel fasteners complying with ASTM B 633 or ASTM F 1941, 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.

2.4 MISCELLANEOUS MATERIALS

A. Welding Rods and Bare Electrodes: Select according to AWS specifications for metal alloy welded.

B. Shop Primers: Provide primers that comply with Division 09 Section "High-Performance Coatings."

2.5 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 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. Cut, reinforce, drill, and tap as indicated to receive finish hardware, screws, and similar items.

F. Connections: Fabricate railings with welded connections unless otherwise indicated.

G. Welded Connections: Cope components at connections to provide close fit, or use fittings designed for this purpose. Weld all around at connections, including at fittings.

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 flux immediately.
4. At exposed connections, finish exposed surfaces smooth and blended so no roughness shows after finishing and welded surface matches contours of adjoining surfaces.

H. Form Changes in Direction as Follows:

1. By radius bends of radius indicated or by inserting prefabricated elbow fittings of radius indicated.

I. 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.

J. Close exposed ends of railing members with prefabricated end fittings.

K. Brackets, Flanges, Fittings, and Anchors: Provide wall brackets, flanges, miscellaneous fittings, and anchors to interconnect railing members to other work unless otherwise indicated.

L. Woven-Wire Mesh Infill Panels: Fabricate infill panels from woven-wire mesh crimped into steel channel frames.

1. Orient wire mesh with wires perpendicular and parallel to top rail.

M. Toe Boards: Where indicated, provide toe boards at railings around openings and at edge of open-sided floors and platforms. Fabricate to dimensions and details indicated.

2.6 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. Shop Priming: Comply with requirements in Division 09 Section “High-Performance Coatings.”

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine plaster and gypsum board assemblies, where reinforced to receive anchors, to verify that locations of concealed reinforcements are clearly marked for Installer. Locate reinforcements and mark locations if not already done.

B. Beginning installation constitutes Contractor’s acceptance of substrates and conditions.

3.2 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.

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.

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.

3.3 RAILING CONNECTIONS

A. Welded Connections: Use fully welded joints for permanently connecting railing components, unless otherwise indicated. Comply with requirements for welded connections in "Fabrication" Article whether welding is performed in the shop or in the field.

3.4 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 indicated.

3.5 ADJUSTING AND CLEANING

A. Touchup Painting: Cleaning and touchup painting of field welds, bolted connections, and abraded areas of shop paint are specified in Division 09 Section "High-Performance Coatings."

3.6 PROTECTION

A. Protect finishes of railings from damage during construction period with temporary protective coverings approved by railing manufacturer.

END OF SECTION 05 52 16

SECTION 06 10 00 - ROUGH CARPENTRY

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. Wood-preservative-treated lumber.
2. Fire-retardant-treated materials, including plywood backing panels.
3. Miscellaneous lumber (non-treated).

1.3 DEFINITIONS

A. Boards or Strips: Lumber of less than 2 inches nominal size in least dimension.
B. Dimension Lumber: Lumber of 2 inches nominal size or greater but less than 5 inches nominal size in least dimension.

1.4 SUBMITTALS, GENERAL

A. General: Submit all action submittals required by this Section concurrently.

1.5 ACTION SUBMITTALS

A. Product Data: For each type of process and factory-fabricated product. Indicate component materials and dimensions and include construction and application details.

1. Wood-Preservative-Treated Lumber: Include data for wood-preservative treatment from chemical treatment manufacturer and certification by treating plant that treated materials comply with requirements. Indicate type of preservative used and net amount of preservative retained.

2. Fire-Retardant-Treated Materials:

a. Include data for fire-retardant treatment from chemical treatment manufacturer and certification by treating plant that treated materials comply with requirements. Include physical properties of treated materials based on testing by a qualified independent testing agency.

b. For fire-retardant treatments, include physical properties of treated lumber both before and after exposure to elevated temperatures, based on testing by a qualified independent testing agency according to ASTM D5664.

c. For fire-retardant treatments, include physical properties of treated plywood both before and after exposure to elevated temperatures, based on testing by a qualified independent testing agency according to ASTM D5516.

1.6 QUALITY ASSURANCE

A. Testing Agency Qualifications: For testing agency providing classification marking for fire-retardant treated material, an inspection agency acceptable to authorities having jurisdiction that periodically performs inspections to verify that the material bearing the classification marking is representative of the material tested.

1.7 DELIVERY, STORAGE, AND HANDLING

A. Stack wood products flat with spacers beneath and between each bundle to provide air circulation. Protect wood products from weather by covering with waterproof sheeting, securely anchored. Provide for air circulation around stacks and under coverings.

PART 2 - PRODUCTS

2.1 WOOD PRODUCTS, GENERAL

A. Lumber: DOC PS 20 and applicable rules of grading agencies indicated. If no grading agency is indicated, comply with the applicable rules of any rules-writing agency certified by the ALSC Board of Review. Grade lumber by an agency certified by the ALSC Board of Review to inspect and grade lumber under the rules indicated.

1. Factory mark each piece of lumber with grade stamp of grading agency.
2. Dress lumber, S4S, unless otherwise indicated.

B. Maximum Moisture Content of Lumber: 19 percent unless otherwise indicated.

2.2 WOOD-PRESERVATIVE-TREATED LUMBER

A. Preservative Treatment by Pressure Process: AWPA U1; Use Category UC2 for interior construction not in contact with ground, Use Category UC3b for exterior construction not in contact with ground, and Use Category UC4a for items in contact with ground.

1. Preservative Chemicals: Acceptable to authorities having jurisdiction and containing no arsenic or chromium.

B. Kiln-dry lumber after treatment to a maximum moisture content of 19 percent. Do not use material that is warped or that does not comply with requirements for untreated material.

C. Mark lumber with treatment quality mark of an inspection agency approved by the ALSC Board of Review.

D. Dimension Lumber Items: Construction or No. 2 grade lumber of any of the following species:

1. Hem-fir (north); NLGA.
2. Mixed southern pine or southern pine; SPIB.
3. Spruce-pine-fir; NLGA.
4. Hem-fir; WCLIB or WWPA.
5. Spruce-pine-fir (south); NeLMA, WCLIB, or WWPA.

E. Application: Treat items indicated on Drawings, and the following:

1. Wood nailers, blocking, and similar members in connection with flashing, vapor barriers, and waterproofing.
2. Wood sills, sleepers, blocking, furring, and similar concealed members in contact with masonry or concrete.
3. Wood floor plates that are installed over concrete slabs-on-grade.

2.3 FIRE-RETARDANT-TREATED MATERIALS

A. General: Where fire-retardant-treated materials are indicated, materials shall comply with requirements in this article, that are acceptable to authorities having jurisdiction, and with fire-test-response characteristics specified as determined by testing identical products per test method indicated by a qualified testing agency.

B. Fire-Retardant-Treated Lumber and Plywood by Pressure Process: Products with a flame-spread index of 25 or less when tested according to ASTM E84, and with no evidence of significant progressive combustion when the test is extended an additional 20 minutes, and with the flame front not extending more than 10.5 feet beyond the centerline of the burners at any time during the test.

1. Treatment shall not promote corrosion of metal fasteners.

2. Exterior Type: Treated materials shall comply with requirements specified above for fire-retardant-treated lumber and plywood by pressure process after being subjected to accelerated weathering according to ASTM D2898. Use for exterior locations and where indicated.

3. Interior Type A: Treated materials shall have a moisture content of 28 percent or less when tested according to ASTM D3201 at 92 percent relative humidity. Use where exterior type is not indicated.

4. Design Value Adjustment Factors: Treated lumber shall be tested according to ASTM D5664 and design value adjustment factors shall be calculated according to ASTM D6841.

C. Kiln-dry lumber after treatment to maximum moisture content of 19 percent. Kiln-dry plywood after treatment to maximum moisture content of 15 percent.

D. Identify fire-retardant-treated wood with appropriate classification marking of qualified testing agency.

E. Equipment Backing Panels: Plywood, DOC PS 1, Exposure 1, C-D Plugged, in thickness indicated or, if not indicated, not less than 3/4-inch nominal thickness.

F. Application: Treat items indicated on Drawings, and the following:

1. Concealed blocking.
2. Plywood backing panels.

2.4 MISCELLANEOUS LUMBER (NON-TREATED)

A. General: Provide miscellaneous lumber indicated and lumber for support or attachment of other construction, including the following:

1. Blocking.
2. Nailers.
3. Furring.
4. Grounds.

B. Dimension Lumber Items: Construction or No. 2 grade lumber of any of the following species:

1. Hem-fir (north); NLGA.
2. Mixed southern pine or southern pine; SPIB.
3. Spruce-pine-fir; NLGA.
4. Hem-fir; WCLIB or WWPA.

C. Concealed Boards: 19 percent maximum moisture content and any of the following species and grades:

1. Mixed southern pine or southern pine; No. 3 grade; SPIB.
2. Hem-fir or hem-fir (north); Standard or No. 3 Common grade; NLGA, WCLIB, or WWPA.

D. For blocking and nailers used for attachment of other construction, select and cut lumber to eliminate knots and other defects that will interfere with attachment of other work.

E. For furring strips for installing plywood or hardboard paneling, select boards with no knots capable of producing bent-over nails and damage to paneling.

2.5 FASTENERS

A. General: Fasteners shall be of size and type indicated and shall comply with requirements specified in this article for material and manufacture.

1. Where rough carpentry is exposed to weather, in ground contact, pressure-preservative treated, or in area of high relative humidity, provide fasteners of Type 304 stainless steel.

B. Nails, Brads, and Staples: ASTM F1667.

C. Power-Driven Fasteners: Fastener systems with an evaluation report acceptable to authorities having jurisdiction, based on ICC-ES AC70.

D. Post-Installed Anchors: Fastener systems with an evaluation report acceptable to authorities having jurisdiction, based on ICC-ES AC01 or ICC-ES AC193 as appropriate for the substrate.

1. Material: Carbon-steel components, zinc plated to comply with ASTM B633, Class Fe/Zn 5.
2. Material: Stainless steel with bolts and nuts complying with ASTM F593 and ASTM F594, Alloy Group 1 or 2.

PART 3 - EXECUTION

3.1 INSTALLATION, GENERAL

A. Beginning installation constitutes Contractor's acceptance of substrates and conditions.

B. Set rough carpentry to required levels and lines, with members plumb, true to line, cut, and fitted. Fit rough carpentry accurately to other construction. Locate furring, nailers, blocking, grounds, and similar supports to comply with requirements for attaching other construction.

C. Install plywood backing panels by fastening to studs; coordinate locations with utilities requiring backing panels. Install fire-retardant-treated plywood backing panels with classification marking of testing agency exposed to view.

D. Provide blocking and framing as indicated and as required to support facing materials, fixtures, specialty items, and trim.

1. Provide metal clips for fastening gypsum board or lath at corners and intersections where framing or blocking does not provide a surface for fastening edges of panels. Space clips not more than 16 inches o.c.

E. Provide fire blocking in furred spaces, stud spaces, and other concealed cavities as indicated and as follows:

1. Fire block furred spaces of walls, at each floor level, at ceiling, and at not more than 96 inches o.c. with solid wood blocking or noncombustible materials accurately fitted to close furred spaces.

2. Fire block concealed spaces of wood-framed walls and partitions at each floor level, at ceiling line of top story, and at not more than 96 inches o.c. Where fire blocking is not inherent in framing system used, provide closely fitted solid wood blocks of same width as framing members and 2-inch nominal thickness.

3. Fire block concealed spaces between floor sleepers with same material as sleepers to limit concealed spaces to not more than 100 sq. ft. and to solidly fill space below partitions.

4. Fire block concealed spaces behind combustible cornices and exterior trim at not more than 20 feet o.c.

F. Sort and select lumber so that natural characteristics do not interfere with installation or with fastening other materials to lumber. Do not use materials with defects that interfere with function of member or pieces that are too small to use with minimum number of joints or optimum joint arrangement.

G. Comply with AWPA M4 for applying field treatment to cut surfaces of preservative-treated lumber.

H. Securely attach rough carpentry work to substrate by anchoring and fastening as indicated, complying with the following:

1. Table 2304.10.1, "Fastening Schedule," in New York State Building Code.
2. ICC-ES evaluation report for fastener.

I. Use steel common nails unless otherwise indicated. Select fasteners of size that will not fully penetrate members where opposite side will be exposed to view or will receive finish materials. Make tight connections between members. Install fasteners without splitting wood. Drive nails snug but do not countersink nail heads unless otherwise indicated.

3.2 INSTALLATION OF WOOD BLOCKING AND NAILERS

A. Install where indicated and where required for screeding or attaching other work. Form to shapes indicated and cut as required for true line and level of attached work. Coordinate locations with other work involved.

1. Provide 1/4-inch vent space between each length of blocking.

B. Attach items to substrates to support applied loading. Recess bolts and nuts flush with surfaces unless otherwise indicated.

3.3 INSTALLATION OF WOOD FURRING

A. Install level and plumb with closure strips at edges and openings. Shim with wood as required for tolerance of finish work.

END OF SECTION 06 10 00

SECTION 06 10 26 - ROOFING ROUGH CARPENTRY

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. Wood-preservative-treated materials.

1.3 DEFINITIONS

A. Dimension Lumber: Lumber of 2 inches nominal size or greater but less than 5 inches nominal size in least dimension.

1.4 SUBMITTALS, GENERAL

A. General: Submit all action submittals required by this Section concurrently.

1.5 ACTION SUBMITTALS

A. Product Data: For each type of process and factory-fabricated product. Indicate component materials and dimensions and include construction and application details.

B. As-Specified Data: If the product to be incorporated into Project is as specified by manufacturer name and product designation in Part 2 of this Specification Section, submit the "**As-Specified Verification Form**" (attached to Division 01 Section "Submittal Procedures") for each item listed below, otherwise submit full Product Data for the following:

1. Adhesives.
2. Isolation barrier membrane.

1.6 DELIVERY, STORAGE, AND HANDLING

A. Stack wood products flat with spacers beneath and between each bundle to provide air circulation. Protect wood products from weather by covering with waterproof sheeting, securely anchored. Provide for air circulation around stacks and under coverings.

PART 2 - PRODUCTS

2.1 WOOD PRODUCTS, GENERAL

A. Lumber: DOC PS 20 and applicable rules of grading agencies indicated. If no grading agency is indicated, comply with the applicable rules of any rules-writing agency certified by the ALSC Board of Review. Grade lumber by an agency certified by the ALSC Board of Review to inspect and grade lumber under the rules indicated.

1. Factory mark each piece of lumber with grade stamp of grading agency.
2. Dress lumber, S4S, unless otherwise indicated.

B. Maximum Moisture Content of Lumber: 19 percent unless otherwise indicated.

C. Plywood: DOC PS 1, Exterior A-C, unless otherwise indicated.

2.2 WOOD-PRESERVATIVE-TREATED MATERIALS

A. Preservative Treatment by Pressure Process: AWPA U1; Use Category UC3b.

1. Preservative Chemicals: Acceptable to authorities having jurisdiction and containing no arsenic or chromium.

B. Kiln-dry lumber after treatment to a maximum moisture content of 19 percent. Do not use material that is warped or that does not comply with requirements for untreated material.

C. Mark lumber with treatment quality mark of an inspection agency approved by the ALSC Board of Review.

D. Mark plywood with appropriate classification marking of an inspection agency acceptable to authorities having jurisdiction.

E. Application: Treat items indicated on Drawings, and the following:

1. Wood nailers, curbs, equipment support bases, blocking, and similar members in connection with roofing.

2.3 FASTENERS

A. General: Fasteners shall be of size and type indicated and shall comply with requirements specified in this article for material and manufacture.

1. Provide fasteners of Type 304 stainless steel.

B. Wood Screws for Attachment of Roof Blocking: Screws complying with ASME B18.6.1. Series 300 stainless steel, non-magnetic, torx or square drive, #10, length as required to provide minimum embedment of 1-1/2-inches into substrate.

C. Screws for Attachment to Metal Deck: Self drilling screws complying with ASME B18.6.1. Series 300 stainless steel, non-magnetic, torx or square drive, #10, 2-1/2-inch length (unless otherwise noted).

D. Screws for Attachment to Steel Angles or Framing: Self drilling screws complying with ASME B18.6.1. Series 300 stainless steel, non-magnetic, #12, 2-1/2-inch length minimum (unless otherwise noted).

1. With Winged Reamers: Wings designed to break off at contact with steel.

E. Lag Bolts: ASME B18.2.1.

F. Bolts: Steel bolts complying with ASTM A 307, Grade A; with ASTM A 563 hex nuts and, where indicated, flat washers.

G. Expansion Anchors: Anchor bolt and sleeve assembly of material indicated below with capability to sustain, without failure, a load equal to 6 times the load imposed when installed in unit masonry assemblies and equal to 4 times the load imposed when installed in concrete as determined by testing per ASTM E 488 conducted by a qualified independent testing and inspecting agency. Anchor expands by tightening or hammering a pin after insertion into pre-drilled hole.

1. Material: Stainless steel with bolts and nuts complying with ASTM F593 and ASTM F594, Alloy Group 1 or 2.

2.4 MISCELLANEOUS MATERIALS

A. Adhesives: Low odor, low VOC (less than 2 percent by weight), high-strength polyurethane formulation complying with ASTM D3498 that is approved for use indicated by adhesive manufacturer.

1. Basis-of-Design Product: Subject to compliance with requirements, provide Henkel Corporation; Loctite PL Premium Fast Grab, or a comparable product.

PART 3 - EXECUTION

3.1 INSTALLATION, GENERAL

A. Beginning installation constitutes Contractor’s acceptance of substrates and conditions.

B. Set roofing rough carpentry to required levels and lines, with members plumb, true to line, cut, and fitted. Fit roofing rough carpentry accurately to other construction. Locate nailers, blocking, and similar supports to comply with requirements for attaching other construction.

C. Sort and select lumber so that natural characteristics do not interfere with installation or with fastening other materials to lumber. Do not use materials with defects that interfere with function of member or pieces that are too small to use with minimum number of joints or optimum joint arrangement.

D. Comply with AWPA M4 for applying field treatment to cut surfaces of preservative-treated lumber.

E. Where wood-preservative-treated lumber is installed adjacent to metal decking, install continuous isolation barrier membrane between wood and metal decking.

3.2 INSTALLATION OF WOOD BLOCKING, NAILERS AND PLYWOOD

A. Install where indicated and where required for screeding or attaching other work. Form to shapes indicated and cut as required for true line and level of attached work. Coordinate locations with other work involved.

1. Provide 1/4-inch vent space between each length of blocking.

B. Attach items to substrates to support applied loading. Recess bolts and nuts flush with surfaces unless otherwise indicated.

C. Securely attach carpentry work to substrate by anchoring and fastening as indicated, complying with recommendations of FM Global Loss Prevention Data Sheet 1-49 and the following:

1. Anchor bottom blocking to steel angles with minimum 3/8-inch stainless steel bolts with washers, at maximum 24 inches on center, or self-drilling screws in two rows, spaced not more than 24 inches on center and 6 inches from ends of blocking lengths.

2. At locations where bottom blocking is to be attached directly to metal decking, provide isolation barrier membrane between deck and blocking, install wrinkle free. Apply primer if required by membrane manufacturer. Use primer rather than nails for installing membrane at low temperatures, overlap edges not less than 3-1/2 inches, roll laps with roller, cover membrane within 14 days. Attach bottom blocking with stainless steel self-drilling screws, penetrating metal decking at least 1 inch in two rows, spaced not more than 24 inches on center and 6 inches from ends of blocking lengths.

3. Attach subsequent blocking to bottom blocking with stainless steel screws, penetrating at least 1-1/4 inches in two rows, spaced not more than 24 inches on center and 6 inches from ends of blocking lengths.

4. Attach plywood to substrate with stainless steel screws spaced at 12 inches on center maximum. Where more than one layer of plywood is being attached, attach subsequent plywood to base layer of plywood/substrate with polyurethane construction adhesive beads spaced at 6 inches on center maximum and stainless-steel screws, penetrating at least 3/4 inch in two rows, spaced not more than 12 inches on center and within 4 inches from end of panel lengths.

5. At outside building corners, locate fasteners at 12 inches on center and 6 inches from corner, unless closer spacing is required to meet minimum 100 lb per fastener withdrawal force in any direction, or to comply with FM 1-49 recommendations.

END OF SECTION 06 10 26

SECTION 06 16 00 - SHEATHING

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. Wall sheathing.
2. Sheathing joint and penetration treatment.

1.3 SUBMITTALS, GENERAL

A. General: Submit all action submittals required by this Section concurrently.

1.4 ACTION SUBMITTALS

A. As-Specified Data: If the product to be incorporated into Project is as specified by manufacturer name and product designation in Part 2 of this Specification Section, submit the "**As-Specified Verification Form**" (attached to Division 01 Section "Submittal Procedures") for item listed below, otherwise submit full Product Data for the following:

1. Glass-mat gypsum wall sheathing.
2. Screws for fastening foam sheathing to cold-formed metal framing.

1.5 DELIVERY, STORAGE, AND HANDLING

A. Stack panels flat with spacers beneath and between each bundle to provide air circulation. Protect sheathing from weather by covering with waterproof sheeting, securely anchored. Provide for air circulation around stacks and under coverings.

PART 2 - PRODUCTS

2.1 WALLSHEATHING

A. Glass-Mat Gypsum Sheathing: ASTM C1177/C1177M.

1. Products: Subject to compliance with requirements, available products that may be incorporated into the Work include, but are not limited to, the following:

   a. CertainTeed Gypsum, Saint-Gobain; GlassRoc Sheathing.
   b. Georgia-Pacific Gypsum, LLC; DensGlassSheathing.
   c. USG Corporation; USG Securock Brand Glass-Mat Sheathing.

2. Type and Thickness: Regular, 1/2 inch thick.

2.2 FASTENERS

A. General: Provide fasteners of size and type indicated that comply with requirements specified in this article for material and manufacture.

1. For wall sheathing, provide fasteners of Type 304 stainless steel.

B. Screws for Fastening Gypsum Sheathing to Cold-Formed Metal Framing: Steel drill screws, in length recommended by sheathing manufacturer for thickness of sheathing to be attached.

1. For steel framing less than 0.0329 inch thick, use screws that comply with ASTM C1002.
2. For steel framing from 0.033 to 0.112 inch thick, use screws that comply with ASTM C954.

2.3 SHEATHING JOINT-AND-PENETRATION TREATMENT MATERIALS

A. Sealant for Glass-Mat Gypsum Sheathing: Silicone emulsion sealant complying with ASTM C834, compatible with sheathing tape and sheathing and recommended by tape and sheathing manufacturers for use with glass-fiber sheathing tape and for covering exposed fasteners.

1. Sheathing Tape: Self-adhering glass-fiber tape, minimum 2 inches wide, 10 by 10 or 10 by 20 threads/inch, of type recommended by sheathing and tape manufacturers for use with silicone emulsion sealant in sealing joints in glass-mat gypsum sheathing and with a history of successful in-service use.

PART 3 - EXECUTION

3.1 INSTALLATION, GENERAL

A. Beginning installation constitutes Contractor’s acceptance of substrates and conditions.

B. Do not use materials with defects that impair quality of sheathing or pieces that are too small to use with minimum number of joints or optimum joint arrangement. Arrange joints so that pieces do not span between fewer than three support members.

C. Cut panels at penetrations, edges, and other obstructions of work; fit tightly against abutting construction unless otherwise indicated.

D. Securely attach to substrate by fastening as indicated, complying with the following:

1. Table 2304.10.1, "Fastening Schedule," in the New York State Building Code.
2. ICC-ES evaluation report for fastener.

E. Use common wire nails unless otherwise indicated. Select fasteners of size that will not fully penetrate members where opposite side will be exposed to view or will receive finish materials. Make tight connections. Install fasteners without splitting wood.

F. Coordinate wall sheathing installation with flashing and joint-sealant installation so these materials are installed in sequence and manner that prevent exterior moisture from passing through completed assembly.

G. Do not bridge building expansion joints; cut and space edges of panels to match spacing of structural support elements.

H. Coordinate sheathing installation with installation of materials installed over sheathing so sheathing is not exposed to precipitation or left exposed at end of the workday when rain is forecast.

3.2 GYPSUM SHEATHING INSTALLATION

A. Comply with GA-253 and with manufacturer's written instructions.

1. Fasten gypsum sheathing to cold-formed metal framing with screws.
2. Install panels with a 3/8-inch gap where non-load-bearing construction abuts structural elements.
3. Install panels with a 1/4-inch gap where they abut masonry or similar materials that might retain moisture, to prevent wicking.

B. Apply fasteners so heads bear tightly against face of sheathing, but do not cut into facing.

C. Vertical Installation: Install vertical edges centered over studs. Abut ends and edges with those of adjacent panels. Attach at perimeter and within field of panel to each stud.

1. Space fasteners approximately 8 inches o.c. and set back a minimum of 3/8 inch from edges and ends of panels.

D. Seal sheathing joints according to sheathing manufacturer's written instructions.

1. Apply glass-fiber sheathing tape to glass-mat gypsum sheathing joints and apply and trowel sealant to embed entire face of tape in sealant. Apply sealant to exposed fasteners with a trowel so fasteners are completely covered. Seal other penetrations and openings.

3.3 FIELD QUALITY CONTROL

A. Special Inspections: Special Inspections are required for the work of this Section. Refer to Division 01 Section “Quality Requirements” and its attachments.

B. Testing and Inspecting Agency: Owner may engage a qualified testing agency to perform tests and inspections.

C. Inspections: Air-barrier and water-resistant glass-mat gypsum sheathing, accessories, and installation are subject to inspection for compliance with requirements. Inspections may include, but not be limited to, the following:

1. Continuity of air-barrier system has been achieved throughout the building envelope with no gaps or holes.
2. Compatible materials have been used.
3. All penetrations have been sealed.

D. Tests: As determined by testing agency.

E. Air barriers will be considered defective if they do not pass tests and inspections.

F. Correct damage to air barriers caused by testing; follow manufacturer's written instructions.

END OF SECTION 06 16 00

SECTION 07 21 00 - THERMAL INSULATION

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. Extruded polystyrene foam-plastic board.
2. Glass-fiber blanket.
3. Closed-cell spray polyurethane foam.
4. Insulation for miscellaneous voids.

1.3 SUBMITTALS, GENERAL

A. General: Submit all action submittals and informational submittals required by this Section concurrently.

1.4 ACTION SUBMITTALS

A. Product Data: For each type of product.

1. Adhesive for bonding insulation.

B. As-Specified Data: If the product to be incorporated into Project is as specified by manufacturer name and product designation in Part 2 of this Specification Section, submit the "**As-Specified Verification Form**" (attached to Division 01 Section "Submittal Procedures") for each item listed below, otherwise submit full Product Data for the following:

1. Extruded polystyrene board, Type IV, 25-psi.
2. Extruded polystyrene board, Type V, 100-psi.
3. Glass-fiber blanket, unfaced.
4. Closed-cell spray polyurethane foam.
5. Thermal barrier intumescent coating.
6. Insulation for miscellaneous voids.

C. Sustainable Design Submittals:

1. Product Data: For adhesives, indicating VOC content.

1.5 INFORMATIONAL SUBMITTALS

A. Evaluation Reports: For closed-cell, spray polyurethane foam insulation.

1.6 QUALITY ASSURANCE

A. Spray Polyurethane Foam Installer Qualifications: An authorized representative who is trained and approved by manufacturer.

B. Identification: Identify product R-values with manufacturer’s markings, or certification, in accordance with requirements of building Code in effect for the Project.

1.7 DELIVERY, STORAGE, AND HANDLING

A. Protect insulation materials from physical damage and from deterioration due to moisture, soiling, and other sources. Store inside and in a dry location. Comply with manufacturer's written instructions for handling, storing, and protecting during installation.

B. Protect foam-plastic board insulation as follows:

1. Do not expose to sunlight except to necessary extent for period of installation and concealment.
2. Protect against ignition at all times. Do not deliver foam-plastic board materials to Project site until just before installation time.
3. Quickly complete installation and concealment of foam-plastic board insulation in each area of construction.

PART 2 - PRODUCTS

2.1 EXTRUDED POLYSTYRENE FOAM-PLASTIC BOARD

A. Extruded Polystyrene Board, Type IV: ASTM C 578, Type IV, 25-psi minimum compressive strength; unfaced; maximum flame-spread and smoke-developed indexes of 25 and 450, respectively, per ASTM E 84.

1. Products: Subject to compliance with requirements, available products that may be incorporated in the Work, include, but are not limited to:

   a. DuPont; Styrofoam Brand Square Edge XPS Foam Insulation (Reduced GWP).
   b. Owens Corning; Foamular NGX 250 Extruded Polystyrene (XPS) Insulation (Square Edge).

2. Thermal Resistance: R-value of 5.0 per inch.

3. Fire Propagation Characteristics: Passes NFPA 285 testing as part of an approved assembly.

B. Extruded Polystyrene Board, Type V: ASTM C 578, Type VI, 100-psi minimum compressive strength; maximum flame-spread and smoke-developed indexes of 25 and 450, respectively, per ASTM E 84.

1. Products: Subject to compliance with requirements, available products that may be incorporated in the Work, include, but are not limited to:

a. DuPont; Styrofoam Brand Highload 100 psi Extruded Polystyrene Foam Insulation (Reduced GWP).
b. Owens Corning; Foamular NGX 1000 Extruded Polystyrene (XPS) Insulation (Square Edge).

2. Thermal Resistance: R-value of 5.0 per inch.

2.2 GLASS-FIBER BLANKET

A. Glass-Fiber Blanket, Unfaced: ASTM C 665, Type I; with maximum flame-spread and smoke-developed indexes of 25 and 50, respectively, per ASTM E 84; passing ASTM E 136 for combustion characteristics.

1. Products: Subject to compliance with requirements, available products that may be incorporated in the Work, include, but are not limited to:

a. CertainTeed Corporation; Sustainable Insulation Fiber Glass Building.
b. Owens Corning; EcoTouch Pink Fiberglas Insulation.

2.3 CLOSED-CELL SPRAY POLYURETHANE FOAM

A. Closed-Cell Spray Polyurethane Foam: ASTM C 1029, Type II, minimum density of 2 lb/cu. ft. and minimum aged R-value at 1-inch thickness of 6.2 deg F x h x sq. ft./Btu at 75 deg F.

1. Products: Subject to compliance with requirements, available products that may be incorporated in the Work, include, but are not limited to:

a. Gaco Western LLC; GacoWallFoam 183M.
b. Lapolla Industries, Inc.; Foam-Lok 2000-4G.

2. Surface-Burning Characteristics: Comply with ASTM E 84; testing by a qualified testing agency. Identify products with appropriate markings of applicable testing agency.

a. Flame-Spread Index: 25 or less.
b. Smoke-Developed Index: 450 or less.

B. Miscellaneous Materials:

1. Primer: Material recommended by insulation manufacturer where required for adhesion of insulation to substrates.

2. Membrane at Transitions: Provide membrane at transitions in substrate and connections to adjacent elements acceptable to the spray polyurethane foam manufacturer.

3. Thermal Barrier Intumescent Coating: Intumescent water-based, spray-applied coating that has been tested and approved for use in a building interior as a 15-minute alternative thermal barrier complying with New York State Code and New York State VOC regulations. Use only products that have been tested and approved for use with spray polyurethane foam to be used; provide primer as required.

   a. Basis-of-Design Product: Subject to compliance with requirements, provide International Fireproof Technology, Inc.; DC315, or comparable product.

2.4 ACCESSORIES

A. Insulation for Miscellaneous Voids:

1. Spray Polyurethane Foam Insulation for Miscellaneous Voids: ASTM C 1029, Type II, closed cell, minimum density of 1.75 lb/cu. ft. and minimum aged R-value at 1-inch thickness of 6.0 deg F x h x sq. ft./Btu at 75 deg F, with maximum flame-spread and smoke-developed indexes of 25 and 400, respectively, per ASTM E 84.

   a. Basis-of-Design Product: Subject to compliance with requirements, provide DuPont; Froth-Pak Foam Insulation, or comparable product.

B. Adhesive for Bonding Insulation: Product compatible with insulation and air and water barrier materials, and with demonstrated capability to bond insulation securely to substrates without damaging insulation and substrates.

1. Adhesives shall have a VOC content of **70** g/L or less.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine substrates, areas, and conditions, with Installer present, for compliance with requirements for conditions affecting performance of the Work.
B. Clean substrates of substances that are harmful to insulation, including removing projections capable of puncturing insulation, or that interfere with insulation attachment.
C. Proceed with installation only after unsatisfactory conditions have been corrected.
D. Beginning installation constitutes Contractor’s acceptance of substrates and conditions.

3.2 INSTALLATION, GENERAL

A. Comply with insulation manufacturer's written instructions applicable to products and applications.

B. Install insulation that is undamaged, dry, and unsoiled and that has not been left exposed to ice, rain, or snow at any time.

C. Extend insulation to envelop entire area to be insulated. Fit tightly around obstructions and fill voids with insulation. Remove projections that interfere with placement.

D. Provide sizes to fit applications and selected from manufacturer's standard thicknesses, widths, and lengths. Apply single layer of insulation units unless multiple layers are otherwise shown or required to make up total thickness or to achieve R-value.

E. Install insulation so that manufacturer’s R-value mark is readily observable, in accordance with requirements of building Code in effect for the Project.

3.3 INSTALLATION OF SLAB INSULATION

A. On vertical slab edge surfaces, set extruded polystyrene board (Type IV, 25-psi) insulation units using manufacturer's recommended adhesive according to manufacturer's written instructions.

B. On horizontal surfaces, loosely lay extruded polystyrene board (Type VI, 40-psi) insulation units according to manufacturer's written instructions. Stagger end joints and tightly abut insulation units.

1. Where indicated, install extruded polystyrene board (Type V, 100-psi) insulation units.

3.4 INSTALLATION OF FOUNDATION WALL INSULATION

A. Butt extruded polystyrene board (Type IV, 25-psi) panels together for tight fit.
B. Adhesive Installation: Install with adhesive according to manufacturer's written instructions.

3.5 INSTALLATION OF CAVITY-WALL INSULATION

A. Foam-Plastic Board Insulation: Install pads of adhesive spaced approximately 24 inches o.c. both ways on inside face and as recommended by manufacturer. Fit courses of extruded polystyrene board (Type IV, 25-psi) insulation between wall ties and other obstructions, with edges butted tightly in both directions. Press units firmly against inside substrates.

1. Supplement adhesive attachment of insulation by securing boards with two-piece wall ties designed for this purpose and specified in Division 04 Section "Unit Masonry."

3.6 INSTALLATION OF INSULATION IN FRAMED CONSTRUCTION

A. Blanket Insulation: Install in cavities formed by framing members according to the following requirements:

1. Use insulation widths and lengths that fill the cavities formed by framing members. If more than one length is required to fill the cavities, provide lengths that will produce a snug fit between ends.

2. Place insulation in cavities formed by framing members to produce a friction fit between edges of insulation and adjoining framing members.

3. Maintain 3-inch clearance of insulation around recessed lighting fixtures not rated for or protected from contact with insulation.

4. For metal-framed wall cavities where cavity heights exceed 96 inches, support unfaced blankets mechanically and support faced blankets by taping flanges of insulation to flanges of metal studs.

B. Miscellaneous Voids: Install insulation in miscellaneous voids and cavity spaces where required to prevent gaps in insulation using the following materials:

1. Spray Polyurethane Insulation for Miscellaneous Voids: Apply according to manufacturer's written instructions.

3.7 INSTALLATION OF SPRAY FOAM INSULATION

A. Verify that substrates are clean, dry, and free of substances that are harmful to insulation.

B. Priming: Prime substrates where recommended by insulation manufacturer. Apply primer to comply with insulation manufacturer's written instructions. Confine primers to areas to be insulated; do not allow spillage or migration onto adjoining surfaces.

C. Comply with insulation manufacturer's written instructions applicable to products and applications.

D. Prior to application, bridge gaps in construction at changes in substrate plane or changes in adjoining materials as recommended by manufacturer.

E. Spray insulation to envelop entire area to be insulated and fill voids.

F. Apply in multiple passes to not exceed maximum thicknesses recommended by manufacturer.

G. Apply thermal barrier intumescent coating in accordance with manufacturer’s written instructions and at the required dry film thickness per the applicable spray foam evaluation report.

3.8 PROTECTION

A. Protect installed insulation from damage due to harmful weather exposures, physical abuse, and other causes. Provide temporary coverings or enclosures where insulation is subject to abuse and cannot be concealed and protected by permanent construction immediately after installation.

END OF SECTION 07 21 00

SECTION 07 27 26 - FLUID-APPLIED MEMBRANE AIR BARRIERS

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. Vapor-retarding, fluid-applied air barriers.

1.3 DEFINITIONS

A. Air-Barrier Material: A primary element that provides a continuous barrier to the movement of air.

B. Air-Barrier Accessory: A transitional component of the air barrier that provides continuity.

C. Air-Barrier Assembly: The collection of air-barrier materials and accessories applied to an opaque wall, including joints and junctions to abutting construction, to control air movement through the wall.

1.4 PREINSTALLATION MEETINGS

A. Preinstallation Conference: Conduct conference at Project site.

1. Review air-barrier requirements and installation, special details, mockups, air-leakage and bond testing, air-barrier protection, and work scheduling that covers air barriers.

1.5 SUBMITTALS, GENERAL

A. General: Submit all action submittals and informational submittals required by this Section concurrently.

1.6 ACTION SUBMITTALS

A. Product Data: For each type of product indicated. Include manufacturer's written instructions for evaluating, preparing, and treating each substrate; technical data; dry film thickness; and tested physical and performance properties of products.

1. Accessory materials.
2. Primers.
3. Stainless-steel sheet.

B. As-Specified Data: If the product to be incorporated into Project is as specified by manufacturer name and product designation in Part 2 of this Specification Section, submit the "**As-Specified Verification Form**" (attached to Division 01 Section "Submittal Procedures") for each item listed below, otherwise submit full Product Data for the following:

1. High-build, vapor-retarding air barrier.

C. Sustainable Design Submittals:

1. Product Data: For coatings, indicating VOC content.

D. Shop Drawings: For air-barrier assemblies.

1. Show locations and extent of air-barrier materials, accessories, and assemblies specific to Project conditions.
2. Include details for substrate joints and cracks, counterflashing strips, penetrations, inside and outside corners, terminations, and tie-ins with adjoining construction.
3. Include details of interfaces with other materials that form part of air barrier.

1.7 INFORMATIONAL SUBMITTALS

A. Qualification Data: For Installer.

B. Product Certificates, Compatibility: From air-barrier manufacturer, certifying compatibility of air barriers and accessory materials with Project materials that connect to or that come in contact with the barrier.

C. Product Certificates, Fire Propagation Characteristics: From a qualified testing agency, documenting that air barrier system as a component of the indicated wall assembly has been tested and passed NFPA 285.

1.8 QUALITY ASSURANCE

A. Installer Qualifications: An entity that employs installers and supervisors who are trained and approved by manufacturer.

1.9 DELIVERY, STORAGE, AND HANDLING

A. Remove and replace liquid materials that cannot be applied within their stated shelf life.
B. Protect stored materials from direct sunlight.

1.10 FIELD CONDITIONS

A. Environmental Limitations: Apply air barrier within the range of ambient and substrate temperatures recommended in writing by air-barrier manufacturer.

1. Protect substrates from environmental conditions that affect air-barrier performance.
2. Do not apply air barrier to a damp or wet substrate or during snow, rain, fog, or mist.

PART 2 - PRODUCTS

2.1 MATERIALS

A. Source Limitations: Obtain primary air-barrier materials and air-barrier accessories from single source from single manufacturer.

B. VOC Content: 100 g/L or less.

2.2 PERFORMANCE REQUIREMENTS

A. Air-Barrier Performance: Air-barrier assembly and seals with adjacent construction shall be capable of performing as a continuous air barrier and as a liquid-water drainage plane flashed to discharge to the exterior incidental condensation or water penetration. Air-barrier assemblies shall be capable of accommodating substrate movement and of sealing substrate expansion and control joints, construction material changes, penetrations, tie-ins to installed waterproofing, and transitions at perimeter conditions without deterioration and air leakage exceeding specified limits.

B. Air-Barrier Assembly Air Leakage: Maximum 0.04 cfm/sq. ft. of surface area at 1.57 lbf/sq. ft., when tested according to ASTM E2357.

2.3 HIGH-BUILD AIR BARRIERS, VAPOR RETARDING

A. High-Build, Vapor-Retarding Air Barrier: Synthetic polymer membrane with an installed dry film thickness, according to manufacturer's written instructions, of 40 mils or thicker over smooth, void-free substrates.

1. Products: Subject to compliance with requirements, available products that may be incorporated in the Work, include, but are not limited to:

   a. Carlisle Coatings & Waterproofing; Fire Resist Barritech NP.
   b. Henry Company; Air-Bloc 32MR.
   c. Meadows, W. R., Inc.; Air-Shield LSR.
   d. Tremco, Inc., Commercial Sealants and Waterproofing Division, an RPM company; ExoAir 130.

2. Physical and Performance Properties:

   a. Air Permeance: Maximum 0.004 cfm/sq. ft. of surface area at 1.57-lbf/sq. ft. pressure difference; ASTM E2178.

b. Vapor Permeance: Maximum 0.1 perm; ASTM E96/E96M, Desiccant Method.
c. Ultimate Elongation: Minimum300 percent; ASTM D412, Die C.
d. Adhesion to Substrate: Minimum 16 lbf/sq. in. when tested according to ASTM D4541.

2.4 ACCESSORY MATERIALS

A. Requirement: Provide primers, transition strips, termination strips, joint reinforcing fabric and strips, joint sealants, counterflashing strips, flashing sheets and metal termination bars, termination mastic, substrate patching materials, adhesives, tapes, foam sealants, lap sealants, and other accessory materials that are recommended in writing by air-barrier manufacturer to produce a complete air-barrier assembly and that are compatible with primary air-barrier material and adjacent construction to which they may seal.

B. Primer: Liquid waterborne primer recommended for substrate by air-barrier material manufacturer.

C. Stainless-Steel Sheet: ASTM A240/A240M, Type 304, 0.0187 inch thick, and Series 300 stainless-steel fasteners.

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 substrates are sound and free of oil, grease, dirt, excess mortar, or other contaminants.
2. Verify that substrates have cured and aged for minimum time recommended in writing by air-barrier manufacturer.
3. Verify that substrates are visibly dry and free of moisture.
4. Verify that masonry joints are flush and completely filled with mortar.

B. Proceed with installation only after unsatisfactory conditions have been corrected.

C. Beginning installation constitutes Contractor’s acceptance of substrates and conditions.

3.2 SURFACE PREPARATION

A. Clean, prepare, treat, fill, and seal substrate and joints and cracks in substrate according to manufacturer's written instructions and details. Provide clean, dust-free, and dry substrate for air-barrier application.

B. Mask off adjoining surfaces not covered by air barrier 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 in concrete with substrate-patching material.

E. Remove excess mortar from masonry ties, shelf angles, and other obstructions.

F. At changes in substrate plane, apply sealant or termination mastic beads at sharp corners and edges to form a smooth transition from one plane to another.

G. Cover gaps in substrate plane and form a smooth transition from one substrate plane to another with stainless-steel sheet mechanically fastened to structural framing to provide continuous support for air barrier.

H. Bridge discontinuous wall-to-wall, deck-to-wall, and deck-to-deck joints with air-barrier accessory material that accommodates joint movement according to manufacturer's written instructions and details.

3.3 ACCESSORIES INSTALLATION

A. Install accessory materials according to air-barrier manufacturer's written instructions and details to form a seal with adjacent construction and ensure continuity of air and water barrier.

1. Coordinate the installation of air barrier with installation of roofing membrane and base flashing to ensure continuity of air barrier with roofing membrane.

2. Install transition strip on roofing membrane or base flashing so that a minimum of 3 inches of coverage is achieved over each substrate.

3. Unless manufacturer recommends in writing against priming, apply primer to substrates at required rate and allow it to dry.

4. Apply primer to substrates at required rate and allow it to dry. Limit priming to areas that will be covered by air-barrier material on same day. Reprime areas exposed for more than 24 hours.

B. Connect and seal exterior wall air-barrier material continuously to roofing-membrane air barrier, concrete below-grade structures, floor-to-floor construction, exterior glazing and window systems, glazed curtain-wall systems, storefront systems, exterior louvers, exterior door framing, and other construction used in exterior wall openings, using accessory materials.

C. At end of each working day, seal top edge of strips and transition strips to substrate with termination mastic.

D. Apply joint sealants forming part of air-barrier assembly within manufacturer's recommended application temperature ranges. Consult manufacturer when sealant cannot be applied within these temperature ranges.

E. Wall Openings: Prime concealed, perimeter frame surfaces of windows, curtain walls, storefronts, and doors. Apply transition strip so that a minimum of 3 inches of coverage is achieved over each substrate. Maintain 3 inches of full contact over firm bearing to perimeter frames, with not less than 1 inch of full contact.

1. Transition Strip: Roll firmly to enhance adhesion.

F. Fill gaps in perimeter frame surfaces of windows, curtain walls, storefronts, and doors, and miscellaneous penetrations of air-barrier material with foam sealant.

G. Seal strips and transition strips around masonry reinforcing or ties and penetrations with termination mastic.

H. Seal top of through-wall flashings to air barrier with an additional 6-inch-wide, transition strip.

I. Seal exposed edges of strips at seams, cuts, penetrations, and terminations not concealed by metal counterflashings or ending in reglets with termination mastic.

J. Correct punctures, voids, and deficient lapped seams in strips and transition strips. Slit and flatten fishmouths and blisters. Patch with transition strips extending 6 inches beyond corrected areas in strip direction.

3.4 PRIMARY AIR-BARRIER MATERIAL INSTALLATION

A. Apply air-barrier material to form a seal with strips and transition strips and to achieve a continuous air barrier according to air-barrier manufacturer's written instructions and details. Apply air-barrier material within manufacturer's recommended application temperature ranges.

1. Unless manufacturer recommends in writing against priming, apply primer to substrates at required rate and allow it to dry.
2. Limit priming to areas that will be covered by air-barrier material on same day. Reprime areas exposed for more than 24 hours.
3. Where multiple prime coats are needed to achieve required bond, allow adequate drying time between coats.

B. High-Build Air Barriers: Apply continuous unbroken air-barrier material to substrates according to the following thickness. Apply air-barrier material in full contact around protrusions such as masonry ties.

1. Vapor-Retarding, High-Build Air Barrier: Total dry film thickness not less than 40 mils.

C. Do not cover air barrier until it has been tested and inspected by testing agency.

D. Correct deficiencies in or remove air barrier that does not comply with requirements; correct substrates and reapply air-barrier components.

3.5 CLEANING AND PROTECTION

A. Protect air-barrier system from damage during application and remainder of construction period, according to manufacturer's written instructions.

1. Protect air barrier from exposure to UV light and harmful weather exposure as recommended in writing by manufacturer. If exposed to these conditions for longer than recommended, remove and replace air barrier or install additional, full-thickness, air-barrier application after correcting and preparing the overexposed materials according to air-barrier manufacturer's written instructions.

2. Protect air barrier from contact with incompatible materials and sealants not approved by air-barrier manufacturer.

B. Clean spills, stains, and soiling from construction that would be exposed in the completed work using cleaning agents and procedures recommended in writing by manufacturer of affected construction.

C. Remove masking materials after installation.

END OF SECTION 07 27 26

SECTION 07 42 13.19 - INSULATED METAL WALL PANELS

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. Foamed-insulation-core metal wall panels.

1.3 PREINSTALLATION MEETINGS

A. Preinstallation Conference: Conduct conference at Project site.

1. Meet with Owner, Architect, metal panel Installer, metal panel manufacturer's representative, and installers whose work interfaces with or affects metal panels, including installers of doors, windows, and louvers.

2. Review and finalize construction schedule and verify availability of materials, Installer's personnel, equipment, and facilities needed to make progress.

3. Review methods and procedures related to metal panel installation, including manufacturer's written instructions.

4. Examine support conditions for compliance with requirements, including alignment between and attachment to structural members.

5. Review flashings, special siding details, wall penetrations, openings, and condition of other construction that affect metal panels.

6. Review governing regulations and requirements for insurance, certificates, and tests and inspections if applicable.

7. Review temporary protection requirements for metal panel assembly during and after installation.

8. Review procedures for repair of metal panels damaged after installation.

1.4 SUBMITTALS, GENERAL

A. General: Submit all action submittals required by this Section concurrently.

1.5 ACTION SUBMITTALS

A. Product Data: For each type of product. Include construction details, material descriptions, dimensions of individual components and profiles, and finishes for each type of panel and accessory.

1. Concealed-fastener, foamed-insulation-core metal wall panels.
2. Miscellaneous metal subframing and furring.
3. Panel accessories.
4. Flashing and trim.
5. Panel fasteners.
6. Panel sealants.

B. Shop Drawings:

1. Include fabrication and installation layouts of metal panels; details of edge conditions, joints, panel profiles, corners, anchorages, attachment system, trim, flashings, closures, and accessories; and special details.

2. Accessories: Include details of the flashing, trim, and anchorage systems, at a scale of not less than 1-1/2 inches per 12 inches.

C. Samples: For each type of metal panel indicated with factory-applied color finishes.

1. Include similar Samples of trim and accessories involving color selection.

D. Sample Warranties: For special warranties.

1.6 CLOSEOUT SUBMITTALS

A. Maintenance Data: For metal panels to include in maintenance manuals.
B. Executed Warranties: For special warranties.

1.7 QUALITY ASSURANCE

A. Installer Qualifications: An entity that employs installers and supervisors who are trained and approved by manufacturer.

B. Mockups: Build mockups to verify selections made under Sample submittals and to demonstrate aesthetic effects and set quality standards for fabrication and installation.

1. Build mockup of typical metal panel assembly 8ft by 8ft, including supports, attachments, and accessories.

2. 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. Deliver components, metal panels, and other manufactured items so as not to be damaged or deformed. Package metal panels for protection during transportation and handling.

B. Unload, store, and erect metal panels in a manner to prevent bending, warping, twisting, and surface damage.

C. Stack metal panels horizontally on platforms or pallets, covered with suitable weathertight and ventilated covering. Store metal panels to ensure dryness, with positive slope for drainage of water. Do not store metal panels in contact with other materials that might cause staining, denting, or other surface damage.

D. Retain strippable protective covering on metal panels during installation.

1.9 FIELD CONDITIONS

A. Weather Limitations: Proceed with installation only when existing and forecasted weather conditions permit assembly of metal panels to be performed according to manufacturers' written instructions and warranty requirements.

1.10 COORDINATION

A. Coordinate metal panel installation with rain drainage work, flashing, trim, construction of soffits, and other adjoining work to provide a leakproof, secure, and noncorrosive installation.

1.11 WARRANTY

A. Special Warranty: Manufacturer's standard form in which manufacturer agrees to repair or replace components of metal panel systems that fail in materials or workmanship within specified warranty period.

1. Failures include, but are not limited to, the following:

a. Structural failures including rupturing, cracking, or puncturing.
b. Deterioration of metals and other materials beyond normal weathering.

2. Warranty Period: Two years from date of Substantial Completion.

B. Special Warranty on Panel Finishes: Manufacturer's standard form in which manufacturer agrees to repair finish or replace metal panels that show evidence of deterioration of factory-applied finishes within specified warranty period.

1. Exposed Panel 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. Structural Performance: Provide metal panel systems capable of withstanding the effects of the following loads, based on testing according to ASTM E 72:

1. Wind Loads: As indicated on Drawings.
2. Other Design Loads: As indicated on Drawings.
3. Deflection Limits: For wind loads, no greater than 1/180 of the span.

B. Air Infiltration: Air leakage of not more than 0.06 cfm/sq. ft. when tested according to ASTM E 283 at the following test-pressure difference:

1. Test-Pressure Difference: 6.24 lbf/sq. ft..

C. Water Penetration under Static Pressure: No water penetration when tested according to ASTM E 331 at the following test-pressure difference:

1. Test-Pressure Difference: 6.24 lbf/sq. ft..

D. Thermal Movements: Allow for thermal movements from ambient and surface temperature changes by preventing buckling, opening of joints, overstressing of components, failure of joint sealants, failure of connections, and other detrimental effects. 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, ambient; 180 deg F, material surfaces.

E. Fire-Test-Response Characteristics: Provide metal wall panels and system components with the following fire-test-response characteristics, as determined by testing identical panels and system components per test method indicated below by UL or another testing and inspecting agency acceptable to authorities having jurisdiction. Identify products with appropriate markings of applicable testing agency.

1. Fire-Resistance Characteristics: Provide materials and construction tested for fire resistance per ASTM E 119.

2. Intermediate-Scale Multistory Fire Test: Tested mockup, representative of completed multistory wall assembly of which wall panel is a part, complies with NFPA 285 for test method and required fire-test-response characteristics of exterior non-load-bearing wall panel assemblies.

3. Radiant Heat Exposure: No ignition when tested according to NFPA 268.

4. Potential Heat: Acceptable level when tested according to NFPA 259.

5. Surface-Burning Characteristics: Provide wall panels with a flame-spread index of 25 or less and a smoke-developed index of 450 or less, per ASTM E 84.

2.2 FOAMED-INSULATION-CORE METAL WALL PANELS

A. General: Provide factory-formed and -assembled metal wall panels fabricated from two metal facing sheets and insulation core foamed in place during fabrication, and with joints between panels designed to form weathertight seals. Include accessories required for weathertight installation.

1. Insulation Core: Modified isocyanurate foam using a non-CFC blowing agent, with maximum flame-spread and smoke-developed indexes of 25 and 450, respectively.

   a. Closed-Cell Content: 90 percent when tested according to ASTM D 6226.
   b. Density: 2.2 to 2.8 lb/cu. ft. when tested according to ASTM D 1622.
   c. Compressive Strength: Minimum 19 psi when tested according to ASTM D 1621.
   d. Shear Strength: 25 psi when tested according to ASTM C 273/C 273M.

B. Concealed-Fastener, Foamed-Insulation-Core Metal Wall Panels: Formed with tongue-and-groove panel edges; designed for sequential installation by interlocking panel edges and mechanically attaching panels to supports using concealed clips or fasteners.

1. Products: Subject to compliance with requirements, available products that may be incorporated into the Work include, but are not limited to, the following:

   a. Benchmark by Kingspan, a Division of Kingspan Insulated Panels, Inc.; Designwall 4000 Flat Panel.
   b. CENTRIA Architectural Systems; Formawall Dimension Series Insulated Core Metal Wall Panels.

2. Metallic-Coated Steel Sheet: Facings of zinc-coated (galvanized) steel sheet complying with ASTM A 653/A 653M, G90 coating designation; structural quality. Prepainted by the coil-coating process to comply with ASTM A 755/A 755M.

   a. Exterior Sheet:

      1) Nominal Thickness: 0.040 inch.

      2) Surface: Smooth, flat.

      3) Exterior Finish: Two-coat fluoropolymer.

         a) Color: As selected by Architect from manufacturer's full range.

   b. Interior (Liner) Sheet:

      1) Nominal Thickness: Minimum 0.028 inch.

      2) Interior Finish: Concealed finish.

         a) Color: As selected by Architect from manufacturer's full range.

3. Panel Coverage: As indicated on Drawings nominal.

4. Panel Joints:

a. Horizontally Installed Panels:

1) Side Joint Reveal: 1/2-inch.
2) End Joint Reveal: 1/2-inch or 5/8-inch, as standard with manufacturer, for insulated metal vertical joint.

b. Vertically Installed Panels:

1) Side Joint Reveal: 1/16-inch or 1/8-inch, as standard with manufacturer.
2) End Joint Reveal: 5/8-inch, for trimless stack joint.

5. Panel Thickness: 3.0 inches.

6. Thermal-Resistance Value (R-Value): R-21 according to ASTM C 1363.

2.3 MISCELLANEOUS MATERIALS

A. Miscellaneous Metal Subframing and Furring: ASTM C 645, cold-formed, metallic-coated steel sheet, ASTM A 653/A 653M, G90 coating designation or ASTM A 792/A 792M, Class AZ50 aluminum-zinc-alloy coating designation unless otherwise indicated. Provide manufacturer's standard sections as required for support and alignment of metal panel system.

B. Panel Accessories: Provide components required for a complete, weathertight panel system including trim, copings, fasciae, mullions, sills, corner units, clips, flashings, sealants, gaskets, fillers, closure strips, and similar items. Match material and finish of metal panels unless otherwise indicated.

C. Flashing and Trim: Provide flashing and trim formed from same material as metal panels as required to seal against weather and to provide finished appearance. Locations include, but are not limited to, bases, drips, sills, jambs, corners, endwalls, framed openings, rakes, fasciae, parapet caps, soffits, reveals, and fillers. Finish flashing and trim with same finish system as adjacent metal panels.

D. Panel Fasteners: Self-tapping screws designed to withstand design loads. Provide exposed fasteners with heads matching color of metal panels by means of plastic caps or factory-applied coating. Provide EPDM or PVC sealing washers for exposed fasteners.

E. Panel Sealants: Provide sealant type recommended by manufacturer that are compatible with panel materials, are nonstaining, and do not damage panel finish.

1. Sealant Tape: Pressure-sensitive, 100 percent solids, gray polyisobutylene compound sealant tape with release-paper backing. Provide permanently elastic, nonsag, nontoxic, nonstaining tape 1/2 inch wide and 1/8 inch thick.

2. Joint Sealant: ASTM C 920; elastomeric polyurethane or silicone sealant; of type, grade, class, and use classifications required to seal joints in metal panels and remain weathertight; and as recommended in writing by metal panel manufacturer.

3. Butyl-Rubber-Based, Solvent-Release Sealant: ASTM C 1311.

2.4 FABRICATION

A. General: Fabricate and finish metal panels and accessories at the factory, by manufacturer's standard procedures and processes, as necessary to fulfill indicated performance requirements demonstrated by laboratory testing. Comply with indicated profiles and with dimensional and structural requirements.

B. Provide panel profile for full length of panel.

C. Fabricate metal panel joints with factory-installed captive gaskets or separator strips that provide a weathertight seal and prevent metal-to-metal contact, and that minimize noise from movements.

D. Sheet Metal Flashing and Trim: Fabricate flashing and trim to comply with manufacturer's recommendations and recommendations in SMACNA's "Architectural Sheet Metal Manual" that apply to design, dimensions, metal, and other characteristics of item indicated.

1. Form exposed sheet metal accessories that are without excessive oil canning, buckling, and tool marks and that are true to line and levels indicated, with exposed edges folded back to form hems.

2. Seams: Fabricate nonmoving seams in accessories with flat-lock seams. Tin edges to be seamed, form seams, and solder.

3. Sealed Joints: Form nonexpansion, but movable, joints in metal to accommodate sealant and to comply with SMACNA standards.

4. Conceal fasteners and expansion provisions where possible. Exposed fasteners are not allowed on faces of accessories exposed to view.

5. Fabricate cleats and attachment devices from same material as accessory being anchored or from compatible, noncorrosive metal recommended in writing by metal panel manufacturer.

a. Size: As recommended by SMACNA's "Architectural Sheet Metal Manual" or metal wall panel manufacturer for application but not less than thickness of metal being secured.

2.5 FINISHES

A. Protect mechanical and painted finishes on exposed surfaces from damage by applying a strippable, temporary protective covering before shipping.

B. 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 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.

C. Steel Panels and Accessories:

1. Two-Coat Fluoropolymer: AAMA 621. 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.

2. Concealed Finish: Apply pretreatment and manufacturer's standard white or light-colored acrylic or polyester backer finish consisting of prime coat and wash coat with a minimum total dry film thickness of 0.8 mil.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine substrates, areas, and conditions, with Installer present, for compliance with requirements for installation tolerances, metal panel supports, and other conditions affecting performance of the Work.

1. Examine wall framing to verify that girts, angles, channels, studs, and other structural panel support members and anchorage have been installed within alignment tolerances required by metal wall panel manufacturer.

2. Examine wall sheathing to verify that sheathing joints are supported by framing or blocking and that installation is within flatness tolerances required by metal wall panel manufacturer.

a. Verify that air- or water-resistive barriers have been installed over sheathing or backing substrate to prevent air infiltration or water penetration.

B. Examine roughing-in for components and systems penetrating metal panels to verify actual locations of penetrations relative to seam locations of metal panels before installation.

C. Proceed with installation only after unsatisfactory conditions have been corrected.

D. Beginning installation constitutes Contractor’s acceptance of substrates and conditions.

3.2 PREPARATION

A. Miscellaneous Supports: Install subframing, furring, and other miscellaneous panel support members and anchorages according to ASTM C 754 and metal panel manufacturer's written recommendations.

3.3 METAL PANEL INSTALLATION

A. General: Install metal panels according to manufacturer's written instructions in orientation, sizes, and locations indicated. Install panels perpendicular to supports unless otherwise indicated. Anchor metal panels and other components of the Work securely in place, with provisions for thermal and structural movement.

1. Shim or otherwise plumb substrates receiving metal panels.

2. Flash and seal metal panels at perimeter of all openings. Fasten with self-tapping screws. Do not begin installation until air- or water-resistive barriers and flashings that will be concealed by metal panels are installed.

3. Install screw fasteners in predrilled holes.

4. Locate and space fastenings in uniform vertical and horizontal alignment.

5. Install flashing and trim as metal panel work proceeds.

6. Align bottoms of metal panels and fasten with blind rivets, bolts, or self-tapping screws. Fasten flashings and trim around openings and similar elements with self-tapping screws.

7. Provide weathertight escutcheons for pipe- and conduit-penetrating panels.

B. Fasteners:

1. Steel Panels: Use stainless-steel fasteners for surfaces exposed to the exterior; use galvanized-steel fasteners for surfaces exposed to the interior.

C. Metal Protection: Where dissimilar metals contact each other or corrosive substrates, protect against galvanic action as recommended in writing by metal panel manufacturer.

D. Joint Sealers: Install gaskets, joint fillers, and sealants where indicated and where required for weathertight performance of metal wall panel assemblies. Provide types of gaskets, fillers, and sealants indicated by metal panel manufacturer; or, if not indicated, provide types recommended by metal wall panel manufacturer.

1. Prepare joints and apply sealants to comply with requirements in Division 07 Section "Joint Sealants."

3.4 INSULATED METAL WALL PANEL INSTALLATION

A. General: Apply continuous ribbon of sealant to panel joint on concealed side of insulated metal wall panels as vapor seal; apply sealant to panel joint on exposed side of panels for weather seal.

1. Fasten foamed-insulation-core metal wall panels to supports with fasteners at each lapped joint at location and spacing and with fasteners recommended by manufacturer.

2. Apply panels and associated items true to line for neat and weathertight enclosure. Avoid "panel creep" or application not true to line.
3. Provide metal-backed washers under heads of exposed fasteners on weather side of insulated metal wall panels.
4. Provide sealant tape at lapped joints of insulated metal wall panels and between panels and protruding equipment, vents, and accessories.
5. Apply a continuous ribbon of sealant tape to panel side laps and elsewhere as needed to make panels weathertight.

B. Foamed-Insulation-Core Metal Wall Panels: Fasten metal wall panels to supports with concealed clips at each joint at location and spacing and with fasteners recommended by manufacturer. Fully engage tongue and groove of adjacent panels.

1. Install clips to supports with self-tapping fasteners.

C. Accessory Installation: Install accessories with positive anchorage to building and weathertight mounting, and provide for thermal expansion. Coordinate installation with flashings and other components.

1. Install components required for a complete metal panel system including trim, copings, corners, seam covers, flashings, sealants, gaskets, fillers, closure strips, and similar items. Provide types indicated by metal panel manufacturer; or, if not indicated, provide types recommended by metal panel manufacturer.

D. Flashing and Trim: Comply with performance requirements, manufacturer's written installation instructions, and SMACNA's "Architectural Sheet Metal Manual." Provide concealed fasteners where possible, and set units true to line and level. Install work with laps, joints, and seams that are permanently watertight.

1. Install exposed flashing and trim that is without buckling and tool marks, and that is true to line and levels indicated, with exposed edges folded back to form hems. Install sheet metal flashing and trim to fit substrates and to achieve waterproof performance.

2. Expansion Provisions: Provide for thermal expansion of exposed flashing and trim. Space movement joints at a maximum of 10 feet with no joints allowed within 24 inches of corner or intersection. Where lapped expansion provisions cannot be used or would not be sufficiently waterproof, form expansion joints of intermeshing hooked flanges, not less than 1 inch deep, filled with mastic sealant (concealed within joints).

3.5 CLEANING AND PROTECTION

A. Remove temporary protective coverings and strippable films, if any, as metal panels are installed, unless otherwise indicated in manufacturer's written installation instructions. On completion of metal panel installation, clean finished surfaces as recommended by metal panel manufacturer. Maintain in a clean condition during construction.

B. After metal panel installation, clear weep holes and drainage channels of obstructions, dirt, and sealant.

C. Replace metal panels that have been damaged or have deteriorated beyond successful repair by finish touchup or similar minor repair procedures.

END OF SECTION 07 42 13.19

SECTION 07 53 23 - EPDM ROOFING

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. Adhered ethylene-propylene-diene-terpolymer (EPDM) roofing system.
2. Roof insulation.
3. Cover board.
4. Walkways.

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, Construction Manager, testing and inspecting agency representative, roofing Installer, roofing Installer’s superintendent, roofing system manufacturer's technical representative, deck 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.

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 building occupancy, safety, HVAC and equipment shut-downs, noise levels and other items that will affect the building occupants and those on or near the site.

9. Review roof observation and repair procedures after roofing installation.

1.5 SUBMITTALS, GENERAL

A. General: Submit all action submittals and informational submittals (except field quality-control reports) required by this Section concurrently.

1.6 ACTION SUBMITTALS

A. Product Data: For each type of product indicated.

1. EPDM sheet.
2. Sheet flashing.
3. Bonding adhesive.
4. Adhesive/primer.
5. Seaming material.
6. Lap sealant.
7. Water cutoff mastic.
8. Liquid flashing system.
9. Metal termination bars.
10. Fasteners.
11. Miscellaneous accessories.
12. Self-adhering-sheet vapor/air barrier.
13. Polyisocyanurate board insulation.
14. Tapered insulation.
15. Insulation fasteners.
16. Insulation adhesive.
17. Cover board.
18. Flexible walkways.

B. Sustainable Design Submittals:

1. Product Test Reports: For roof materials, documentation indicating that roof materials comply with Solar Reflectance Index requirements.
2. Product Data: For applicable adhesives and sealants, indicating VOC content.

C. Shop Drawings: Include roof plans, sections, details, and attachments to other work, including the following:

1. Layout, R-values and thickness of insulation.
2. Base flashings and membrane terminations.
3. Flashing details at penetrations.
4. Tapered insulation, thickness, R-values and slopes.

5. Insulation fastening patterns for corner, perimeter, and field-of-roof locations.
6. Tie-in with air barrier.
7. Walkway pad layout.

D. Samples: For the following products:

1. Roof membrane and flashings of color required.
2. Substrate board.
3. Roof insulation.
4. Cover board.
5. Walkway pads, of color required.

E. Wind Uplift Resistance Submittal: For roofing system, indicating compliance with wind uplift performance requirements.

F. Sample Warranties: For manufacturer's special warranties and special Project warranties.

1.7 INFORMATIONAL SUBMITTALS

A. Manufacturer Certificates:

1. Performance Requirement Certificate: Signed by roof membrane manufacturer, identifying all roof system components and 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.

B. Field quality-control reports.

1.8 CLOSEOUT SUBMITTALS

A. Maintenance Data: For roofing system to include in maintenance manuals.
B. Warranty: Executed special warranties and special Project warranties.
C. Certified statement from existing roof membrane manufacturer stating that existing roof warranty has not been affected by Work performed under this Section.

1.9 QUALITY ASSURANCE

A. Manufacturer Qualifications: A qualified manufacturer that is listed in FM Approvals' RoofNav for roofing system identical to that used for this Project.

1. Manufacturer’s Technical Representative: A non-sales technical representative who shall, at a minimum:

a. Participate in the Preinstallation Roofing Conference.

b. Witness start of roofing membrane installation.

c. Inspect the roofing membrane installation when work is approximately 50 percent complete to ascertain that procedures being followed are proper and to determine whether any corrective work will be required.

d. Inspect the roofing membrane installation at completion to determine whether any corrective work will be required prior to issuing the warranty. Notify the Owner and Architect a minimum of 72 hours before said inspection.

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, and has successfully completed a minimum of three similar-sized projects in the last five years.

1. Installer’s Superintendent Qualifications: An experienced superintendent who is trained and approved by roofing system manufacturer, to oversee installation on-site of roofing system at all times roofing work is in progress.

2. Provide adequate number of experienced workers regularly engaged in this type of work who are skilled in the application techniques of the materials specified.

3. Installer is approved by warrantor of existing roofing system.

C. Identification: Identify product R-values with manufacturer’s markings, or certification, in accordance with requirements of building Code in effect for the Project.

1.10 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.

1. Do not install materials that are wet or moisture damaged; remove from Project site.

D. Handle and store roofing materials, and place equipment in a manner to avoid permanent deflection of deck.

1.11 FIELD CONDITIONS

A. Weather Limitations: Proceed with installation only when existing and forecasted weather conditions permit roofing system to be installed according to manufacturer's written instructions and warranty requirements.

B. Proceed with work such that recently completed roof areas are not subjected to construction traffic. Protect recently completed roof areas and inspect for possible damage.

1.12 COORDINATION

A. Coordinate construction operations on or adjacent to roof, included in different Sections, which depend on each other for proper installation, connection, and operation.

1.13 WARRANTY

A. Special Warranty: Manufacturer’s total system “edge-to-edge” warranty, without monetary limitation, in which manufacturer agrees to repair or replace components of roofing system that fail in materials or workmanship within specified warranty period. Pro-rated warranties are not acceptable.

1. Special warranty includes roof membrane, base flashings, roof insulation, fasteners, cover boards, and other components of roofing system.
2. Special warranty includes roof specialties specified in Division 07 Section “Roof Specialties.”
3. Special warranty includes coverage for wind damage sustained up to wind speed requirements specified in "Performance Requirements" Article.
4. Special warranty includes coverage for hail resistance.
5. Warranty Period: 20years from Date of Substantial Completion.

B. Special Project Warranty: Submit roofing Installer's warranty, covering the Work of this Section, including all components of roofing system such as roof membrane, base flashing, roof insulation, fasteners, cover boards vapor/air retarders, and walkway products, against leaks and faulty or defective materials and workmanship, and to repair or replace work, without monetary limitation, for the following warranty period:

1. Warranty Period: 2 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 according to ASTM G152, ASTM G154, or ASTM G155.

2. Impact Resistance: Roof membrane shall resist impact damage when tested according to 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. Materials shall comply with the Building Code of New York State.

C. Wind Uplift Resistance: Design roofing system to resist the following wind uplift pressures calculated according to the requirements of the Building Code of New York State, which references ASCE/SEI 7:

1. Wind Speed: As indicated on Drawings.
2. Wind Uplift Pressures: As indicated on Drawings.

D. 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-90.
2. Hail-Resistance Rating: FM Global Property Loss Prevention Data Sheet 1-34 MH.

E. SPRI's Directory of Roof Assemblies 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 SPRI's Directory of Roof Assemblies for roof assembly identical for that specified for this Project.

F. Exterior Fire-Test Exposure: ASTM E108 or UL 790, Class A; for application and roof slopes indicated; testing by a qualified testing agency. Identify products with appropriate markings of applicable testing agency.

2.2 MANUFACTURERS

A. Source Limitations: Obtain components for roofing system from roof membrane manufacturer or manufacturers approved by roof membrane manufacturer.

2.3 ETHYLENE-PROPYLENE-DIENE-TERPOLYMER (EPDM) ROOFING

A. EPDM Sheet: ASTM D4637/D4637M, Type I, nonreinforced, fire-retardant EPDM sheet.

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. Carlisle SynTec Incorporated.

b. Firestone Building Products.
c. Johns Manville; a Berkshire Hathaway company.

2. Thickness: 60 mils, nominal.

3. Sheet Width: Maximum allowable for applicable installation.

4. Exposed Face Color: Black.

2.4 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.

2. Adhesives and sealants on the interior side of weather barrier shall comply with the following limits for VOC content:

a. Plastic Foam Adhesives: 50 g/L.
b. Panel Adhesives: 50 g/L.
c. Multipurpose Construction Adhesives: 70 g/L.
d. Fiberglass Adhesives: 80 g/L.
e. Other Adhesives: 250 g/L.
f. Single-Ply Roof Membrane Sealants: 450 g/L.
g. Nonmembrane Roof Sealants: 300 g/L.
h. Sealant Primers for Nonporous Substrates: 250 g/L.
i. Sealant Primers for Porous Substrates: 775 g/L.

B. Sheet Flashing: 60-mil-thick EPDM laminated with 30-mil-thick pressure-sensitive adhesive, partially cured or cured, according to application.

C. Bonding Adhesive: Manufacturer's standard, low-VOC type.

D. Adhesive/Primer: Manufacturer's standard, low-VOC type.

1. Basis-of-Design Product: Subject to compliance with requirements, provide Carlisle SynTec Incorporated; Cav-Grip III Low-VOC Adhesive/Primer, or comparable product.

E. Membrane Cleaner: Manufacturer’s standard.

F. Seaming Material: Manufacturer's standard, synthetic-rubber polymer primer and 6-inch-wide minimum, butyl splice tape with release film.

1. At Contractor’s option, seam tape may be factory-applied type.

G. Lap Sealant: Manufacturer's standard, single-component sealant, colored to match membrane roofing.

H. Water Cutoff Mastic: Manufacturer's standard butyl mastic sealant.

I. Liquid Flashing System: Manufacturer’s standard, low-VOC type, cold-applied flashing system, including polyurethane-based resin, fabric flashing, primer, and related materials.

1. Basis-of-Design Product: Subject to compliance with requirements, provide Carlisle SynTec Incorporated; Liquiseal Liquid Flashing, or comparable product.

J. Metal Termination Bars: Manufacturer's standard, predrilled at 6-inch centers aluminum bars, approximately 1 by 1/8 inch thick; with sealant ledge.

1. Fasteners: Series 300 stainless steel drive pin fasteners for masonry substrate embedment, Series 300 stainless steel screw-type fasteners at wood substrate embedment.

K. 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.

1. Fasteners at Wood-Preservative-Treated Lumber: Screws complying with ASME B18.6.1. Series 300 stainless steel, non-magnetic, torx or square drive, #10, length as required to provide minimum embedment of 1-1/2-inches into substrate.

L. 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.

1. Provide white flashing accessories for white EPDM membrane roofing.

2.5 ROOF INSULATION

A. General: Preformed roof insulation boards manufactured or approved by EPDM roof membrane manufacturer, and in compliance with “Performance Requirements” Article.

1. Minimum Total System R-Value: 30.

B. Polyisocyanurate Board Insulation: ASTM C1289, Type II, Class 2, Grade 2, glass-fiber mat facer on both major surfaces.

1. Products: Subject to compliance with requirements, available products that may be incorporated into the Work include, but are not limited to, the following:

a. Carlisle SynTec Incorporated; SecurShield Polyiso.
b. Firestone Building Products; ISOGARD CG.
c. Johns Manville; a Berkshire Hathaway company; ENRGY 3 CGF.

2. Provide insulation tested as part of an assembly that satisfactorily passes UL 1256.

3. Compressive Strength: 20 psi.

4. Size: 48 by 48 inches, for adhered installationand48 by 96 inches, for mechanical attachment.

5. Thickness:

a. Base Layer: Not less than 2.4 inches.
b. Upper Layer: Not less than 2.4 inches.

C. Tapered Insulation: Provide factory-tapered insulation boards.

1. Material: Match roof insulation.

2. Minimum Thickness: 1/2 inch.

3. Slope:

a. Roof Field: 1/4 inch per foot unless otherwise indicated on Drawings.
b. Saddles and Crickets: 1/2 inch per foot unless otherwise indicated on Drawings.

4. Provide fiberboard tapered edge strips to transition from 1/2 inch to 0 inches.

2.6 INSULATION ACCESSORIES

A. General: Roof insulation accessories recommended by insulation manufacturer for intended use and compatibility with other roofing system components.

B. Fasteners: Factory-coated steel fasteners and metal or plastic plates complying with corrosion-resistance provisions in FM Approvals 4470, designed for fastening roof insulation to substrate, and acceptable to roofing system manufacturer.

C. 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, multicomponent urethane adhesive.

2. Products: Subject to compliance with requirements, available products that may be incorporated into the Work include, but are not limited to, the following:

a. Carlisle SynTec Incorporated; FAST Dual Cartridge Adhesive.
b. Firestone Building Products; I.S.O. Twin Pack Insulation Adhesive.
c. Johns Manville; a Berkshire Hathaway company; JM Two-Part Urethane Insulation Adhesive.

D. Cover Board: ASTM C1289 Type II, Class 4, Grade 1, 1/2-inch-thick polyisocyanurate, with a minimum compressive strength of 80 psi.

1. Products: Subject to compliance with requirements, available products that may be incorporated into the Work include, but are not limited to, the following:

a. Carlisle SynTec Incorporated; SecurShield HD Polyiso.
b. Firestone Building Products; Isogard HD Cover Board.
c. Johns Manville; a Berkshire Hathaway company; ProtectoR HD.

2.7 WALKWAYS

A. Flexible Walkways: Factory-formed, nonporous, heavy-duty, slip-resisting, surface-textured walkway pads, not less than 0.30-inch thick and acceptable to roofing system manufacturer.

1. Size: Approximately 30 by 30 inches.

2.8 ROOF INFORMATION DECALS

A. Roofing manufacturer’s roof information decal including the following information clearly printed in permanent ink:

1. Name of roofing manufacturer.
2. Name of roofing installer.
3. Type of roofing system including membrane type and thickness.
4. Date of substantial completion.
5. Manufacturer’s project identification number.
6. Roofing system warranty duration.
7. Telephone number for reporting warranty-related questions.

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 Division 05 Section "Steel Decking."

B. Proceed with installation only after unsatisfactory conditions have been corrected.

C. Beginning installation constitutes Contractor’s acceptance of substrates and conditions.

3.2 PREPARATION

A. Clean substrate of dust, debris, moisture, and other substances detrimental to roofing system installation according to roofing system manufacturer's written instructions. Remove sharp projections.

B. Prevent materials from entering and clogging roof drains and conductors and from spilling or migrating onto surfaces of other construction. Remove roof-drain plugs when no work is taking place or when rain is forecast.

3.3 INSTALLATION OF ROOFING, GENERAL

A. Install roofing system according to roofing system manufacturer's written instructions, in compliance with “Performance Requirements” Article 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.

C. Install roof membrane and auxiliary materials to tie into existing roofing to maintain weathertightness of transition and to not void warranty for existing roofing system.

D. Coordinate installation and transition of roofing system component serving as an air barrier with air barrier specified under Division 07 Section "Fluid-Applied Membrane Air Barriers."

3.4 INSTALLATION OF INSULATION

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. Insulation Installation, General:

1. Trim insulation neatly to fit around penetrations and projections, and to fit tight to intersecting sloping roof decks.
2. Make joints between adjacent insulation boards not more than 1/8 inch in width.
3. Fill gaps exceeding 1/8 inch with insulation.
4. Cut and fit insulation within 1/8 inch of nailers, projections, and penetrations.
5. Keep manufacturer’s R-value markings readily observable in accordance with building Code in effect for Project.
6. Construct tapered sumps at roof drain locations as shown on Drawings.
7. Install fiberboard tapered edge strips to transition from 1/2 inch to 0 inches.
8. Trim insulation so that water flow is unrestricted.

D. Installation Directly Over Metal Decking:

1. Mechanically Attached Base Layer: Install base layer of insulation with end joints staggered not less than 12 inches in adjacent rows and with long joints continuous at right angle to flutes of decking.

    a. Locate end joints over crests of decking.

    b. Mechanically attach base layer of insulation using mechanical fasteners specifically designed and sized for fastening specified board-type roof insulation to metal decks.

1) Fasten insulation to resist specified uplift pressure in compliance with "Performance Requirements" Article; minimum quantity: one fastener per 2 square feet at field and perimeter, one fastener per square foot at corners.

2) Fasten into top flutes only; with fastener length not to exceed elevation of bottom flute.

2. Adhered Upper Layers: Install upper layers of insulation and tapered insulation with joints of each layer offset not less than 12 inches from previous layer of insulation.

a. Stagger end joints within each layer not less than 24 inches in adjacent rows.

b. Adhere each layer of insulation to substrate using adhesive in compliance with "Performance Requirements" Article and FM Global Property Loss Prevention Data Sheet 1-29, as follows:

1) Set each layer of insulation in ribbons of bead-applied insulation adhesive, applied at a maximum of 4 inches on center at all field, perimeter, and corner roof areas, firmly pressing and maintaining insulation in place.

2) When installing the adhesive, do not allow the adhesive installation pattern to exceed the width of the board being installed. Exceeding the width of the roof board may cause an uneven application of the adjacent board due to the rising adhesive. Remove any excess adhesive from adjacent surfaces immediately prior to rising and curing.

3) Walk the boards into the adhesive and roll with a 30-inch wide, 150-pound weighted steel roller to ensure full embedment.

3.5 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 in each direction.

1. Trim cover board neatly to fit around penetrations and projections, and to fit tight to intersecting sloping roof decks. Cut or score boards at angle changes to avoid bridging.

2. Cut and fit cover board tight to nailers, projections, and penetrations.

3. Adhere cover board to substrate using adhesive in compliance with "Performance Requirements" Article and FM Global Property Loss Prevention Data Sheet 1-29, as follows:

a. Set cover board in ribbons of bead-applied insulation adhesive, applied at a maximum of 4 inches on center at all field, perimeter, and corner roof areas, firmly pressing and maintaining insulation in place.

b. When installing the adhesive, do not allow the adhesive installation pattern to exceed the width of the board being installed. Exceeding the width of the cover board may cause an uneven application of the adjacent board due to the rising adhesive. Remove any excess adhesive from adjacent surfaces immediately prior to rising and curing.

c. Walk the boards into the adhesive and roll with a 30-inch wide, 150-pound weighted steel roller to ensure full embedment.

3.6 INSTALLATION OF ADHERED ROOF MEMBRANE

A. Thoroughly clean substrate of all debris, projections, and substances detrimental to membrane installation, including stray projections of adhesive.

B. Adhere roof membrane over area to receive roofing according to roofing system manufacturer's written instructions.

C. Unroll roof membrane and allow to relax before installing.

D. Start installation of roofing in presence of roofing system manufacturer's technical personnel.

E. Accurately align roof membrane and maintain uniform side and end laps of minimum dimensions required by manufacturer. Stagger end laps.

F. In addition to adhering, mechanically fasten roof membrane securely at terminations, penetrations, and perimeters.

G. Apply roof membrane with side laps shingled with slope of roof deck where possible.

H. Apply pressure to the membrane surface in accordance with manufacturer’s instructions to obtain maximum contact between the membrane and substrate.

I. 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.
3. At Contractor’s option, use manufacturer’s factory-applied seam tape installation system.

J. Repair tears, voids, and lapped seams in roof membrane that do not comply with requirements.

K. Spread sealant or mastic bed over deck-drain flange at roof drains, and securely seal roof membrane in place with clamping ring.

3.7 INSTALLATION OF BASE FLASHING

A. Install sheet flashings and preformed flashing accessories and adhere to substrates according to 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.

3.8 INSTALLATION OF WALKWAYS

A. Flexible Walkways: Install walkway products according to manufacturer's written instructions.

1. Install flexible walkways at the following locations:

   a. Perimeter of each rooftop unit.
   b. Top and bottom of each roof access ladder.
   c. As required by roof membrane manufacturer's warranty requirements.

2. Adhere walkway products to substrate according to roofing system manufacturer's written instructions.

3.9 ROOF INFORMATION DECAL INSTALLATION

A. Adhesively attach roofing manufacturer’s Roof Information Decal at all roof access points (i.e. inside face of hatches, doors, etc. leading to the roof).

3.10 FIELD QUALITY CONTROL

A. 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.
B. Correct or remove and replace components of roofing system where inspections indicate that they do not comply with specified requirements.
C. Additional testing and inspecting, at Contractor's expense, will be performed to determine if replaced or additional work complies with specified requirements.

3.11 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, correct substrates, and correct or reinstall roofing system to a condition free of damage and deterioration at time of Substantial Completion and according to warranty requirements.

C. Thoroughly clean all roof and ground areas of dust, debris, excess materials and equipment.

D. Clean overspray and spillage from adjacent construction using cleaning agents and procedures recommended by manufacturer of affected construction.

END OF SECTION 07 53 23

SECTION 07 71 00 - ROOF SPECIALTIES

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. Roof-edge specialties.
2. Roof-edge drainage systems.
3. Roof drain inserts.

B. Preinstallation Conference: Conduct conference at Project site.

1. Meet with Owner, Architect, Installer, and installers whose work interfaces with or affects roof specialties.
2. Examine substrate conditions for compliance with requirements, including flatness and attachment to structural members.
3. Review special roof details, roof drainage, and condition of other construction that will affect roof specialties.

1.3 SUBMITTALS, GENERAL

A. General: Submit all action submittals (except Samples for Verification) and informational submittals required by this Section and by Division 07 Section “EPDM Roofing” concurrently.

1.4 ACTION SUBMITTALS

A. Product Data: For each type of product indicated. Include construction details, material descriptions, dimensions of individual components and profiles, and finishes.

1. Fasteners.

B. As-Specified Data: If the product to be incorporated into Project is as specified by manufacturer name and product designation in Part 2 of this Specification Section, submit the “**As-Specified Verification Form**” (attached to Division 01 Section “Submittal Procedures”) for each item listed below, otherwise submit full Product Data for the following:

1. Canted roof-edge fascia.
2. Gutters.
3. Downspouts.
4. Downspout boots.

5. Roof drain inserts.
6. Self-adhering, high-temperature sheet underlayment.

C. 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.

D. Sample Warranty: For manufacturer's special warranty.

1.5 INFORMATIONAL SUBMITTALS

A. Manufacturer Certificates: For each type of roof specialty, as required by Division 07 Section "EPDM Roofing" certifying that each item complies with requirements specified in "Performance Requirements" Article.

1.6 CLOSEOUT SUBMITTALS

A. Maintenance Data: For roofing specialties to include in maintenance manuals.
B. Warranty: Executed special warranty.

1.7 MAINTENANCE MATERIAL SUBMITTALS

A. Furnish extra materials, from the same product run, that match products installed and that are packaged with protective covering for storage and identified with labels describing contents.

1.8 QUALITY ASSURANCE

A. Manufacturer Qualifications: A qualified manufacturer offering products meeting requirements that are FM Approvals listed for specified class and ANSI/SPRI ES-1 tested to specified design pressure.

B. Source Limitations: Obtain roof specialties approved by manufacturer providing roofing-system warranty specified in Division 07 Section "EPDM Roofing."

1.9 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.

1.10 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.

1.11 WARRANTY

A. Roofing-System Warranty: Roof specialties are included in warranty provisions in Division 07 Section “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 Delta E units when tested according to ASTM D2244.
b. Chalking in excess of a No. 8 rating when tested according to ASTM D4214.
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. FM Approvals' Listing: Manufacture and install roof-edge specialties that are listed in FM Approvals' "RoofNav" and approved for windstorm classification, Class 1-90. Identify materials with FM Approvals' markings.

C. SPRI Wind Design Standard: Manufacture and install roof-edge specialties tested and certified according to ANSI/SPRI ES-1 (Test Methods RE-1, RE-2, and RE-3, as applicable) to comply with the Building Code of New York State which references ASCE/SEI 7, and capable of meeting the wind load design criteria indicated on the Drawings.

D. 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, ambient; 180 deg F, material surfaces.

2.2 ROOF-EDGE SPECIALTIES

A. Canted Roof-Edge Fascia: Manufactured, roof-edge fascia system with a snap-on metal fascia cover in longest uniform section lengths not exceeding 12 feet. Provide matching corner units.

1. Provide one of the following types of canted roof-edge fascia systems to meet wind speed requirements or to comply with roofing system manufacturer's warranty requirements:

   a. Two-Piece Canted Roof-Edge Fascia: Two-piece fascia system with a continuous formed galvanized steel sheet cant, 0.028 inch thick (24 gage), minimum, with extended vertical leg terminating in a drip edge cleat.

      1) Products: Subject to compliance with requirements, available products that may be incorporated into the Work include, but are not limited to, the following:

         a) Carlisle SynTec Systems; SecurEdge 200 Fascia System.
         b) Firestone Building Products Company, LLC; EdgeGard +.
         c) Johns Manville; Fascia System 200.

2. Formed Aluminum Sheet Fascia Covers: Aluminum sheet, not less than 0.050 inch thick and as required to meet performance requirements.

   a. Surface: Smooth, flat finish.
   b. Finish: Two-coat fluoropolymeror Clear anodic.
   c. Color: As selected by Architect from manufacturer's full range.

3. Corners: Factory mitered and continuously welded, not less than 2 feet long in each direction.

4. Splice Plates: Concealed, of same material, finish, and shape as fascia cover.

5. Fascia Accessories: Provide the following from the fascia system manufacturer:

   a. Fascia Extenders: Manufactured, two-piece fascia extender with metal fascia extension in longest uniform section lengths practical not exceeding 12 feet and continuous formed galvanized steel sheet hold-down cleats, 0.028 inch thick (24 gage), minimum, with extended vertical leg terminating in a drip edge cleat. Provide matching corner units.

      1) Formed Aluminum: Not less than 0.050 inch thick, with pre-punched slotted holes at 12 inches o.c.at top edge, finished to match fascia cover.
      2) Corners: Factory mitered and continuously welded, not less than 2 feet long in each direction.
      3) Splice Plates: Concealed, of same material, finish, and shape as fascia extension.

2.3 ROOF-EDGE DRAINAGE SYSTEMS

A. Gutters: Manufactured in longest uniform section lengths not exceeding 12 feet, with matching corner units, ends, outlet tubes, and other accessories. Elevate back edge at least 1 inch above front edge. Furnish expansion joints and expansion-joint covers fabricated from same metal as gutters.

1. Products: Subject to compliance with requirements, available products that may be incorporated into the Work include, but are not limited to, the following:

   a. Carlisle SynTec Systems; SecurEdge 200 Industrial Gutter System IG-1.
   b. Firestone Building Products Company, LLC; Firestone Industrial Gutter FS-1.
   c. Johns Manville; Johns Manville Industrial Gutter IG-1.

2. Aluminum Sheet: Not less than 0.063 inch thick.

3. Corners: Factory mitered and continuously welded, not less than 2 feet long in each direction.

4. Gutter Supports: Straps with finish matching the gutters.

B. Downspouts: Plain rectangular complete with mitered elbows, manufactured from the following exposed metal. Furnish with metal brackets mounted at rear of downspout, from same material as downspouts, and stainless steel anchors.

1. Products: Subject to compliance with requirements, available products that may be incorporated into the Work include, but are not limited to, the following:

   a. Carlisle SynTec Systems; SecurEdge 200 Industrial Downspout Closed Face.
   b. Firestone Building Products Company, LLC; Firestone Industrial Closed Face.
   c. Johns Manville; Johns Manville Industrial Downspout Closed Face.

2. Formed Aluminum: Not less than 0.063 inch thick.

3. Size: As indicated on Drawings.

C. Aluminum Finish: Two-coat fluoropolymeror Clear anodic.

1. Color: As selected by Architect from manufacturer's full range.

D. Downspout Boots:

1. Stainless Steel Type: ASTM A 240/A 240M, Type 304 stainless steel body and strap, not less than 0.1094-inch thick (12 gage), with brushed finish.

   a. Basis-of-Design Product: Subject to compliance with requirements, provide Piedmont Pipe Manufacturing, Model SO, or comparable product.
   b. Inlet Size: 4 by 3inches.
   c. Cleanout: Provide with standard type.
   d. Height: **36**inches.
   e. Offset Size2.5inches.

f. Outlet Size: 6 inch diameter.
g. Color: As selected by Architect from manufacturer’s full range.

2.4 ROOF DRAIN INSERTS

A. Roof Drain Inserts: One-piece spun aluminum body and heavy duty cast aluminum clamping ring and strainer dome roof drain insert, factory fabricated fixture designed to be installed inside an existing drain leader with no reduction in size.

1. Products: Subject to compliance with requirements, available products that may be incorporated in the Work, include, but are not limited to:

a. Carlisle SynTec Incorporated; Hercules Retrofit Drain.
b. Firestone Building Products; Firestone Drain Insert.
c. Johns Manville, a Berkshire Hathaway company; Hercules RetroDrain.

2.5 MATERIALS

A. Zinc-Coated (Galvanized) Steel Sheet: ASTM A653/A653M, G90 coating designation.
B. Aluminum Sheet: ASTM B209, alloy as standard with manufacturer for finish required, with temper to suit forming operations and performance required.
C. Aluminum Extrusions: ASTM B221, alloy and temper recommended by manufacturer for type of use and finish indicated.

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. Exposed Penetrating Fasteners: Not permitted.
2. Fasteners for Aluminum: Series 300 stainless steel.
3. Fasteners for Zinc-Coated (Galvanized) Steel Sheet: Series 300 stainless steel.

B. Elastomeric Sealant: ASTM C920, elastomeric polymer sealant of type, grade, class, and use classifications required by roofing-specialty manufacturer for each 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 polyvinylidene fluoride (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. 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.

2. Clear Anodic Finish: AAMA 611, AA-M12C22A41, Class I, 0.018 mm or thicker.

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 wallsand roof edges 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.
E. Beginning installation constitutes Contractor’s acceptance of substrates and conditions.

3.2 INSTALLATION OF UNDERLAYMENT

A. Self-Adhering Sheet Underlayment: Apply primer if required by manufacturer. Comply with temperature restrictions of underlayment manufacturer for installation. Apply wrinkle free, in shingle fashion to shed water, and with end laps of not less than 6 inches staggered 24 inches between courses. Overlap side edges not less than 3-1/2 inches. Roll laps with roller. Cover underlayment within 14 days.

1. Apply continuously under roof-edge specialties.
2. Coordinate application of self-adhering sheet underlayment under roof specialties with requirements for continuity with adjacent air barrier materials.

3.3 INSTALLATION, GENERAL

A. Install roof specialties according to manufacturer's written instructions. Anchor roof specialties securely in place, with provisions for thermal and structural movement. Use fasteners, 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 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 self-adhering sheet underlayment or by other permanent separation as recommended by manufacturer.

1. Underlayment: Where installing metal directly on cementitious or wood substrates, install a course of self-adhering sheet underlayment.

C. Expansion Provisions: Allow for thermal expansion of exposed roof specialties.

1. Space movement joints at a maximum of 12 feet with no joints within 24 inches of corners or intersections unless otherwise indicated on Drawings.

2. When ambient temperature at time of installation is between 40 and 70 deg F, set joint members for 50 percent movement each way. Adjust setting proportionately for installation at higher ambient temperatures.

3. Loose-nail fascia extender at center of pre-punched slotted hole; do not draw nail tight.

4. Stagger joints in fascia from those in fascia extender by not less than 24 inches.

D. Fastener Sizes: Use fasteners of sizes that penetrate substrate not less than recommended by fastener manufacturer to achieve maximum pull-out resistance.

E. 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.

3.4 INSTALLATION OF COPINGS

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.

3.5 INSTALLATION OF ROOF-EDGE SPECIALITIES

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.

3.6 INSTALLATION OF ROOF-EDGE DRAINAGE-SYSTEM

A. Install components to produce a complete roof-edge drainage system according to manufacturer's written instructions. Coordinate installation of roof perimeter flashing with installation of roof-edge drainage system.

B. Gutters: Join and seal gutter lengths. Allow for thermal expansion. Attach gutters to firmly anchored gutter supports spaced not more than 30 inches apart. Attach ends with rivets and seal with sealant to make watertight. Slope to downspouts.

1. Install gutter with expansion joints at locations indicated but not exceeding 48 feet apart. Install expansion-joint caps.

C. Downspouts: Join sections with manufacturer's standard telescoping joints. Provide hangers with fasteners designed to hold downspouts securely to walls and 1 inch away from walls; locate fasteners at top and bottom and at approximately 60 inches o.c.

1. Connect downspouts to underground drainage system indicated. Secure downspout boots to walls with stainless steel flat head bolts.

3.7 INSTALLATION OF ROOF DRAIN INSERTS

A. Comply with manufacturer's written instructions for handling and installing roof drain inserts.

3.8 CLEANING AND PROTECTION

A. Clean and neutralize flux materials. Clean off excess sealants.

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 restored by finish touchup or similar minor restoration procedures.

END OF SECTION 07 71 00

SECTION 07 72 00 - ROOF ACCESSORIES

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. Roof curbs.
2. Equipment supports.
3. Pipe, conduit and duct supports.
4. Vent pipe extensions.
5. Movable safety railing systems.
6. Isolation barrier membrane.

1.3 PREINSTALLATION MEETINGS

A. Preinstallation Conference: Conduct conference at Project site.

1. Meet with Owner, Architect, roofing Installer, Installer, and installers whose work interfaces with or affect roof accessories.
2. Review special roof details, roof drainage, and conditions of other construction that will affect roof accessories.

1.4 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.

C. Coordinate construction operations on or adjacent to roof, included in different Sections, which depend on each other for proper installation, connection, and operation.

1.5 SUBMITTALS, GENERAL

A. General: Submit all action submittals required by this Section concurrently.

1.6 ACTION SUBMITTALS

A. Product Data: For each type of roof accessory. Include construction details, material descriptions, dimensions of individual components and profiles, and finishes.

B. As-Specified Data: If the product to be incorporated into Project is as specified by manufacturer name and product designation in Part 2 of this Specification Section, submit the "**As-Specified Verification Form**" (attached to Division 01 "Submittal Procedures") for each item listed below, otherwise submit full Product Data for the following:

1. Roof curbs.
2. Equipment supports.
3. Adjustable-height roller-bearing pipe and conduit supports.
4. Hanger-type pipe and conduit supports.
5. Duct supports.
6. Vent pipe extensions.
7. Storm collars.
8. Isolation barrier membrane.

C. Shop Drawings: For roof accessories.

1. Include plans, elevations, keyed details, and attachments to other work. Indicate dimensions, loadings, and special conditions.

1.7 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 ROOF CURBS

A. Roof Curbs: Internally reinforced roof-curb units capable of supporting superimposed live and dead loads, including equipment loads and other construction indicated on Drawings, bearing continuously on roof structure, and capable of meeting performance requirements; with welded or mechanically fastened and sealed corner joints, straight sides, and integrally formed deck-mounting flange at perimeter bottom.

1. Products: Subject to compliance with requirements, available products that may be incorporated in the Work, include, but are not limited to:

a. Conn-Fab Sales, Inc.; Series 4000.
b. Pate Company (The); PC-2.
c. Thybar Corporation; TC-3.

B. Size: Coordinate dimensions with roughing-in information or Shop Drawings of equipment to be supported.

C. Material: Zinc-coated (galvanized) steel sheet, 0.052 inch thick (18 gage).

D. Construction:

1. Curb Profile: Manufacturer's standard compatible with roofing system.

2. Fabricate curbs to minimum height of 12 inches above roofing surface unless otherwise indicated.

3. Top Surface: Level top of curb.

4. Insulation: Factory insulated with 1-1/2-inch-thick glass-fiber board insulation.

a. R-Value: 6.0 according to ASTM C1363.

5. Liner: Same material as curb, of manufacturer's standard thickness and finish.

6. Nailer: Factory-installed wood nailer along top flange of curb, continuous around curb perimeter.

7. 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.

2.3 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 corner joints, and integrally formed structure-mounting flange at bottom.

1. Products: Subject to compliance with requirements, available products that may be incorporated in the Work, include, but are not limited to:

a. Conn-Fab Sales, Inc.; Series 300.
b. Pate Company (The); ES-2.
c. Thybar Corporation; TEMS-3.

B. Size: Coordinate dimensions with roughing-in information or Shop Drawings of equipment to be supported.

C. Material: Zinc-coated (galvanized) steel sheet, 0.052 inch thick (18 gage).

D. Construction:

1. Curb Profile: Manufacturer's standard compatible with roofing system.

2. Nailer: Factory-installed continuous wood nailers 5-1/2 inches 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 above roofing surface unless otherwise indicated.

2.4 PIPE, CONDUIT AND DUCT SUPPORTS

A. Adjustable-Height Roller-Bearing Pipe and Conduit Supports: Pipe stand base, pipe support, and roller housing, with stainless steel threaded rod designed for adjusting support height, accommodating up to 2-1/2 inch diameter pipe or conduit; for penetration-free installation over roof membrane type; as required for load and quantity of pipe or conduit runs and sizes.

1. Products: Subject to compliance with requirements, available products that may be incorporated in the Work, include, but are not limited to:

a. Miro Industries, Inc.; Roller Series Supports.
b. PHP Systems & Design; Super Sleeper System SS-8-R.

2. Base: Molded polypropylene or polycarbonate.

3. Maximum Height: 8inches above roof.

2.5 VENT PIPE EXTENSIONS

A. Vent Pipe Extensions: Prefabricated plumbing vent pipe extensions. Solid-wall PVC pipe with integral six-inch-long joint splice sleeve insert at each end. Verify existing pipe size in field.

1. Basis-of-Design Product: Subject to compliance with requirements, provide Tubos, Inc.; TUBOS Vent Pipe Extensions, or a comparable product.

2.6 MOVABLE SAFETY RAILING SYSTEMS

A. Movable Safety Railing Systems: Manufacturer's standard system including rails, clamps, fasteners, and accessories required for a complete installation; freestanding, non-penetrating, and complying with OSHA requirements and authorities having jurisdiction.

1. Basis-of-Design Product: Subject to compliance with requirements, provide Safety Rail Company; SRC 360 Mobile Safety Rail System, or a comparable product.

2. Height: 42 inches above finished roof, mid-rail at 21” above finished roof.

3. Length: 5’-0” long minimum rail sections with locking pins securing rail section to base while allowing the sections to rotate. Custom longer lengths may be required between fixed points – verify in field.

4. Bases: Cast iron with EPDM pad, with base mover/dolly.

5. Posts and Rails: Steel tube, not less than 0.064-inch-thick (16 gage), 1-5/8 inches in diameter.

6. Spanner Brackets: Horizontal members with brackets and hardware as required for attachment to rigid safety railings at roof hatch and walls.

7. Maximum Opening Size: System constructed to prevent passage of a sphere 21 inches in diameter.

8. Provide weep holes or another means to drain entrapped water in hollow sections of handrail and railing members.

9. Fabricate joints exposed to weather to be watertight.

10. Fasteners: Manufacturer's standard.

11. Finish: Hot dip galvanized finish.

2.7 METAL MATERIALS

A. Zinc-Coated (Galvanized) Steel Sheet: ASTM A653/A653M, G90 coating designation.

B. Aluminum Sheet: ASTM B209, manufacturer's standard alloy for finish required, with temper to suit forming operations and performance required.

1. Mill Finish: As manufactured.

C. Aluminum Extrusions and Tubes: ASTM B221, manufacturer's standard alloy and temper for type of use, finished as indicated; otherwise mill finished.

1. Powder-Coat Finish: AAMA 2603 except with a minimum dry film thickness of 1.5 mils. Comply with coating manufacturer's written instructions for cleaning, conversion coating, and applying and baking finish.

D. Stainless Steel Sheet and Shapes: ASTM A240/A240M or ASTM A666, Type 304.

2.8 MISCELLANEOUS MATERIALS

A. 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 C726, nominal density of 3 lb/cu. ft., thermal resistivity of 4.3 deg F x h x sq. ft./Btu x in. at 75 deg F, thickness as indicated.

C. Polyisocyanurate Board Insulation: ASTM C1289, 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 thick.

E. Isolation Barrier Membrane: Composite, self-adhesive, flashing product consisting of a pliable, butyl rubber compound, bonded to a polypropylene film to produce an overall thickness of not less than 0.014 inch.

   1. Basis-of-Design Product: Subject to compliance with requirements, provide GCP Applied Technologies, Inc.; Vycor PRO, or comparable product.

F. Fasteners: Roof accessory manufacturer's recommended fasteners suitable for application and metals being fastened. Match finish of exposed fasteners with finish of material being fastened. Provide nonremovable fastener heads to exterior exposed fasteners. Furnish the following unless otherwise indicated:

   1. Fasteners for Zinc-Coated Steel: Series 300 stainless steel.
   2. Fasteners for Aluminum 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.

H. Elastomeric Sealant: ASTM C920, elastomeric silicone polymer sealant as recommended by roof accessory manufacturer for installation indicated; low modulus; of type, grade, class, and use classifications required to seal joints and remain watertight.

2.9 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, and securely anchored.
C. Verify dimensions of roof openings for roof accessories.
D. Proceed with installation only after unsatisfactory conditions have been corrected.
E. Beginning installation constitutes Contractor’s acceptance of substrates and conditions.

3.2 INSTALLATION

A. 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. Install isolation barrier membrane between metal and wood blocking, wrinkle free. Apply primer if required by membrane manufacturer. Use primer rather than nails for installing membrane at low temperatures. Overlap edges not less than 3-1/2 inches. Roll laps with roller. Cover membrane within 14 days.

C. Roof Curb Installation: Install each roof curb so top surface is level.

D. Equipment Support Installation: Install equipment supports so top surfaces are level with each other.

E. Pipe Support Installation: Comply with MSS SP-58 and MSS SP-89. Install supports and attachments as required to properly support piping. Arrange for grouping of parallel runs of horizontal piping, and support together.

1. Pipes of Various Sizes: Space supports for smallest pipe size or install intermediate supports for smaller diameter pipes as specified for individual pipe hangers.
2. Install pipe, conduit and duct supports over adhered flexible walkway pads.

F. Vent Pipe Extension Installation: Install prefabricated vent pipe extensions according to manufacturer’s written installation instructions.

G. Movable Safety Railing Installation: Assemble in place to verify that components are complete. Instruct Owner's designated personnel in properly handling, adjusting, and maintaining units.

1. Install safety railing system at locations shown on drawings. Install required components on adhered walk pads at EPDM and loose over roof at SPF and mechanically attach to roof hatch safety railings and walls per manufacturer’s requirements to meet OSHA requirements.

H. Seal joints with elastomeric sealant as required by roof accessory manufacturer.

3.3 CORRECTION AND CLEANING

A. Galvanized Surfaces: Clean field welds, bolted connections, and abraded areas and repair galvanizing according to ASTM A780/A780M.
B. Clean exposed surfaces according to manufacturer's written instructions.
C. Clean off excess sealants.
D. Replace roof accessories that have been damaged or that cannot be successfully restored by finish touchup or similar minor correction procedures.

END OF SECTION 07 72 00

SECTION 07 84 13 - PENETRATION FIRESTOPPING

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. Penetrations in fire-resistance-rated walls.
2. Penetrations in smoke barriers.

1.3 PREINSTALLATION MEETINGS

A. Preinstallation Conference: Conduct conference at Project site.

1.4 SUBMITTALS, GENERAL

A. General: Submit all action submittals required by this Section concurrently.

1.5 ACTION SUBMITTALS

A. Product Data: For each type of product.

1. Penetrations in fire-resistance-rated walls.
2. Penetrations in smoke barriers.

B. Sustainable Design Submittals:

1. Product Data: For sealants, indicating VOC content.

C. Product Schedule: For each penetration firestopping system. Include type of penetration, illustration of firestopping system, and design designation of qualified testing and inspecting agency.

1.6 CLOSEOUT SUBMITTALS

A. Installer Certificates: From Installer indicating that penetration firestopping systems have been installed in compliance with requirements and manufacturer's written instructions.

1.7 QUALITY ASSURANCE

A. Installer Qualifications: A firm that has been approved by FM Approvals according to FM Approvals 4991, "Approval Standard for Firestop Contractors," or been evaluated by UL and found to comply with its "Qualified Firestop Contractor Program Requirements."

1.8 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.

1.9 COORDINATION

A. Coordinate construction of openings and penetrating items to ensure that penetration firestopping systems can be installed according to 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 SOURCE LIMITATIONS

A. Obtain joint firestop systems for each type of joint opening indicated from single manufacturer.

2.2 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 firestop systems installed with products bearing the classification marking of a qualified product certification agency in accordance with listed system designs published by a qualified testing agency.

1) UL in its online directory "Product iQ."

2.3 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 are to be compatible with one another, with the substrates forming openings, and with penetrating items if any.

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. 3M Fire Protection Products.
   b. Hilti, Inc.
   c. RectorSeal, a CSW Industrials company.

B. Penetrations in Fire-Resistance-Rated Walls: Penetration firestopping systems with ratings determined per ASTM E814 or UL 1479.

1. F-Rating: Not less than the fire-resistance rating of the wall penetrated.
2. Membrane Penetrations: Install recessed fixtures such that the required fire resistance will not be reduced.

C. Penetrations in Smoke Barriers: Penetration firestopping systems with ratings determined per UL 1479.

1. L-Rating: Not exceeding 5.0 cfm/sq. ft. of penetration opening and no more than 50-cfm cumulative total for any 100 sq. ft. at both ambient and elevated temperatures.

D. Exposed Penetration Firestopping Systems: Flame-spread and smoke-developed indexes of less than 25 and 450, respectively, per ASTM E84.

1. Verify sealant has a VOC content of 250 g/L or less.

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.

2.4 FILL MATERIALS

A. Cast-in-Place Firestop Devices: Factory-assembled devices for use in cast-in-place concrete floors and consisting of an outer sleeve lined with an intumescent strip, a flange attached to one end of the sleeve for fastening to concrete formwork, and a neoprene gasket.

B. Latex Sealants: Single-component latex formulations that do not re-emulsify after cure during exposure to moisture.

C. Firestop Devices: Factory-assembled collars formed from galvanized steel and lined with intumescent material sized to fit specific diameter of penetrant.

D. Intumescent Composite Sheets: Rigid panels consisting of aluminum-foil-faced intumescent elastomeric sheet bonded to galvanized-steel sheet.

E. Intumescent Putties: Nonhardening, water-resistant, intumescent putties containing no solvents or inorganic fibers.

F. Intumescent Wrap Strips: Single-component intumescent elastomeric strips for use around combustible penetrants.

G. 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.

H. Pillows/Bags: Compressible, removable, and reusable intumescent pillows encased in fire-retardant polyester or glass-fiber cloth. Where exposed, cover openings with steel-reinforcing wire mesh to protect pillows/bags from being easily removed.

I. Silicone Foams: Multicomponent, silicone-based liquid elastomers that, when mixed, expand and cure in place to produce a flexible, nonshrinking foam.

J. Silicone Sealants: Single-component, silicone-based, neutral-curing elastomeric sealants.

K. Fire-Rated Cable Sleeve Kits: Complete kits designed for new or existing cable penetrations through walls to accept standard accessories.

L. Thermal Wrap: Flexible protective wrap tested and listed for up to 2-hour fire ratings in accordance with ASTM E814/UL 1479 for membrane penetrations or ASTM E1725/UL 1724 for thermal barrier and circuit integrity protection.

M. Fire-Rated Cable Pathways: Single or gangable device modules composed of a steel raceway with integral intumescent material and requiring no additional action in the form of plugs, twisting closure, putty, pillows, sealant, or otherwise to achieve fire and air-leakage ratings.

N. Retrofit Device for Cable Bundles: Factory-made, intumescent, collar-like device for firestopping existing over-filled cable sleeves and capable of being installed around projecting sleeves and cable bundles.

O. Wall-Opening Protective Materials: Intumescent, non-curing putty pads or self-adhesive inserts for protection of electrical switch and receptacle boxes.

P. Fire-Rated HVAC Retaining Angles: Steel angle system with integral intumescent firestop gasket for use around rectangular steel HVAC ducts without fire dampers.

Q. Firestop Plugs: Flexible, re-enterable, intumescent, foam-rubber plug for use in blank round openings and cable sleeves.

R. Fire-Rated Cable Grommet: Molded two-piece grommet made of plenum-grade polymer and foam inner core for sealing small cable penetrations in gypsum walls up to 1/2 inch diameter.

S. Closet Flange Gasket: Molded, single-component, flexible, intumescent gasket for use beneath a water closet (toilet) flange in floor applications.

T. Endothermic Wrap: Flexible, insulating, fire-resistant, endothermic wrap for protecting membrane penetrations of utility boxes, critical electrical circuits, communications lines, and fuel lines.

2.5 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.

C. Beginning installation constitutes Contractor’s acceptance of substrates and conditions.

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 OF PENETRATION FIRESTOPPING SYSTEMS

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 high and with minimum 0.375-inch strokes.

1. Locate in accessible concealed floor, floor-ceiling, or attic space at 15 feet from end of wall and at intervals not exceeding 30 feet.

B. Penetration Identification: Identify each penetration firestopping system with legible metal or plastic labels. Attach labels permanently to surfaces adjacent to and within 6 inches of penetration firestopping system edge so labels are visible to anyone seeking to remove penetrating items or firestopping systems. Use mechanical fasteners or self-adhering-type labels with adhesives capable of permanently bonding labels to surfaces on which labels are placed. Include the following information on labels:

1. The words "Warning - Penetration Firestopping - Do Not Disturb. Notify Building Management of Any Damage."
2. Contractor's name, address, and phone number.
3. Designation of applicable testing and inspecting agency.
4. Date of installation.
5. Manufacturer's name.
6. Installer's name.

3.5 FIELD QUALITY CONTROL

A. Special Inspections: Special Inspections are required for the work of this Section. Refer to Division 01 Section “Quality Requirements” and its attachments.

1. Owner will engage a qualified testing agency to perform tests and inspections according to 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.

3.7 PENETRATION FIRESTOPPING SYSTEM SCHEDULE

A. Where UL-classified systems are indicated, they refer to UL system numbers in its online directory "Product iQ” under product Category XHEZ.

B. For each location where a penetration occurs, provide a firestopping system selected from the wall system below that complies with this Section and is suitable for the penetration conditions indicated for the Project.

WALL Firestopping Systems Listed Using the Alpha-Alpha-Numeric Identification System Published in UL's *Fire Resistance Directory*, Vols. 2a - 2b				
TYPE OF PENETRANT	Wall PENETRATION SYSTEMS (First Alpha Component = C or W)			
	Concrete or Masonry Walls with a Minimum Thickness Less Than or Equal to 8 Inches (203 MM)	Concrete or Masonry Walls with a Minimum Thickness OF MORE Than 8 Inches (203 MM)	Framed Walls	Composite panel walls
NO PENETRATING ITEMS	C-AJ-0001-0999, C-BJ-0001-0999, or W-J-0001-0999		W-L-000-1-0999	
METALLIC PIPE, CONDUIT, OR TUBING	C-AJ-1001-1999, C-BJ-1001-1999, or W-J-1001-1999	C-BK-1001-1999 or W-K-1001-1999	W-L-1001-1999	W-N-1001-1999
NONMETALLIC PIPE, CONDUIT, OR TUBING	C-AJ-2001-2999, C-BJ-2001-2999, or W-J-2001-2999	C-BK-2001-2999 or W-K-2001-2999	W-L-2001-2999	W-N-2001-2999
ELECTRICAL CABLES	C-AJ-3001-3999, C-BJ-3001-3999, or W-J-3001-3999	C-BK-3001-3999 or WK-3001-3999	W-L-3001-3999	
CABLE TRAYS WITH ELECTRICAL CABLES	C-AJ-4001-4999, C-BJ-4001-4999, or W-J-4001-4999	W-K-4001-4999	W-L-4001-4999	

WALL Firestopping Systems Listed Using the Alpha-Alpha-Numeric Identification System Published in UL's *Fire Resistance Directory*, Vols. 2a - 2b				
TYPE OF PENETRANT	Wall PENETRATION SYSTEMS (First Alpha Component = C or W)			
	Concrete or Masonry Walls with a Minimum Thickness Less Than or Equal to 8 Inches (203 MM)	Concrete or Masonry Walls with a Minimum Thickness OF MORE Than 8 Inches (203 MM)	Framed Walls	Composite panel walls
INSULATED PIPES	C-AJ-5001-5999, C-BJ-5001-5999, or W-J-5001-5999	C-BK-5001-5999	W-L-5001-5999	W-N-5001-5999
MISCELLANEOUS ELECTRICAL PENETRANTS	C-AJ-6001-6999, C-BJ-6001-6999, or W-BJ-6001-6999		W-L-6001-6999	
MISCELLANEOUS MECHANICAL PENETRANTS	C-AJ-7001-7999, C-BJ-7001-7999, or W-J-7001-7999		W-L-7001-7999	W-N-7001-7999
GROUPINGS OF PENETRATIONS	C-AJ-8001-8999, C-BJ-8001-8999, or W-J-8001-8999		W-L-8001-8999	

END OF SECTION 07 84 13

SECTION 07 92 00 - JOINT SEALANTS

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. Silicone joint sealants.
2. Urethane joint sealants.
3. Mildew-resistant joint sealants.
4. Latex joint sealants.
5. Acoustical joint sealants.

1.3 SUBMITTALS, GENERAL

A. General: Submit all action submittals required by this Section concurrently.

1.4 ACTION SUBMITTALS

A. Product Data: For each joint-sealant product indicated.

1. Cylindrical sealant backings.
2. Bond-breaker tape.
3. Primers.

B. As-Specified Data: If the product to be incorporated into Project is as specified by manufacturer name and product designation in Part 2 of this Specification Section, submit the "**As-Specified Verification Form**" (attached to Division 01 Section "Submittal Procedures") for each item listed below, otherwise submit full Product Data for the following:

1. Silicone joint sealants.
2. Urethane joint sealants.
3. Mildew-resistant joint sealants.
4. Latex joint sealants.
5. Acoustical joint sealants.

C. Sustainable Design Submittals:

1. Product Data: For sealants, indicating VOC content.

D. Samples: Manufacturer's color charts showing the full range of colors available for each product exposed to view.

E. Samples for Verification: For each kind and color of joint sealant required, provide Samples with joint sealants in 1/2-inch-wide joints formed between two 6-inch-long strips of material matching the appearance of exposed surfaces adjacent to joint sealants.

F. 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.

1.5 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.
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.

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. VOC Content: Sealants and sealant primers shall comply with the following:

1. Architectural sealants shall have a VOC content of 250 g/L or less.
2. Sealants and sealant primers for nonporous surfaces shall have a VOC content of 250 g/L or less.
3. Sealants and sealant primers for porous substrates shall have a VOC content of 775 g/L or less.

C. Colors of Exposed Joint Sealants: As selected by Architect from manufacturer's full range. Multiple colors may be selected.

2.2 SILICONE JOINT SEALANTS

A. Silicone Joint Sealants: Single-component, nonsag, plus 100 percent and minus 50 percent movement capability, nontraffic-use, neutral-curing silicone joint sealant; ASTM C920, Type S, Grade NS, Class 100/50, Use NT.

1. Products: Subject to compliance with requirements, available products that may be incorporated into the Work include, but are not limited to, the following:

   a. Dow Chemical Company (The); DOWSIL790 Silicone Building Sealant.
   b. GE/Momentive Performance Materials Inc.; SCS2700 SilPruf LM.
   c. Pecora Corporation; 890NST.
   d. Tremco Incorporated; Spectrem 1.

2. Joint-Sealant Application: Joints in vertical surfaces.

   a. Exterior Joint Locations:

      1) Construction joints in cast-in-place concrete.
      2) Joints between plant-precast architectural concrete units.
      3) Control and expansion joints in unit masonry.
      4) Joints in dimension stone cladding.
      5) Joints in glass unit masonry assemblies.
      6) Joints in exterior insulation and finish systems.
      7) Joints between metal panels.
      8) Joints between different materials listed above.
      9) Perimeter joints between materials listed above and frames of exterior openings.
      10) Other joints as indicated.

   b. Interior Joint Locations:

      1) Control and expansion joints on exposed interior surfaces of exterior walls.
      2) Perimeter joints of exterior openings.
      3) Other joints as indicated.

2.3 URETHANE JOINT SEALANTS

A. Urethane Joint Sealants, Nontraffic-Use: Single-component, nonsag, nontraffic-use, plus 25 percent and minus 25 percent movement capability, urethane joint sealant; ASTM C920, Type S, Grade NS, Class 25, Use NT.

1. Products: Subject to compliance with requirements, available products that may be incorporated into the Work include, but are not limited to, the following:

   a. Master Builders Solutions; MasterSeal TX 1.
   b. Polymeric Systems, Inc.; Flexiprene 1000.

2. Joint-Sealant Application: Joints up to 1 inch wide in horizontal nontraffic surfaces.

a. Exterior Joint Locations:

1) Control and expansion joints in ceilings and other overhead surfaces.
2) Other joints as indicated.

b. Interior Joint Locations:

1) Control and expansion joints in ceilings and other overhead surfaces.
2) Other joints as indicated.

B. Urethane Joint Sealants, Traffic-Use: Single-component, pourable, plus 25 percent and minus 25 percent movement capability, traffic--use, urethane joint sealant; ASTM C920, Type S, Grade P, Class 25, Use T.

1. Products: Subject to compliance with requirements, available products that may be incorporated into the Work include, but are not limited to, the following:

a. Master Builders Solutions; MasterSeal SL 1.
b. Polymeric Systems, Inc.; Flexiprene PSI-952.
c. Sherwin-Williams Company (The); Loxon SL1.

2. Joint-Sealant Application: Joints up to 1 inch wide in horizontal traffic surfaces.

a. Exterior Joint Locations:

1) Control and expansion joints in brick pavers.
2) Isolation and contraction joints in cast-in-place concrete slabs.
3) Joints in stone paving units, including steps.
4) Joints between different materials listed above.
5) Other joints as indicated.

b. Interior Joint Locations:

1) Isolation joints in cast-in-place concrete slabs.
2) Control and expansion joints in stone flooring.
3) Control and expansion joints in brick flooring.
4) Control and expansion joints in tile flooring.
5) Other joints as indicated.

2.4 MILDEW-RESISTANT JOINT SEALANTS

A. Mildew-Resistant Joint Sealants: Formulated for prolonged exposure to humidity with fungicide to prevent mold and mildew growth.

B. Silicone Joint Sealants, Mildew Resistant: Mildew-resistant, single-component, nonsag, plus 25 percent and minus 25 percent movement capability, nontraffic-use, acid-curing silicone joint sealant; ASTM C920, Type S, Grade NS, Class 25, Use NT.

1. Products: Subject to compliance with requirements, available products that may be incorporated into the Work include, but are not limited to, the following:

    a. Dow Chemical Company (The); DOWSIL786 Silicone Sealant.
    b. GE/Momentive Performance Materials Inc.; SCS1700 Sanitary.

2. Joint-Sealant Application: Mildew-resistant interior joints in vertical surfaces.

    a. Joint Sealant Location:

        1) Tile control and expansion joints where indicated.
        2) Other joints as indicated.

2.5 LATEX JOINT SEALANTS

A. Acrylic Latex Joint Sealants: Acrylic latex or siliconized acrylic latex, ASTM C834, Type OP.

1. Products: Subject to compliance with requirements, available products that may be incorporated into the Work include, but are not limited to, the following:

    a. Pecora Corporation; AC-20 +Silicone.
    b. Tremco Incorporated; Tremflex 834.

2. Joint-Sealant Application: Interior joints in vertical surfaces not subject to significant movement.

    a. Joint Locations:

        1) Vertical joints on exposed surfaces of interior unit masonry and gypsum board.
        2) Perimeter joints between interior wall surfaces and frames of openings.
        3) Other joints as indicated.

2.6 ACOUSTICAL JOINT SEALANTS

A. Acoustical Joint Sealants for Exposed and Concealed Joints: Manufacturer's standard nonsag, paintable, nonstaining latex acoustical sealant complying with ASTM C834.

1. Products: Subject to compliance with requirements, available products that may be incorporated into the Work include, but are not limited to, the following:

    a. Grabber Construction Products; Grabber Acoustical Sound Sealant.
    b. Pecora Corporation; AC-20 FTR.
    c. USG Corporation; Sheetrock Brand Acoustical Sealant.

2.7 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 C1330, Type C (closed-cell material with a surface skin), Type O (open-cell material) or either 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.

2.8 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.

C. Beginning installation constitutes Contractor’s acceptance of substrates and conditions.

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.

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.

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 C1193 for use of joint sealants as applicable to materials, applications, and conditions indicated.

C. Install sealant backings of kind indicated to support sealants during application and at position required to produce cross-sectional shapes and depths of installed sealants relative to joint widths that allow optimum sealant movement capability.

1. Do not leave gaps between ends of sealant backings.
2. Do not stretch, twist, puncture, or tear sealant backings.
3. Remove absorbent sealant backings that have become wet before sealant application, and replace them with dry materials.

D. Install bond-breaker tape behind sealants where sealant backings are not used between sealants and backs of joints.

E. Install sealants using proven techniques that comply with the following and at the same time backings are installed:

1. Place sealants so they directly contact and fully wet joint substrates.
2. Completely fill recesses in each joint configuration.
3. Produce uniform, cross-sectional shapes and depths relative to joint widths that allow optimum sealant movement capability.

F. Tooling of Nonsag Sealants: Immediately after sealant application and before skinning or curing begins, tool sealants according to requirements specified in subparagraphs below to form smooth, uniform beads of configuration indicated; to eliminate air pockets; and to ensure contact and adhesion of sealant with sides of joint.

1. Remove excess sealant from surfaces adjacent to joints.
2. Use tooling agents that are approved in writing by sealant manufacturer and that do not discolor sealants or adjacent surfaces.
3. Provide concave joint profile per Figure 8A in ASTM C1193 unless otherwise indicated.

3.4 INSTALLATION OF ACOUSTICAL JOINT SEALANTS

A. Comply with acoustical joint-sealant manufacturer's written installation instructions unless more stringent requirements apply.

B. Stud Partition Assemblies: Seal construction at perimeters, behind control joints, and at openings and penetrations with a continuous bead of acoustical joint sealant. Install acoustical joint sealants at both faces of partitions, at perimeters, and through penetrations. Comply with ASTM C919, ASTM C1193, and manufacturer's written recommendations for closing off sound-flanking paths around or through assemblies, including sealing partitions to underside of floor slabs above acoustical ceilings.

C. Acoustical Ceiling Areas: Apply acoustical joint sealant at perimeter edge moldings of acoustical ceiling areas in a continuous ribbon concealed on back of vertical legs of moldings before they are installed.

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 correct damaged or deteriorated joint sealants immediately so installations with corrected areas are indistinguishable from original work.

END OF SECTION 07 92 00

SECTION 08 11 13 - HOLLOW METAL DOORS AND FRAMES

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. Interior standard steel doors and frames.

1.3 DEFINITIONS

A. Minimum Thickness: Minimum thickness of base metal without coatings according to ANSI/SDI A250.8. (Nominal gage equivalents are listed in parentheses.)

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.

B. Coordinate requirements for installation of door hardware, electrified door hardware, and access control and security systems.

1.5 SUBMITTALS, GENERAL

A. General: Submit all action submittals required by this Section and by Division 08 Sections “Door Hardware” and “Glazing” concurrently.

1.6 ACTION SUBMITTALS

A. Product Data: For each type of product indicated. Include construction details, material descriptions, core descriptions, fire-resistance ratings, and finishes.

1. Interior standard steel doors and frames.
2. Borrowed lights.
3. Frame anchors.

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 electrical raceway and preparation for electrified hardware, access control systems, and security systems.
7. Details of anchorages, joints, field splices, and connections.
8. Details of accessories.
9. Details of moldings, removable stops, and glazing. Indicate which side of each door or frame has a removable stop.

C. Product Schedule: For hollow-metal doors and frames, 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.

1.7 INFORMATIONAL SUBMITTALS

A. Field quality control reports.

1.8 CLOSEOUT SUBMITTALS

A. Record Documents: For fire-rated doors, list of door numbers and applicable room name and number to which door accesses.

1.9 DELIVERY, STORAGE, AND HANDLING

A. Deliver hollow-metal doors and frames palletized, packaged, or crated to provide protection during transit and Project-site storage. Do not use nonvented plastic.

B. Deliver welded frames with two removable spreader bars across bottom of frames.

C. Store hollow-metal doors and frames vertically under cover at Project site with head up. Place on minimum 4-inch-high wood blocking. Provide minimum 1/4-inch space between each stacked door to permit air circulation.

PART 2 - PRODUCTS

2.1 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. Ceco Door; ASSA ABLOY.

2. Curries Company; ASSA ABLOY.
3. Pioneer Industries.
4. Steelcraft; an Allegion brand.

2.2 PERFORMANCE REQUIREMENTS

A. Fire-Rated Door Assemblies: Assemblies complying with NFPA 80 that are listed and labeled by a qualified testing agency acceptable to authorities having jurisdiction for fire-protection ratings indicated on Drawings, based on testing at positive pressure according to NFPA 252 or UL 10C.

1. Smoke- and Draft-Control Door Assemblies: 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. Temperature-Rise Limit: At vertical exit enclosures and exit passageways, provide doors that have a maximum transmitted temperature end point of not more than 450 deg F above ambient after 30 minutes of standard fire-test exposure.

B. Fire-Rated, Borrowed-Lite Assemblies: Assemblies complying with NFPA 80 and listed and labeled by a qualified testing agency acceptable to authorities having jurisdiction, for fire-protection ratings indicated, based on testing according to NFPA 257 or UL 9.

2.3 INTERIOR STANDARD STEEL DOORS AND FRAMES

A. Construct hollow-metal doors and frames to comply with standards indicated for materials, fabrication, hardware locations, hardware reinforcement, tolerances, and clearances, and as specified.

B. Heavy-Duty Doors and Frames: ANSI/SDI A250.8, Level 2; ANSI/SDI A250.4, Level B. At all interior locations.

1. Doors:

a. Type: As indicated in the Door and Frame Schedule.

b. Thickness: 1-3/4 inches.

c. Face: Uncoated steel sheet, minimum thickness of 0.042 inch (18-gage).

d. Edge Construction: Model 2, Seamless, continuously welded seam dressed smooth.

e. Edge Bevel: Bevel lock edge 1/8 inch in 2 inches.

f. Core: Vertical steel stiffener. Fill space between stiffeners with glass- or mineral-fiber insulation.

g. Fire-Rated Core: Manufacturer's vertical steel stiffener, with space between stiffeners filled with glass- or mineral-fiber insulation or laminated mineral board core for fire-rated doors.

2. Frames:

a. Materials: Uncoated steel sheet, minimum thickness of 0.053 inch (16-gage).
b. Sidelite and Transom Frames: Fabricated from same thickness material as adjacent door frame.
c. Construction: Full profile welded in factory.

3. Exposed Finish: Prime.

2.4 BORROWED LITES

A. Fabricate of uncoated steel sheet, minimum thickness of 0.053 inch (16-gage).

B. Construction: Full profile welded in factory.

C. Fabricate in one piece except where handling and shipping limitations require multiple sections. Where frames are fabricated in sections due to shipping or handling limitations, provide alignment plates or angles at each joint, fabricated of metal of same or greater thickness as metal as frames.

D. Provide countersunk, flat- or oval-head exposed screws and bolts for exposed fasteners unless otherwise indicated.

2.5 FRAME ANCHORS

A. Jamb Anchors:

1. Type: Anchors of minimum size and type required by applicable door and frame standard, and suitable for performance level indicated.

2. Quantity: Minimum of three anchors per jamb, with one additional anchor for frames with no floor anchor. Provide one additional anchor for each 24 inches of frame height above 7 feet.

3. Postinstalled Expansion Anchor: Minimum 3/8-inch-diameter bolts with expansion shields or inserts, with manufacturer's standard pipe spacer.

B. Floor Anchors: Provide floor anchors for each jamb and mullion that extends to floor.

C. Floor Anchors for Concrete Slabs with Underlayment: Adjustable-type anchors with extension clips, allowing not less than 2-inch height adjustment. Terminate bottom of frames at top of underlayment.

D. Material: ASTM A879/A879M, Commercial Steel (CS), 04Z coating designation; mill phosphatized.

1. For anchors built into exterior walls, steel sheet complying with ASTM A1008/A1008M or ASTM A1011/A1011M; hot-dip galvanized according to ASTM A153/A153M, Class B.

2.6 MATERIALS

A. Cold-Rolled Steel Sheet: ASTM A1008/A1008M, Commercial Steel (CS), Type B; suitable for exposed applications.

B. Hot-Rolled Steel Sheet: ASTM A1011/A1011M, Commercial Steel (CS), Type B; free of scale, pitting, or surface defects; pickled and oiled.

C. Metallic-Coated Steel Sheet: ASTM A653/A653M, Commercial Steel (CS), Type B.

D. Inserts, Bolts, and Fasteners: Hot-dip galvanized according to ASTM A153/A153M.

E. 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.

F. Mineral-Fiber Insulation: ASTM C665, 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 E136 for combustion characteristics.

G. Glazing: Comply with requirements in Division 08 Section "Glazing" and with hollow-metal manufacturer's requirements.

2.7 FABRICATION

A. Door Astragals: Provide overlapping astragal on one leaf of pairs of doors where required by NFPA 80 for fire-performance rating or where indicated. Extend minimum 3/4 inch beyond edge of door on which astragal is mounted or as required to comply with published listing of qualified testing agency.

B. Hollow-Metal Frames: Fabricate in one piece except where handling and shipping limitations require multiple sections. Where frames are fabricated in sections, provide alignment plates or angles at each joint, fabricated of metal of same or greater thickness as frames.

1. Sidelite and Transom Bar 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 welding.

2. Provide countersunk, flat- or oval-head exposed screws and bolts for exposed fasteners unless otherwise indicated.

3. Door Silencers: Except on weather-stripped frames, drill stops to receive door silencers as follows. Keep holes clear during construction.

   a. Single-Door Frames: Drill stop in strike jamb to receive three door silencers.
   b. Double-Door Frames: Drill stop in head jamb to receive two door silencers.

C. Hardware Preparation: Factory prepare hollow-metal doors and frames to receive templated mortised hardware, and electrical wiring; include cutouts, reinforcement, mortising, drilling, and tapping according to ANSI/SDI A250.6, the Door Hardware Schedule, and templates.

   1. Reinforce doors and frames to receive nontemplated, mortised, and surface-mounted door hardware.
   2. Comply with BHMA A156.115 for preparing hollow-metal doors and frames for hardware.

D. Glazed Lites: Provide stops and moldings around glazed lites where indicated. Form corners of stops and moldings with butted or mitered hairline joints.

   1. Provide stops and moldings flush with face of door, and with square stops unless otherwise indicated.

   2. Multiple Glazed Lites: Provide fixed and removable stops and moldings so that each glazed lite is capable of being removed independently.

   3. Provide fixed frame moldings on outside of exterior and on secure side of interior doors and frames. Provide loose stops and moldings on inside of hollow-metal doors and frames.

   4. Coordinate rabbet width between fixed and removable stops with glazing and installation types indicated.

   5. Provide stops for installation with countersunk flat- or oval-head machine screws spaced uniformly not more than 9 inches o.c. and not more than 2 inches o.c. from each corner.

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 ANSI/SDI A250.10; recommended by primer manufacturer for substrate; compatible with substrate and field-applied coatings despite prolonged exposure.

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.
D. Beginning installation constitutes Contractor’s acceptance of substrates and conditions.

3.2 PREPARATION

A. Remove shipping spreaders installed at factory. Restore exposed finish by grinding, filling, and dressing, as required to make restored area smooth, flush, and invisible on exposed faces. Touch up factory-applied finishes where spreaders are removed.

B. Drill and tap doors and frames to receive nontemplated, mortised, and surface-mounted door hardware.

3.3 INSTALLATION

A. Install hollow-metal doors and frames plumb, rigid, properly aligned, and securely fastened in place. Comply with approved Shop Drawings and with manufacturer's written instructions.

B. Hollow-Metal Frames: Comply with ANSI/SDI A250.11.

1. Set frames accurately in position; plumbed, aligned, and braced securely until permanent anchors are set. After wall construction is complete, remove temporary braces without damage to completed Work.

    a. Where frames are fabricated in sections, field splice at approved locations by welding face joint continuously; grind, fill, dress, and make splice smooth, flush, and invisible on exposed faces. Touch-up finishes.

    b. Install frames with removable stops located on secure side of opening.

2. Fire-Rated Openings: Install frames according to NFPA 80.

3. Floor Anchors: Secure with postinstalled expansion anchors.

    a. Floor anchors may be set with power-actuated fasteners instead of postinstalled expansion anchors if so indicated and approved on Shop Drawings.

4. Metal-Stud Partitions: Solidly pack mineral-fiber insulation inside frames.

5. Masonry Walls: Solidly fill space between frames and masonry with mineral-fiber insulation.

6. In-Place Concrete or Masonry Construction: Secure frames in place with postinstalled expansion anchors. Countersink anchors, and fill and make smooth, flush, and invisible on exposed faces.

7. Installation Tolerances: Adjust hollow-metal frames to the following tolerances:

   a. Squareness: Plus or minus 1/16 inch, measured at door rabbet on a line 90 degrees from jamb perpendicular to frame head.
   b. Alignment: Plus or minus 1/16 inch, measured at jambs on a horizontal line parallel to plane of wall.
   c. Twist: Plus or minus 1/16 inch, measured at opposite face corners of jambs on parallel lines, and perpendicular to plane of wall.
   d. Plumbness: Plus or minus 1/16 inch, measured at jambs at floor.

C. Hollow-Metal Doors: Fit and adjust hollow-metal doors accurately in frames, within clearances specified below.

   1. Non-Fire-Rated Steel Doors: Comply with ANSI/SDI A250.8.
   2. Fire-Rated Doors: Install doors with clearances according to NFPA 80.
   3. Smoke-Control Doors: Install doors according to NFPA 105.

D. Glazing: Comply with installation requirements in Division 08 Section "Glazing" and with hollow-metal manufacturer's written instructions.

3.4 FIELD QUALITY CONTROL

A. Inspection Agency: Engage a qualified inspector to perform inspections and to furnish reports to Architect.

B. Inspections:

   1. Fire-Rated Door Inspections: Inspect each fire-rated door according to NFPA 80, Section 5.2.

C. Correct or remove and replace installations where inspections indicate that they do not comply with specified requirements.

D. Reinspect corrected or replaced installations to determine if replaced or corrected door assembly installations comply with specified requirements.

E. Prepare and submit separate inspection report for each fire-rated door assembly indicating compliance with each item listed in NFPA 80.

3.5 RESTORATION

A. Remove and replace defective work, including hollow-metal work that is warped, bowed, or otherwise unacceptable.
B. Prime-Coat Touchup: Immediately after erection, sand smooth rusted or damaged areas of prime coat and apply touchup of compatible air-drying, rust-inhibitive primer.

END OF SECTION 08 11 13

SECTION 08 31 13 - ACCESS DOORS AND FRAMES

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 access doors and frames for walls and ceilings.

1.3 SUBMITTALS, GENERAL

A. General: Submit all action submittals required by this Section concurrently.

1.4 ACTION SUBMITTALS

A. Product Data: For each type of product. Include construction details material descriptions, dimensions of individual components and profiles, and finishes.

B. As-Specified Data: If the product to be incorporated in the Work is as specified by manufacturer name and product designation in this Specification Section, submit the "**As-Specified Verification Form**" (attached to Division 01 Section "Submittal Procedures") for each item listed below; otherwise submit full Product Data for the following:

1. Flush access doors with exposed flanges.
2. Stainless-steel flush access doors with exposed flanges.
3. Flush access doors with concealed flanges in gypsum board.

C. Product Schedule: For access doors and frames.

1.5 INFORMATIONAL SUBMITTALS

A. Field quality control reports.

1.6 CLOSEOUT SUBMITTALS

A. Record Documents: For fire-rated doors, list of applicable room name and number in which access door is located.

PART 2 - PRODUCTS

2.1 ACCESS DOORS AND FRAMES

A. Flush Access Doors with Exposed Flanges:

1. Products: Subject to compliance with requirements, available products that may be incorporated in the Work, include, but are not limited to:

   a. Karp Associates, Inc.; Model DSC-214M Universal Flush Access Door.
   b. Milcor Company; Series M – Architectural Grade Flush Steel Access Door.
   c. Nystrom, Inc.; NT Architectural Access Door.

2. Description: Face of door flush with frame, with exposed flange and concealed hinge.

3. Locations: Walls, where indicated on Drawings and, if not indicated, as follows:

   a. Concealed locations not exposed to view (i.e., above lay-in ceilings and in mechanical and other utility rooms).

4. Door Size: 12” x 12” unless otherwise indicated.

5. Uncoated Steel Sheet for Door: Nominal 0.075 inch (14 gage), factory primed.

6. Frame Material: Same material and finish as door; nominal 0.060 inch (16 gage).

7. Latch and Lock: Cam latch, screwdriver operated with interior release.

B. Stainless-Steel Flush Access Doors with Exposed Flanges:

1. Products: Subject to compliance with requirements, available products that may be incorporated in the Work, include, but are not limited to:

   a. Karp Associates, Inc.; Model DSC-214M Universal Flush Access Door.
   b. Nystrom, Inc.; NT Architectural Access Door.

2. Description: Face of door flush with frame, with exposed flange and concealed hinge.

3. Locations: Walls, where indicated on Drawings and, if not indicated, as follows:

   a. In painted CMU exposed to view.
   b. In painted gypsum board or plaster exposed to view.
   c. In ceramic tile exposed to view.
   d. In corrosive environments (i.e., natatorium, pool mechanical room) exposed to view.

4. Door Size: 12” x 12”, unless otherwise indicated.

5. Stainless Steel Sheet for Door: Not less than nominal 0.062 inch (16 gage), ASTM A480/A480M No. 4 finish.

6. Frame Material: Same material, thickness, and finish as door.

7. Latch and Lock: Cam latch, screwdriver operated with interior release.

C. Flush Access Doors with Concealed Flanges in Gypsum Board:

1. Products: Subject to compliance with requirements, available products that may be incorporated in the Work, include, but are not limited to:

   a. Karp Associates, Inc.; Model KDW Flush Drywall Access Door.
   b. Milcor Company; Series DW – Standard Flush Access Door.
   c. Nystrom, Inc.; NW Architectural Access Door.

2. Description: Face of door flush with frame; with concealed flange for gypsum board installation and concealed hinge. Provide edge trim for gypsum panels securely attached to perimeter of frames.

3. Locations: Walls and ceilings, where indicated on Drawings and, if not indicated, as follows:

   a. In painted gypsum board exposed to view.

4. Door Size: 12” x 12” unless otherwise indicated.

5. Uncoated Steel Sheet for Door: Not less than nominal 0.060 inch (16 gage), factory primed.

6. Frame Material: Same material and finish as door; nominal 0.060 inch (16 gage).

7. Latch and Lock: Cam latch, screwdriver operated with interior release.

2.2 MATERIALS

A. Steel Plates, Shapes, and Bars: ASTM A36/A36M.
B. Steel Sheet: Uncoated or electrolytic zinc coated, ASTM A879/A879M, with cold-rolled steel sheet substrate complying with ASTM A1008/A1008M, Commercial Steel (CS), exposed.
C. Stainless Steel Plate, Sheet, and Strip: ASTM A240/A240M or ASTM A666, Type 304. Remove tool and die marks and stretch lines, or blend into finish.
D. Stainless Steel Flat Bars: ASTM A666, Type 304. Remove tool and die marks and stretch lines, or blend into finish.
E. Frame Anchors: Same material as door face.
F. Inserts, Bolts, and Anchor Fasteners: Hot-dip galvanized steel according to ASTM A153/A153M or ASTM F2329.

2.3 FABRICATION

A. General: Provide access door and frame assemblies manufactured as integral units ready for installation.

B. Metal Surfaces: For metal surfaces exposed to view in the completed Work, provide materials with smooth, flat surfaces without blemishes. Do not use materials with exposed pitting, seam marks, roller marks, rolled trade names, or roughness.

C. Doors and Frames: Grind exposed welds smooth and flush with adjacent surfaces. Furnish mounting holes, attachment devices and fasteners of type required to secure access doors to types of supports indicated.

D. Latch and Lock Hardware:

1. Quantity: Furnish number of latches and locks required to hold doors tightly closed.

2.4 FINISHES

A. Comply with NAAMM's "Metal Finishes Manual for Architectural and Metal Products" for recommendations for applying and designating finishes.

B. Protect mechanical finishes on exposed surfaces from damage by applying a strippable, temporary protective covering before shipping.

C. Appearance of Finished Work: Noticeable variations in same piece are not acceptable. Variations in appearance of adjoining components are acceptable if they are within the range of approved Samples and are assembled or installed to minimize contrast.

D. Painted Finishes: Comply with coating manufacturer's written instructions for cleaning, conversion coating, and applying and baking finish.

1. Factory Primed: Apply manufacturer's standard, baked-enamel or powder-coat primer immediately after surface preparation and pretreatment.

E. Stainless Steel Finishes:

1. Surface Preparation: Remove tool and die marks and stretch lines, or blend into finish.

2. Polished Finish: ASTM A480/A480M No. 4 finish. Grind and polish surfaces to produce uniform finish, free of cross scratches.

a. Run grain of directional finishes with long dimension of each piece.
b. When polishing is completed, passivate and rinse surfaces. Remove embedded foreign matter and leave surfaces chemically clean.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine substrates 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.
C. Beginning installation constitutes Contractor’s acceptance of substrates and conditions.

3.2 INSTALLATION

A. Comply with manufacturer's written instructions for installing access doors and frames.

3.3 ADJUSTING

A. Adjust doors and hardware, after installation, for proper operation.

END OF SECTION 08 31 13

SECTION 08 33 13 - COILING COUNTER DOORS

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. Fire-rated counter door assemblies.

1.3 SUBMITTALS, GENERAL

A. General: Submit all action submittals required by this Section concurrently.

1.4 ACTION SUBMITTALS

A. Product Data: For each type and size of coiling counter door and accessory.

1. Include construction details, material descriptions, dimensions of individual components, profiles for slats, and finishes.
2. Include rated capacities, operating characteristics, electrical characteristics, and furnished accessories.
3. Include description of automatic closing device and testing and resetting instructions.

B. As-Specified Data: If the product to be incorporated in the Work is as specified by manufacturer name and product designation in this Specification Section, submit the "**As-Specified Verification Form**" (attached to Division 01 Section "Submittal Procedures") for each item listed below, otherwise submit full Product Data for the following:

1. Fire-rated counter door assemblies.

C. Shop Drawings: For each installation and for special components not dimensioned or detailed in manufacturer's product data.

1. Include plans, elevations, sections, mounting details, and attachments to other work.
2. Include details of equipment assemblies, and 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. Show locations of controls, locking devices, detectors, and other accessories.
5. Include diagrams for power, signal, and control wiring.

D. Samples: Manufacturer's finish charts showing full range of colors and textures available for units with factory-applied finishes.

E. Sample Warranty: For special warranty.

1.5 INFORMATIONAL SUBMITTALS

A. Field quality-control reports.

1.6 CLOSEOUT SUBMITTALS

A. Maintenance Data: For coiling counter doors to include in maintenance manuals.
B. Warranty: Executed special warranty.
C. Record Documents: For fire-rated doors, list of door numbers and applicable room name and number to which door accesses.

1.7 QUALITY ASSURANCE

A. Installer Qualifications: An entity that employs installers and supervisors who are trained and approved by manufacturer for installation of units required for this Project.

1.8 WARRANTY

A. Special Warranty: Manufacturer agrees to correct or replace components of 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.

2. Warranty Period: 2 years from date of Substantial Completion.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Source Limitations: Obtain coiling counter doors from single source from single manufacturer.

1. Obtain operators and controls from coiling counter door manufacturer.

2.2 PERFORMANCE REQUIREMENTS

A. Fire-Rated Door Assemblies: Complying with NFPA 80; listed and labeled by a qualified testing agency, for fire-protection ratings indicated, based on testing at as close to neutral pressure as possible according to NFPA 252 or UL 10B.

1. Smoke Control: In corridors and smoke barriers, provide doors that are listed and labeled with the letter "S" on the fire-rating label by a qualified testing agency for smoke- and draft-control based on testing according to UL 1784; with maximum air-leakage rate of 3.0 cfm/sq. ft. of door opening at 0.10 inch wg for both ambient and elevated temperature tests.

B. Accessibility Standard: Comply with applicable provisions in the USDOJ's "2010 ADA Standards for Accessible Design," ICC A117.1, and building Code in effect for Project.

2.3 FIRE-RATED COUNTER DOOR ASSEMBLY

A. Fire-Rated Counter Door: Overhead fire-rated coiling door formed with curtain of interlocking metal slats.

1. Products: Subject to compliance with requirements, available products that may be incorporated in the Work, include, but are not limited to:

a. Clopay Building Products Co.; Model CERC10 Rolling Counter Fire Doors.
b. CornellCookson, LLC; Model ERC10 Rolling Counter Fire Shutters.
c. Wayne Dalton; FireStar Model 540 Fire-Rated Counter Shutters.

B. Operation Cycles: Door components and operators capable of operating for not less than 20,000 operating cycles. 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. Fire Rating: 3/4 hour.

D. Door Curtain Material: Galvanized steel.

E. Door Curtain Slats: Flat profile slats of 1-1/2- to 2-inch center-to-center height.

1. Thickness: Not less than nominal sheet thickness (coated) 0.034 inch (22 gage) galvanized steel; and as required to meet performance requirements.

F. Curtain Jamb Guides: Galvanized steel with exposed finish matching curtain slats.

G. Hood: Galvanized steel.

1. Thickness: Not less than nominal sheet thickness (coated) 0.028 inch (24 gage) galvanized steel.
2. Mounting: Face of wall.

H. Sill Configuration: Fire-rated, laminate counter.

1. High-Pressure Decorative Laminate: As selected by Architect from manufacturer's full range.

I. Locking Devices: Equip door with locking device assembly.

1. Locking Device Assembly: Cremone-type, both jamb sides locking bars, operable from inside with thumb-turn.

J. Curtain Accessories: Equip door with smoke seals and automatic closing device.

K. Door Finish:

1. Powder-Coated Finish: Color as selected by Architect from manufacturer's full range.

2.4 DOOR CURTAIN MATERIALS AND FABRICATION

A. Door Curtains: Fabricate coiling counter door curtain of interlocking metal slats in a continuous length for width of door without splices. Unless otherwise indicated, provide slats of thickness and mechanical properties recommended by door manufacturer for performance, size, and type of door indicated, and as follows:

1. Steel Door Curtain Slats: Zinc-coated (galvanized), cold-rolled structural-steel sheet; complying with ASTM A653/A653M, with G90 zinc coating; nominal sheet thickness (coated) as indicated; and as required to meet performance requirements.

B. Curtain Jamb Guides: Manufacturer's standard angles or channels and angles of same material and finish as curtain slats unless otherwise indicated, with sufficient depth and strength to retain curtain, to allow curtain to operate smoothly, and to withstand loading. Slot bolt holes for guide adjustment. Provide removable stops on guides to prevent overtravel of curtain.

2.5 HOODS

A. General: Form sheet metal hood to entirely enclose coiled curtain and operating mechanism at opening head. Contour to fit end brackets to which hood is attached. Roll and reinforce top and bottom edges for stiffness. Form closed ends for surface-mounted hoods and fascia for any portion of between-jamb mounting that projects beyond wall face. Equip hood with intermediate support brackets as required to prevent sagging.

1. Galvanized Steel: Hot-dip galvanized-steel sheet with G90 zinc coating, complying with ASTM A653/A653M.
2. Include automatic drop baffle on fire-rated doors to guard against passage of smoke or flame.

B. Removable Metal Soffit: Formed or extruded from same metal and with same finish as curtain if hood is mounted above ceiling unless otherwise indicated.

2.6 LOCKING DEVICES

A. Locking Device Assembly: Fabricate with cylinder lock, spring-loaded dead bolt, operating handle, cam plate, and adjustable locking bars to engage through slots in tracks.

1. Lock Cylinders: As standard with manufacturer and keyed to building keying system.
2. Keys: Three for each cylinder.

B. Safety Interlock Switch: Equip power-operated doors with safety interlock switch to disengage power supply when door is locked.

2.7 CURTAIN ACCESSORIES

A. Smoke Seals: Equip each fire-rated door with replaceable smoke-seal perimeter gaskets or brushes for smoke and draft control as required for door listing and labeling by a qualified testing agency.

B. Automatic-Closing Device: Equip each fire-rated door with an automatic-closing device or holder-release mechanism and governor unit complying with NFPA 80 and an easily tested and reset release mechanism. Release mechanism for motor-operated doors allows testing without mechanical release of the door. Automatic-closing device is to be designed for activation by the following:

1. Building fire-detection, smoke-detection, and -alarm systems.

2.8 COUNTER DOOR ACCESSORIES

A. Fire-Rated, Laminate Counter: Fire-door manufacturer's high-pressure, decorative laminate-covered countertop; UL or ITS tested and labeled for 1-1/2-hour fire rating for approved use with fire-door assembly.

2.9 COUNTERBALANCE MECHANISM

A. General: Counterbalance doors by means of manufacturer's standard mechanism with an adjustable-tension, steel helical torsion spring mounted around a steel shaft and contained in a spring barrel connected to top of curtain with barrel rings. Use grease-sealed bearings or self-lubricating graphite bearings for rotating members.

B. Counterbalance Barrel: Fabricate spring barrel of manufacturer's standard hot-formed, structural-quality, seamless carbon-steel pipe, of sufficient diameter and wall thickness to support rolled-up curtain without distortion of slats and to limit barrel deflection to not more than 0.03 in./ft. of span under full load.

C. Counterbalance Spring: One or more oil-tempered, heat-treated steel helical torsion springs. Size springs to counterbalance weight of curtain, with uniform adjustment accessible from outside barrel. Secure ends of springs to barrel and shaft with cast-steel barrel plugs.

1. Fire-Rated Doors: Equip with auxiliary counterbalance spring and prevent tension release from main counterbalance spring when automatic closing device operates.

D. Torsion Rod for Counterbalance Shaft: Fabricate of manufacturer's standard cold-rolled steel, sized to hold fixed spring ends and carry torsional load.

E. Brackets: Manufacturer's standard mounting brackets of either cast iron or cold-rolled steel plate.

2.10 GENERAL FINISH REQUIREMENTS

A. Comply with NAAMM/NOMMA 500 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.

2.11 STEEL AND GALVANIZED-STEEL FINISHES

A. Powder-Coat 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.
D. Beginning installation constitutes Contractor’s acceptance of substrates and conditions.

3.2 INSTALLATION, GENERAL

A. Install coiling counter doors and operating equipment complete with necessary hardware, anchors, inserts, hangers, and equipment supports; according to manufacturer's written instructions and as specified.

B. Install coiling counter doors, hoods, controls, and operators at the mounting locations indicated for each door.

C. Accessibility: Install coiling counter doors, switches, and controls along accessible routes in compliance with the accessibility standard.

D. Fire-Rated Doors: Install according to NFPA 80.

E. Smoke-Control Doors: Install according to NFPA 80 and NFPA 105.

3.3 FIELD QUALITY CONTROL

A. Testing Agency: Engage a qualified testing agency to perform tests and inspections and to furnish reports to Architect.

B. Perform the following tests and inspections:

1. Test door release, closing, and alarm operations when activated by smoke detector or building's fire-alarm system. Test manual operation of closed door. Reset door-closing mechanism after successful test.

2. Fire-Rated Door Inspections: Inspect each fire-rated door in accordance with NFPA 80, section 5.2.

C. Correct or remove and replace installations where inspections indicate that they do not comply with specified requirements.

D. Reinspect corrected or replaced installations to determine if replaced or corrected door assembly installations comply with specified requirements.

E. Prepare and submit separate inspection report for each fire-rated door assembly indicating compliance with each item listed in NFPA 80.

3.4 STARTUP SERVICE

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.

3.5 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 seals to provide tight fit around entire perimeter.

3.6 DEMONSTRATION

A. Engage a factory-authorized service representative to train Owner's maintenance personnel to adjust, operate, and maintain coiling counter doors.

END OF SECTION 08 33 13

SECTION 08 33 23 - OVERHEAD COILING DOORS

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. Service doors.
2. Fire-rated service doors.

B. Products Installed but not Furnished under This Section:

1. Steel support framing.

1.3 SUBMITTALS, GENERAL

A. General: Submit all action submittals required by this Section concurrently.

1.4 ACTION SUBMITTALS

A. Product Data: For each type and size of overhead coiling door and accessory.

1. Include construction details, material descriptions, dimensions of individual components, profiles for slats, and finishes.
2. Include rated capacities, operating characteristics, electrical characteristics, and furnished accessories.
3. Include description of automatic-closing device and testing and resetting instructions.

B. As-Specified Data: If the product to be incorporated in the Work is as specified by manufacturer name and product designation in this Specification Section, submit the "**As-Specified Verification Form**" (attached to Division 01 Section "Submittal Procedures") for each item listed below, otherwise submit full Product Data for the following:

1. Service doors.
2. Fire-rated service doors.

C. Shop Drawings: For each installation and for special components not dimensioned or detailed in manufacturer's product data.

1. Include plans, elevations, sections, mounting details, and attachments to other work.

2. Include details of equipment assemblies, and 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. Show locations of controls, locking devices, detectors, and other accessories.
5. Include diagrams for power, signal, and control wiring.

D. Samples: Manufacturer's finish charts showing full range of colors and textures available for units with factory-applied finishes.

E. Sample Warranty: For special warranty.

1.5 INFORMATIONAL SUBMITTALS

A. Field quality-control reports.

1.6 CLOSEOUT SUBMITTALS

A. Maintenance Data: For overhead coiling doors to include in maintenance manuals.
B. Warranty: Executed special warranty.
C. Record Documents: For fire-rated doors, list of door numbers and applicable room name and number to which door accesses.

1.7 QUALITY ASSURANCE

A. Installer Qualifications: An entity that employs installers and supervisors who are trained and approved by manufacturer for installation of units required for this Project.

1.8 WARRANTY

A. Special Warranty: Manufacturer agrees to correct or replace components of 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: 2 years from date of Substantial Completion.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Source Limitations: Obtain overhead coiling doors from single source from single manufacturer.

1. Obtain operators and controls from overhead coiling-door manufacturer.

2.2 PERFORMANCE REQUIREMENTS

A. Fire-Rated Door Assemblies: Complying with NFPA 80; listed and labeled by qualified testing agency, for fire-protection ratings indicated, based on testing at as close to neutral pressure as possible according to NFPA 252 or UL 10B.

1. Smoke Control: In corridors and smoke barriers, provide doors that are listed and labeled with the letter "S" on the fire-rating label by a qualified testing agency for smoke- and draft-control based on testing according to UL 1784; with maximum air-leakage rate of 3.0 cfm/sq. ft. of door opening at 0.10 inch wg for both ambient and elevated temperature tests.

B. Accessibility Standard: Comply with applicable provisions in the USDOJ's "2010 ADA Standards for Accessible Design," ICC A117.1, and building Code in effect for Project.

2.3 SERVICE DOOR ASSEMBLY

A. Service Door: Overhead coiling door formed with curtain of interlocking metal slats.

1. Products: Subject to compliance with requirements, available products that may be incorporated into the Work include, but are not limited to, the following:

a. Clopay Building Products Co.; Model CESD10 Standard Heavy-Duty Service Door.
b. CornellCookson, LLC; Roll Up Service Door Model ESD10.
c. Wayne Dalton; Model 800 Rolling Service Door.

B. Operation Cycles: Door components and operators capable of operating for not less than 20,000 operation cycles. 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. Door Curtain Material: Galvanized steel.

D. Door Curtain Slats: Flat profile slats of 2-7/16- to 2-5/8-inch center-to-center height.

1. Thickness: Not less than nominal sheet thickness (coated) 0.040 inch (20 gage) galvanized steel; and as required to meet performance requirements.

E. Bottom Bar: Two angles, each not less than 1-1/2 by 1-1/2 by 1/8 inch thick; fabricated from hot-dip galvanized steel and finished to match door.

F. Curtain Jamb Guides: Galvanized steel with exposed finish matching curtain slats.

G. Hood: Galvanized steel.

1. Thickness: Not less than nominal sheet thickness (coated) 0.028 inch (24 gage) galvanized steel.
2. Mounting: Face of wall.

H. Locking Devices: Equip door with locking device assembly.

1. Locking Device Assembly (only on manual doors): Cremone-type, both jamb sides locking bars, operable from outside only, with cylinder.

I. Door Finish:

1. Powder-Coated Finish: Color as selected by Architect from manufacturer's full range.

2.4 FIRE-RATED SERVICE DOOR ASSEMBLY

A. Fire-Rated Service Door: Overhead fire-rated coiling door formed with curtain of interlocking metal slats.

1. Products: Subject to compliance with requirements, available products that may be incorporated into the Work include, but are not limited to, the following:

a. Clopay Building Products Co.; Model CERD10 Standard Heavy-Duty Fire-Rated Door.
b. CornellCookson, LLC; Roll Up Fire Resistant Door Model ERD10.
c. Wayne Dalton; Model 700 Rolling Steel Fire Door – FireStar.

B. Operation Cycles: Door components and operators capable of operating for not less than 20,000 operation cycles. 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. Fire Rating: 3/4 hour.

D. Door Curtain Material: Galvanized steel.

E. Door Curtain Slats: Flat profile slats of 2-7/16- to 2-5/8-inch center-to-center height.

1. Thickness: Not less than nominal sheet thickness (coated) 0.052 inch (18 gage) galvanized steel; and as required to meet performance requirements.

F. Bottom Bar: Two angles, each not less than 1-1/2 by 1-1/2 by 1/8 inch thick; fabricated from hot-dip galvanized steel and finished to match door.

G. Curtain Jamb Guides: Galvanized steel with exposed finish matching curtain slats.

H. Hood: Galvanized steel.

1. Thickness: Not less than nominal sheet thickness (coated) 0.028 inch (24 gage) galvanized steel.
2. Mounting: Face of wall.

I. Locking Devices: Equip door with locking device assembly and chain lock keeper.

1. Locking Device Assembly (on manual door only): Cremone-type, both jamb sides locking bars, operable from outside only, with cylinder.

J. Electric Door Operator:

1. Usage Classification: Standard duty, up to 25 cycles per hour and up to 90 cycles per day.

2. Operator Location: Top of hood.

3. Safety: Listed according to UL 325 by a qualified testing agency for commercial or industrial use; moving parts of operator enclosed or guarded if exposed and mounted at 8 ft. or lower.

4. Motor Exposure: Interior.

5. Motor Electrical Characteristics:

a. Horsepower: 1/2 hp.
b. Voltage: 115 V ac, single phase, 60 Hz.

6. Emergency Manual Operation: Chain type.

7. Obstruction-Detection Device: Automatic electric sensor edge on bottom bar; self-monitoring type.

8. Control Station(s): Where indicated on Drawings.

9. Other Equipment: Audible and visual signals.

K. Door Finish:

1. Powder-Coated Finish: Color as selected by Architect from manufacturer's full range.
2. Factory Prime Finish: Manufacturer's standard color.
3. Stainless Steel Finish: ASTM A480/A480M No. 4 (polished directional satin).

2.5 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.

2.6 DOOR CURTAIN MATERIALS AND CONSTRUCTION

A. Door Curtains: Fabricate overhead coiling-door curtain of interlocking metal slats, designed to withstand wind loading indicated, in a continuous length for width of door without splices. Unless otherwise indicated, provide slats of thickness and mechanical properties recommended by door manufacturer for performance, size, and type of door indicated, and as follows:

1. Steel Door Curtain Slats: Zinc-coated (galvanized), cold-rolled structural-steel sheet; complying with ASTM A653/A653M, with G90 zinc coating; nominal sheet thickness (coated) as indicated; and as required to meet performance requirements.

2. Stainless Steel Door Curtain Slats: ASTM A240/A240M or ASTM A666, Type 304; sheet thickness as indicated; and as required to meet performance requirements.

3. Aluminum Door Curtain Slats: ASTM B209 sheet or ASTM B221 extrusions, alloy and temper standard with manufacturer for type of use and finish indicated; thickness as indicated; and as required to meet performance requirements.

4. Metal Interior Curtain-Slat Facing: Match metal of exterior curtain-slat face, with minimum thickness as indicated.

B. Curtain Jamb Guides: Manufacturer's standard angles or channels and angles of same material and finish as curtain slats unless otherwise indicated, with sufficient depth and strength to retain curtain, to allow curtain to operate smoothly, and to withstand loading. Slot bolt holes for guide adjustment. Provide removable stops on guides to prevent overtravel of curtain.

2.7 HOODS

A. General: Form sheet metal hood to entirely enclose coiled curtain and operating mechanism at opening head. Contour to fit end brackets to which hood is attached. Roll and reinforce top and bottom edges for stiffness. Form closed ends for surface-mounted hoods and fascia for any portion of between-jamb mounting that projects beyond wall face. Equip hood with intermediate support brackets as required to prevent sagging.

1. Galvanized Steel: Hot-dip galvanized-steel sheet with G90 zinc coating, complying with ASTM A653/A653M.
2. Include automatic drop baffle on fire-rated doors to guard against passage of smoke or flame.

B. Removable Metal Soffit: Formed or extruded from same metal and with same finish as curtain if hood is mounted above ceiling unless otherwise indicated.

2.8 LOCKING DEVICES

A. Locking Device Assembly: Fabricate with cylinder lock, spring-loaded dead bolt, operating handle, cam plate, and adjustable locking bars to engage through slots in tracks.

1. Lock Cylinders: As standard with manufacturer and keyed to building keying system.
2. Keys: Three for each cylinder.

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 CURTAIN ACCESSORIES

A. Smoke Seals: Equip each fire-rated door with replaceable smoke-seal perimeter gaskets or brushes for smoke and draft control as required for door listing and labeling by a qualified testing agency.

B. Automatic-Closing Device: Equip each fire-rated door with an automatic-closing device or holder-release mechanism and governor unit complying with NFPA 80 and an easily tested and reset release mechanism. Release mechanism for motor-operated doors allows testing without mechanical release of the door. Automatic-closing device is to be designed for activation by the following:

1. Building fire-detection, smoke-detection, and -alarm systems.

2.10 COUNTERBALANCE MECHANISM

A. General: Counterbalance doors by means of manufacturer's standard mechanism with an adjustable-tension, steel helical torsion spring mounted around a steel shaft and contained in a spring barrel connected to top of curtain with barrel rings. Use grease-sealed bearings or self-lubricating graphite bearings for rotating members.

B. Counterbalance Barrel: Fabricate spring barrel of manufacturer's standard hot-formed, structural-quality, seamless carbon-steel pipe, of sufficient diameter and wall thickness to support rolled-up curtain without distortion of slats and to limit barrel deflection to not more than 0.03 in./ft. of span under full load.

C. Counterbalance Spring: One or more oil-tempered, heat-treated steel helical torsion springs. Size springs to counterbalance weight of curtain, with uniform adjustment accessible from outside barrel. Secure ends of springs to barrel and shaft with cast-steel barrel plugs.

1. Fire-Rated Doors: Equip with auxiliary counterbalance spring and prevent tension release from main counterbalance spring when automatic-closing device operates.

D. Torsion Rod for Counterbalance Shaft: Fabricate of manufacturer's standard cold-rolled steel, sized to hold fixed spring ends and carry torsional load.

E. Brackets: Manufacturer's standard mounting brackets of either cast iron or cold-rolled steel plate.

2.11 ELECTRIC DOOR OPERATORS

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. Comply with NFPA 70.
2. 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 Location(s): Operator location indicated for each door.

1. Top-of-Hood Mounted: Operator is mounted to the right or left door head plate with the operator on top of the door-hood assembly and connected to the door drive shaft with drive chain and sprockets. Headroom is required for this type of mounting.

2. Front-of-Hood Mounted: Operator is mounted to the right or left door head plate with the operator on coil side of the door-hood assembly and connected to the door drive shaft with drive chain and sprockets. Front clearance is required for this type of mounting.

3. Wall Mounted: Operator is mounted to the inside front wall on the left or right side of door and connected to door drive shaft with drive chain and sprockets. Side room is required for this type of mounting. Wall-mounted operator can also be mounted above or below shaft; if above shaft, headroom is required.

D. Motors: Reversible-type motor with controller (disconnect switch) for motor exposure indicated for each door assembly.

1. Electrical Characteristics: Minimum as indicated for each door assembly. 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. and not more than 12 in./sec., without exceeding nameplate ratings or service factor.

2. Operating Controls, Controllers, Disconnect Switches, Wiring Devices, and Wiring: Manufacturer's standard unless otherwise indicated.

3. Coordinate wiring requirements and electrical characteristics of motors and other electrical devices with building electrical system and each location where installed.

E. Limit Switches: Equip each 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 Devices: External entrapment protection consisting of indicated automatic safety sensor capable of protecting full width of door opening. For non-fire-rated doors, activation of device immediately stops and reverses downward door travel. For fire-rated doors, activation delays closing.

1. Electric Sensor Edge: Automatic safety sensor edge, located within astragal or weather stripping mounted to bottom bar. Contact with sensor activates device. Connect to control circuit using manufacturer's standard take-up reel or self-coiling cable.

a. Self-Monitoring Type: Four-wire-configured device designed to interface with door operator control circuit to detect damage to or disconnection of sensor edge.

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.

H. Emergency Manual Operation: Equip each electrically powered door with capability for emergency manual operation. Design manual mechanism so required force for door operation does not exceed 25 lbf.

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 the accessibility standard.

2.12 GENERAL FINISH REQUIREMENTS

A. Comply with NAAMM/NOMMA 500 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. Powder-Coat 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.
D. Beginning installation constitutes Contractor’s acceptance of substrates and conditions.

3.2 INSTALLATION, GENERAL

A. Install overhead coiling doors and operating equipment complete with necessary hardware, anchors, inserts, hangers, and equipment supports; according to manufacturer's written instructions and as specified.

B. Install overhead coiling doors, hoods, controls, and operators at the mounting locations indicated for each door.

C. Accessibility: Install overhead coiling doors, switches, and controls along accessible routes in compliance with the accessibility standard.

D. Fire-Rated Doors: Install according to NFPA 80.

E. Smoke-Control Doors: Install according to NFPA 80 and NFPA 105.

F. Power-Operated Doors: Install according to UL 325.

3.3 FIELD QUALITY CONTROL

A. Testing Agency: Engage a qualified testing agency to perform tests and inspections and to furnish reports to Architect.

B. Perform the following tests and inspections:

1. Test door release, closing, and alarm operations when activated by smoke detector or building's fire-alarm system. Test manual operation of closed door. Reset door-closing mechanism after successful test.

2. Fire-Rated Door Inspections: Inspect each fire-rated door in accordance with NFPA 80, Section 5.2.

C. Correct or remove and replace installations where inspections indicate that they do not comply with specified requirements.

D. Reinspect corrected or replaced installations to determine if replaced or corrected door assembly installations comply with specified requirements.

E. Prepare and submit separate inspection report for each fire-rated door assembly indicating compliance with each item listed in NFPA 80.

3.4 STARTUP SERVICE

A. Engage a factory-authorized service representative to perform startup service.

1. Complete installation and startup checks according to manufacturer's written instructions.
2. After electrical circuitry has been energized, operate doors to confirm proper motor rotation and door performance.
3. Test and adjust controls and safety devices. Replace damaged and malfunctioning controls and equipment.

3.5 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 seals to provide tight fit around entire perimeter.

3.6 DEMONSTRATION

A. Engage a factory-authorized service representative to train Owner's maintenance personnel to adjust, operate, and maintain overhead coiling doors.

END OF SECTION 08 33 23

SECTION 08 36 13 - SECTIONAL DOORS

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. Sectional-door assemblies.

B. Products Installed but not Furnished under This Section:

1. Steel support framing.

1.3 SUBMITTALS, GENERAL

A. General: Submit all action submittals required by this Section concurrently.

1.4 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. As-Specified Data: If the product to be incorporated in the Work is as specified by manufacturer name and product designation in this Specification Section, submit the "**As-Specified Verification Form**" (attached to Division 01 Section "Submittal Procedures") for each item listed below, otherwise submit full Product Data for the following:

1. Steel sectional doors.

C. Shop Drawings: For each installation and for components not dimensioned or detailed in manufacturer's product data.

1. Include plans, elevations, sections, mounting details, and attachments to other work.
2. Include details of equipment assemblies, and 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. For exterior components, include details of provisions for assembly expansion and contraction and for excluding and draining moisture to the exterior.
5. Include diagrams for power, signal, and control wiring.

D. Samples: Manufacturer's finish charts showing full range of colors and textures available for units with factory-applied finishes.

E. Delegated Design Submittal: For sectional doors including analysis data signed and sealed by the qualified professional engineer responsible for their preparation.

F. Sample Warranty: For manufacturer’s warranty.

1.5 CLOSEOUT SUBMITTALS

A. Maintenance Data: For sectional doors to include in maintenance manuals.
B. Executed Warranty: For manufacturer’s warranty.

1.6 QUALITY ASSURANCE

A. Installer Qualifications: An entity that employs installers and supervisors who are trained and approved by manufacturer for installation of units required for this Project.

1.7 WARRANTY

A. Manufacturer's Warranty: Manufacturer agrees to correct 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.

2. Warranty Period: 3 years from date of Substantial Completion, except 10 years from date of Substantial Completion against rust through and delamination.

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: Provide sectional doors that comply with performance requirements specified without failure from defective manufacture, fabrication, installation, or other defects in construction and without requiring temporary installation of reinforcing components.

B. Accessibility Standard: Comply with applicable provisions in the USDOJ's "2010 ADA Standards for Accessible Design," ICC A117.1, and building Code in effect for Project.

C. Delegated Design: Engage a qualified professional engineer, as defined in Division 01 Section "Quality Requirements," to design exterior sectional doors.

D. Structural Performance, Exterior Doors: Capable of withstanding the following design wind loads:

1. Design Wind Load: As indicated on Drawings.

2. Testing: In accordance with ASTM E330/E330M.

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 door width.
b. Deflection of horizontal track assembly shall not exceed 1/240 of door height.

2.3 SECTIONAL-DOOR ASSEMBLY

A. Steel Sectional Door: Provide sectional door formed with hinged sections and fabricated so that finished door assembly is rigid and aligned with tight hairline joints; free of warp, twist, and deformation; and complies with requirements in DASMA 102.

1. Products: Subject to compliance with requirements, available products that may be incorporated in the Work, include, but are not limited to:

a. Clopay Building Products Co.; Energy Series with Intellicore Model 3722.
b. Overhead Door Corporation; Thermacore Sectional Steel Doors Model 596.
c. Raynor; ThermaSeal TM220.
d. Wayne Dalton; Thermospan 200-20.

B. Operation Cycles: Door components and operators capable of operating for not less than 25,000 operation cycles. One operation cycle is complete when door is opened from closed position to the open position and returned to closed position.

C. Air Infiltration: Maximum rate of 0.12 cfm/sq. ft. Insert value when tested in accordance with ASTM E283 or DASMA 105.

D. U-Value: Maximum of 0.057 Btu/sq. ft. x h x deg F.

E. Steel Door Sections: ASTM A653/A653M, zinc-coated (galvanized), cold-rolled, commercial steel sheet with G90 zinc coating.

1. Door-Section Thickness: 2 inches.

2. Section Faces:

a. Thermal-Break Construction: Provide sections with continuous thermal-break construction separating the exterior and interior faces of door.

b. Exterior Face: Fabricated from single sheets, not more than 24 inches high; with horizontal meeting edges rolled to continuous, interlocking, keyed, rabbeted, shiplap, or tongue-in-groove, weather- and pinch-resistant seals and reinforcing flange return.

1) Steel Sheet Thickness: 0.040-inch (20 gage) nominal coated thickness.
2) Surface: Manufacturer's standard, stucco embossed.

c. Interior Face: Enclose insulation completely within steel exterior facing and interior facing material, with no exposed insulation. Provide the following interior-facing material:

1) Zinc-Coated (Galvanized) Steel Sheet: With minimum nominal coated thickness of dimension recommended in writing by manufacturer to comply with performance requirements.

3. End Stiles: Enclose open ends of sections with channel end stiles formed from galvanized-steel sheet not less than 0.064-inch (16 gage) nominal coated thickness and welded to door section.

4. Section Reinforcing: 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.

a. Bottom Section: Reinforce section with a continuous channel or angle conforming to bottom-section profile and allowing installation of astragal (weatherseal).
b. Hardware Locations: Provide reinforcement for hardware attachment.

5. Thermal Insulation: Insulate interior of steel sections with door manufacturer's standard CFC-free insulation of type indicated below:

a. Foamed-in-Place Insulation: Polyurethane, foamed in place to completely fill interior of section and pressure bonded to face sheets to prevent delamination under wind load.

b. Fire-Resistance Characteristics: Maximum flame-spread and smoke-developed indexes of 75 and 450, respectively, in accordance with ASTM E84.

F. Track: Manufacturer's standard, galvanized-steel, high-lift track system. Provide complete system including brackets, bracing, and reinforcement to ensure rigid support of ball-bearing roller guides.

1. Material: Galvanized steel, ASTM A653/A653M, minimum G60 zinc coating.

2. Size: As recommended in writing by manufacturer for door size, weight, track configuration and door clearances indicated on Drawings.

3. Track Reinforcement and Supports: Provide 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 apart for door-drop safety device.

a. Vertical Track: Incline vertical track to ensure weathertight closure at jambs. Provide continuous angle attached to track and wall.

b. Horizontal Track: Provide 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.

G. Weatherseals: Replaceable, adjustable, continuous, compressible weather-stripping gaskets of flexible vinyl, rubber, or neoprene fitted to bottom top and jambs of door. Provide combination bottom weatherseal and sensor edge for bottom seal.

H. Windows: Manufacturer's full vision lites in locations indicated on Drawings. Set glazing in vinyl, rubber, or neoprene glazing channel. Provide removable stops of same material as door-section frames. Provide the following glazing:

1. Insulating Glass Units: Manufacturer's standard, fully tempered clear float glass outdoor and indoor lites with interspace, low-E coating on surface 2, not less than 1/2-inch overall unit thickness.

I. Hardware: Heavy-duty, corrosion-resistant hardware, with hot-dip galvanized, stainless steel, or other corrosion-resistant fasteners, to suit door type.

1. Hinges: Heavy-duty, galvanized-steel hinges of not less than 0.079-inch (14 gage) nominal coated thickness at each end stile and at each intermediate stile, in accordance with manufacturer's written recommendations for door size.

a. 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.

b. Provide double-end hinges where required for doors more than 16 ft. wide unless otherwise recommended by door manufacturer in writing.

2. Rollers: Heavy-duty rollers with steel ball bearings in case-hardened steel races, mounted to suit slope of track. Extend roller shaft through both hinges where double hinges are required. Match roller-tire diameter to track width.

a. Roller-Tire Material: Manufacturer's standard.

J. Locking Device:

1. Locking Device Assembly: Fabricate with cylinder lock, spring-loaded deadbolt, operating handle, cam plate, and adjustable locking bars to engage through slots in tracks.

   a. Lock Cylinders: Cylinders standard with manufacturer.
   b. Keying: Keyed to building keying system.
   c. Keys: Three for each cylinder.

2. Safety Interlock Switch: Equip power-operated doors with safety interlock switch to disengage power supply when door is locked.

K. Counterbalance Mechanism:

1. Torsion Spring: Adjustable-tension torsion springs complying with requirements of DASMA 102 for number of operation cycles indicated, mounted on torsion shaft.

2. Cable Drums and Shaft for Doors: Cast-aluminum cable drums mounted on torsion shaft and grooved to receive door-lifting cables as door is raised.

   a. Mount counterbalance mechanism with manufacturer's standard ball-bearing brackets at each end of torsion shaft.

   b. Provide one additional midpoint bracket for shafts up to 16 ft. long and two additional brackets at one-third points to support shafts more than 16 ft. long unless closer spacing is recommended in writing by door manufacturer.

3. Most manufacturers offer standard cables with a safety factor of 5 or 7 to 1. Cables: Galvanized-steel, multistrand, lifting cables with cable safety factor of at least 5 to 1.

4. Cable Safety Device: Include a spring-loaded steel or bronze cam mounted to bottom door roller assembly on each side and designed to automatically stop door if lifting cable breaks.

5. Bracket: Provide anchor support bracket as required to connect stationary end of spring to the wall and to level the shaft and prevent sag.

6. Bumper: Provide spring bumper at each horizontal track to cushion door at end of opening operation.

L. Electric Door Operator: Electric door operator assembly of size and capacity recommended by door manufacturer for door and operation cycles 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. Comply with NFPA 70.

2. 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.

3. Safety: Listed in accordance with UL 325 by a qualified testing agency for commercial or industrial use; moving parts of operator enclosed or guarded if exposed and mounted at 8 ft. or lower.

4. Usage Classification: Standard duty, up to 25 cycles per hour and up to 90 cycles per day.

5. Operator Type: Manufacturer's standard for door requirements.

6. Motor: Reversible-type with controller (disconnect switch) for interior, clean, and dry motor exposure. Use adjustable motor-mounting bases for belt-driven operators.

    a. Motor Size: 1/2 hp.

    b. Electrical Characteristics:

        1) Phase: Single phase.
        2) Volts: 115 V.

7. 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.

8. Obstruction Detection: Automatic external entrapment protection consisting of automatic safety sensor capable of protecting full width of door opening. Activation of device immediately stops and reverses downward door travel.

    a. Monitored Entrapment Protection: Electric sensor edge on bottom section designed to interface with door-operator control circuit to detect damage to or disconnection of sensor and complying with requirements in UL 325.

9. Control Station: Surface mounted, three-position (open, close, and stop) control.

    a. Operation: Push button interior and key exterior.

    b. Interior-Mounted Unit: Full-guarded, surface-mounted, heavy-duty type, with general-purpose NEMA ICS 6, Type 1 enclosure.

    c. Features: Provide the following:

        1) Radio-control operation.
        2) Explosion- and dust-ignition-proof control wiring.
        3) Audible and visual signals that comply with regulatory requirements for accessibility.

10. Emergency Manual Operation: Chain type designed so required force for door operation does not exceed 25 lbf.

11. Emergency Operation Disconnect Device: 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.

12. Motor Removal: Design operator so motor can be removed without disturbing limit-switch adjustment and without affecting emergency manual operation.

M. Metal Finish: Comply with NAAMM/NOMMA's "Metal Finishes Manual for Architectural and Metal Products (AMP 500-06)" for recommendations for applying and designating finishes.

1. 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.

a. Color and Gloss: As selected by Architect from manufacturer's full range] including custom colors.

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. Proceed with installation only after unsatisfactory conditions have been corrected.
C. Beginning installation constitutes Contractor’s acceptance of substrates and conditions.

3.2 INSTALLATION

A. Install sectional doors and operating equipment complete with necessary hardware, anchors, inserts, hangers, and equipment supports; in accordance with manufacturer's written instructions.

B. Tracks:

1. Fasten vertical track assembly to opening jambs and framing with fasteners spaced not more than 24 inches 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 in accordance with UL 325.

3.3 STARTUP SERVICES

A. Engage a factory-authorized service representative to perform startup service.

1. Complete installation and startup checks in accordance with 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. Touchup Painting Galvanized Material: Immediately after welding galvanized materials, clean welds and abraded galvanized surfaces and repair galvanizing to comply with ASTM A780/A780M.

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 08 36 13

SECTION 08 41 13 - ALUMINUM-FRAMED ENTRANCES AND STOREFRONTS

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. Aluminum-framed storefront systems.
2. Entrance door systems.

1.3 PREINSTALLATION MEETINGS

A. Preinstallation Conference: Conduct conference at Project site.

1. Review and discuss the finishing of aluminum storefront that is required to be coordinated with the finishing of other aluminum work for color and finish matching.

2. Review, discuss, and coordinate the interrelationship of aluminum storefront with other exterior wall components. Include provisions for anchoring, flashing, weeping, sealing perimeters, and protecting finishes.

3. Review and discuss the sequence of work required to construct a watertight and weathertight exterior building envelope.

4. Inspect and discuss the condition of substrate and other preparatory work performed by other trades.

1.4 SUBMITTALS, GENERAL

A. General: Submit all action submittals and informational submittals required by this Section and by Division 08 Sections “Door Hardware” and “Glazing” concurrently.

1.5 ACTION SUBMITTALS

A. Product Data: For each type of product indicated. Include construction details, material descriptions, dimensions of individual components and profiles, and finishes.

1. Entrance door hardware.
2. Accessories.

B. As-Specified Data: If the product to be incorporated in the Work is as specified by manufacturer name and product designation in this Specification Section, submit the "**As-Specified Verification Form**" (attached to Division 01 Section "Submittal Procedures") for each item listed below, otherwise submit full Product Data for the following:

1. Thermally broken framing.
2. Thermal entrance doors.
3. Flush entrance doors.

C. 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. Show connection to and continuity with adjacent thermal, weather, air, and vapor barriers.
3. Show provisions for coordination with door hardware, electrically operated door hardware, and access control and security systems.

D. Samples: For each type of exposed finish required, in manufacturer's standard sizes.

E. Delegated Design Submittal: For aluminum-framed entrances and storefronts including analysis data signed and sealed by the qualified professional engineer responsible for their preparation.

F. Sample Warranties: For special warranties.

1.6 INFORMATIONAL SUBMITTALS

A. Energy Performance Certificates: For aluminum-framed entrances and storefronts, accessories, and components, from manufacturer.

1. Basis for Certification: NFRC-certified energy performance values for each aluminum-framed entrance and storefront.

B. Performance Reports: For fiberglass reinforced polyester (FRP) face sheet doors, showing compliance with fire-performance and door construction requirements.

1.7 CLOSEOUT SUBMITTALS

A. Maintenance Data: For aluminum-framed entrances and storefronts to include in maintenance manuals.
B. Warranties: Executed special warranties.

1.8 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.

1.9 WARRANTY

A. Special Warranty: Manufacturer agrees to correct 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. Deterioration of metals and other materials beyond normal weathering.
d. Water penetration through fixed glazing and framing areas.
e. Failure of operating components.

2. Warranty Period: 2 years from date of Substantial Completion.

B. Special Finish Warranty, Anodized Finishes: Standard form in which manufacturer agrees to restore finishes or replace aluminum that shows evidence of deterioration of anodized finishes within specified warranty period.

1. Deterioration includes, but is not limited to, the following:

a. Color fading more than 5 Delta E units when tested in accordance with ASTM D 2244.
b. Chalking in excess of a No. 8 rating when tested in accordance with ASTM D 4214.
c. Cracking, peeling, or chipping.

2. Warranty Period: 10 years from date of Substantial Completion.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Source Limitation: Obtain all components of aluminum-framed entrance and storefront system, including framing and accessories, and entrance doors when available, from single manufacturer.

2.2 PERFORMANCE REQUIREMENTS

A. Delegated Design: Engage a qualified professional engineer, as defined in Division 01 Section "Quality Requirements," to design aluminum-framed entrances and storefronts.

B. 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, 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.

C. Structural Loads:

1. Wind Loads: As indicated on Drawings.
2. Other Design Loads: As indicated on Drawings.

D. Deflection of Framing Members Supporting Glass: At design wind load, as follows:

1. Deflection Normal to Wall Plane: Limited to 1/175 of clear span for spans of up to 13 feet 6 inches and to 1/240 of clear span plus 1/4 inch for spans greater than 13 feet 6 inches.

2. Deflection Parallel to Glazing Plane: Limited to amount not exceeding that which reduces glazing bite to less than 75 percent of design dimension and that which reduces edge clearance between framing members and glazing or other fixed components to less than 1/8 inch.

a. Operable Units: Provide a minimum 1/16-inch clearance between framing members and operable units.

3. Cantilever Deflection: Where framing members overhang an anchor point, as follows:

a. Perpendicular to Plane of Wall: No greater than 1/240 of clear span plus 1/4 inch for spans greater than 6 feet 9 inches or 1/175 times span, for spans of less than 6 feet 9 inches.

E. Structural: Test in accordance with ASTM E330/E330M as follows:

1. When tested at positive and negative wind-load design pressures, storefront assemblies, including entrance doors, do not evidence deflection exceeding specified limits.

2. When tested at 150 percent of positive and negative wind-load design pressures, storefront assemblies, including entrance doors and 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.

F. Water Penetration under Static Pressure: Test in accordance with ASTM E331 as follows:

1. No evidence of water penetration through fixed glazing and framing areas, including entrance doors, when tested in accordance with a minimum static-air-pressure differential of 20 percent of positive wind-load design pressure, but not less than 10 lbf/sq. ft..

G. Energy Performance: Certified and labeled by manufacturer for energy performance as follows:

1. Thermal Transmittance (U-factor):

a. Thermally Broken Fixed Glazing and Framing Areas: U-factor for the system of not more than 0.38 Btu/sq. ft. x h x deg F as determined in accordance with NFRC 100.

b. Thermal Entrance Doors: U-factor of not more than 0.77 Btu/sq. ft. x h x deg F as determined in accordance with NFRC 100.

c. Flush Entrance Doors: U-factor of not more than 0.37 Btu/sq. ft. x h x deg F as determined according to NFRC 100.

2. Solar Heat-Gain Coefficient (SHGC):

a. Thermally Broken Fixed Glazing and Framing Areas: SHGC for the system of not more than 0.38 as determined in accordance with NFRC 200.
b. Thermal Entrance Doors: SHGC of not more than 0.38 as determined in accordance with NFRC 200.

3. Air Leakage:

a. Thermally Broken Fixed Glazing and Framing Areas: Air leakage for the system of not more than 0.06 cfm/sq. ft. at a static-air-pressure differential of 6.24 lbf/sq. ft. when tested in accordance with ASTM E283 or NFRC 400.

b. Flush Entrance Doors: Air leakage of not more than 1.0 cfm/sq. ft. at a static-air-pressure differential of 1.57 lbf/sq. ft.

4. Condensation Resistance Factor (CRF):

a. Thermally Broken Fixed Glazing and Framing Areas: CRF for the system of not less than 62 as determined in accordance with AAMA 1503.

H. Thermal Movements: Allow for thermal movements resulting from ambient and surface temperature changes.

1. Temperature Change: 120 deg F, ambient; 180 deg F, material surfaces.

2.3 STOREFRONT SYSTEMS, GENERAL

A. Framing Members: Manufacturer's extruded- or formed-aluminum framing members of thickness required and reinforced as required to support imposed loads.

1. Exterior Framing Construction: Thermally broken.
2. Interior Framing Construction: Thermally broken.
3. Glazing System: Retained mechanically with gaskets on four sides.
4. Glazing Plane: Center.
5. Finish: Clear anodic finish.
6. Fabrication Method: Field-fabricated stick system.
7. Aluminum: Alloy and temper recommended by manufacturer for type of use and finish indicated.
8. Steel Reinforcement: As required by manufacturer.

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. Insulated Spandrel Panels: Comply with Division 08 Section "Glazing."

2.4 STOREFRONT SYSTEM TYPES

A. Types: Provide the following types in locations indicated on Drawings:

1. Thermally broken framing.

2.5 THERMALLY BROKEN FRAMING

A. Products: Subject to compliance with requirements, available products that may be incorporated in the Work include, but are not limited to:

1. EFCO Corporation; System 403X Dual-Thermal Flush-Glazed Storefront.
2. Kawneer; Trifab 451UT Framing System.
3. YKK AP America Inc.; YES 45 XT Storefront System.

B. Framing Size: 2-inch by 4-1/2-inch.

2.6 ENTRANCE DOOR SYSTEMS, GENERAL

A. Entrance Doors: Manufacturer's standard flush entrance doors for manual-swingoperation.

B. Door Construction:

1. Flush Entrance Door Construction: Fiberglass reinforced polyester (FRP) face sheet with poured-in-place or frothed-in-place urethane insulation and interlocked into extruded-aluminum rail and stile members to conceal edges of face sheets.

a. Fiberglass Reinforced Polyester (FRP) Face Sheet: 0.120-inch-thick pebble-textured FRP.

1) FRP door construction must comply with IBC 2603.4.1.7 or have special approval per IBC 2603.9.

2) Surface-Burning Characteristics: For FRP face sheets facing the interior, surface-burning characteristics as follows when tested by a qualified testing agency according to ASTM E 84. Identify products with appropriate markings of applicable testing agency.

a) Flame-Spread Index: 25 or less.
b) Smoke-Developed Index: 450 or less.

2. Glazing Stops and Gaskets: Square, snap-on, extruded-aluminum stops and preformed gaskets.

a. Provide nonremovable glazing stops on outside of door.

3. Finish: Match adjacent storefront framing finish.

2.7 ENTRANCE DOOR TYPES

A. Types: Provide the following entrance door types in locations indicated on Drawings:

1. Flush entrance doors.

2.8 FLUSH ENTRANCE DOORS

A. Products: Subject to compliance with requirements, available products that may be incorporated in the Work include, but are not limited to:

1. Aluminum Face Sheet Doors:

a. Kawneer; Flushline Entrances.
b. Special-Lite, Inc.; SL-16 Aluminum Flush Door.

2. Fiberglass Reinforced Polyester (FRP) Face Sheet Doors:

a. FRP Architectural Doors Inc.; FD25 Heavy Duty FRP Faced Door.
b. Special-Lite, Inc.; SL-17 Pebble Grain FRP/Aluminum Hybrid Door.

B. Depth: 1-3/4-inch.

C. Color: As selected by Architect from manufacturer's full range.

2.9 ENTRANCE DOOR HARDWARE

A. Entrance Door Hardware: Hardware not specified in this Section is specified in Division 08 Section "Door Hardware."

B. General: Provide entrance door hardware and entrance door hardware sets indicated in door and frame schedule for each entrance door, to comply with requirements in this Section.

1. Opening-Force Requirements:

a. Egress Doors: Not more than 15 lbf to release the latch and not more than 30 lbf to set the door in motion and not more than 15 lbf to open the door to its minimum required width.

b. Accessible Interior Doors: Not more than 5 lbf to fully open door.

C. Recessed Pulls: Manufacturer’s standard accessibility-compliant recessed pulls for flush doors.

D. Removable Mullions: BHMA A156.3 extruded aluminum.

1. When used with panic exit devices, provide keyed removable mullions listed and labeled by a testing and inspecting agency acceptable to authorities having jurisdiction, for panic protection, based on testing in accordance with UL 305. Use only mullions that have been tested with exit devices to be used.

E. Weather Stripping: Manufacturer's standard replaceable components.

1. Compression Type: Made of ASTM D2000 molded neoprene or ASTM D2287 molded PVC.
2. Sliding Type: AAMA 701/702, made of wool, polypropylene, or nylon woven pile with nylon-fabric or aluminum-strip backing.

F. Weather Sweeps: Manufacturer's standard exterior-door bottom sweep with concealed fasteners on mounting strip.

G. Thresholds: BHMA A156.21 raised thresholds beveled with a slope of not more than 1:2, with maximum height of 1/2 inch.

2.10 GLAZING

A. Glazing: Comply with Division 08 Section "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.

2.11 MATERIALS

A. Sheet and Plate: ASTM B209.

B. Extruded Bars, Rods, Profiles, and Tubes: ASTM B221.

C. Structural Profiles: ASTM B308/B308M.

D. Steel Reinforcement:

1. Structural Shapes, Plates, and Bars: ASTM A36/A36M.
2. Cold-Rolled Sheet and Strip: ASTM A1008/A1008M.
3. Hot-Rolled Sheet and Strip: ASTM A1011/A1011M.

E. Steel Reinforcement Primer: Manufacturer's standard zinc-rich, corrosion-resistant primer complying with SSPC-PS Guide No. 12.00; applied immediately after surface preparation and pretreatment. Select surface preparation methods in accordance with recommendations in SSPC-SP COM, and prepare surfaces in accordance with applicable SSPC standard.

2.12 ACCESSORIES

A. Automatic Door Operators: Comply with Division 08 Section "Automatic Door Operators."

B. 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.

C. Anchors: Three-way adjustable anchors with minimum adjustment of 1 inch 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 A123/A123M or ASTM A153/A153M requirements.

D. Concealed Flashing: Manufacturer's standard corrosion-resistant, nonstaining, nonbleeding flashing compatible with adjacent materials.

E. Bituminous Paint: Cold-applied asphalt-mastic paint containing no asbestos, formulated for 30-mil thickness per coat.

2.13 FABRICATION

A. Form or extrude aluminum shapes before finishing.

B. Weld in concealed locations to greatest extent possible to minimize distortion or discoloration of finish. Remove weld spatter and welding oxides from exposed surfaces by descaling or grinding.

C. 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.
6. Fasteners, anchors, and connection devices that are concealed from view to greatest extent possible.

D. Mechanically Glazed Framing Members: Fabricate for flush glazing without projecting stops.

E. Entrance Door Frames: Reinforce as required to support loads imposed by door operation and for installing entrance door hardware.

1. At interior and exterior doors, provide compression weather stripping at fixed stops. Blade-type stops are not acceptable.

F. Entrance Doors: Reinforce doors as required for installing entrance door hardware.

1. At pairs of exterior doors, provide sliding-type weather stripping retained in adjustable strip and mortised into door edge.
2. At exterior doors, provide weather sweeps applied to door bottoms.

G. Entrance Door Hardware Installation: Factory install entrance door hardware to the greatest extent possible. Cut, drill, and tap for factory-installed entrance door hardware before applying finishes.

H. After fabrication, clearly mark components to identify their locations in Project in accordance with Shop Drawings.

2.14 ALUMINUM FINISHES

A. Clear Anodic Finish: AAMA 611, AA-M12C22A41, Class I, 0.018 mm or thicker.

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.
C. Beginning installation constitutes Contractor’s acceptance of substrates and conditions.

3.2 INSTALLATION, GENERAL

A. Comply with manufacturer's written instructions.

B. Do not install damaged components.

C. Fit joints to produce hairline joints free of burrs and distortion.

D. Rigidly secure nonmovement joints.

E. Install anchors with separators and isolators to prevent metal corrosion and electrolytic deterioration and to prevent impeding movement of moving joints.

F. Seal perimeter and other joints watertight unless otherwise indicated.

G. 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.

H. Set continuous sill members and flashing in full sealant bed, as specified in Division 07 Section "Joint Sealants," to produce weathertight installation.

I. Install joint filler behind sealant as recommended by sealant manufacturer.

J. Install components plumb and true in alignment with established lines and grades.

3.3 INSTALLATION OF OPERABLE UNITS

A. Install operable units level and plumb, securely anchored, and without distortion. Adjust weather-stripping contact and hardware movement to produce proper operation.

3.4 INSTALLATION OF GLAZING

A. Install glazing as specified in Division 08 Section "Glazing."

3.5 INSTALLATION OF ALUMINUM-FRAMED ENTRANCE DOORS

A. Install entrance doors to produce smooth operation and tight fit at contact points.

1. Exterior Doors: Install to produce weathertight enclosure and tight fit at weather stripping.

2. Field-Installed Entrance Door Hardware: Install surface-mounted entrance door hardware in accordance with entrance door hardware manufacturers' written instructions using concealed fasteners to greatest extent possible.

3.6 ERECTION TOLERANCES

A. Install aluminum-framed entrances and storefronts to comply with the following maximum tolerances:

1. Plumb: 1/8 inch in 10 feet; 1/4 inch in 40 feet.

2. Level: 1/8 inch in 20 feet; 1/4 inch in 40 feet.

3. Alignment:

   a. Where surfaces abut in line or are separated by reveal or protruding element up to 1/2 inch wide, limit offset from true alignment to 1/16 inch.
   b. Where surfaces are separated by reveal or protruding element from 1/2 to 1 inch wide, limit offset from true alignment to 1/8 inch.
   c. Where surfaces are separated by reveal or protruding element of 1 inch wide or more, limit offset from true alignment to 1/4 inch.

4. Location: Limit variation from plane to 1/8 inch in 12 feet; 1/2 inch over total length.

3.7 FIELD QUALITY CONTROL

A. Special Inspections: Special Inspections are required for the work of this Section. Refer to Division 01 Section “Quality Requirements” and its attachments.

3.8 MAINTENANCE SERVICE

A. Entrance Door Hardware Maintenance:

1. Maintenance Tools and Instructions: Furnish a complete set of specialized tools and maintenance instructions as needed for Owner's continued adjustment, maintenance, and removal and replacement of entrance door hardware.

END OF SECTION 08 41 13

SECTION 08 46 00 – FIRE-RATED GLAZED OPENING ASSEMBLIES

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. Fire-resistance-rated storefront systems.

1.3 DEFINITIONS

A. Fire-Protection Rating: The period of time that an opening protective will maintain the ability to confine a fire as determined by tests specified in Section 716 of the building Code in effect for the Project.

B. Fire-Rated Glazed Opening Assemblies: Glazed opening assemblies configured as either possessing a fire-protection rating or a fire-resistance rating.

C. Fire-Resistance Rating: The period of time a building element, component or assembly maintains the ability to confine a fire, continues to perform a given structural function, or both, as determined by tests, or the methods based on tests, prescribed in Section 703 of the building Code in effect for the Project.

1.4 PREINSTALLATION MEETINGS

A. Preinstallation Conference: Conduct conference at Project site.

1. Review and finalize construction schedule and verify availability of materials, Installer's personnel, equipment, and facilities needed to make progress.

2. Review and discuss the finishing of fire-rated glazed opening assemblies that is required to be coordinated with the finishing of other similar work for color and finish matching.

3. Review, discuss, and coordinate the interrelationship of fire-rated glazed opening assemblies with other exterior wall components. Include provisions for anchoring, flashing, weeping, sealing perimeters, and protecting finishes.

4. Review and discuss the sequence of work required to construct a watertight and weathertight exterior building envelope.

5. Inspect and discuss the condition of substrate and other preparatory work performed by other trades.

1.5 SUBMITTALS, GENERAL

A. General: Submit all action submittals required by this Section and by Division 08 Sections "Door Hardware" and "Glazing" concurrently.

1.6 ACTION SUBMITTALS

A. Product Data: For each type of product indicated. Include construction details, material descriptions, dimensions of individual components and profiles, and finishes.

1. Door hardware.
2. Accessories.

B. As-Specified Data: If the product to be incorporated into Project is as specified by manufacturer name and product designation in this Specification Section, submit the "**As-Specified Verification Form**" (attached to Division 01 Section "Submittal Procedures") for each item listed below, otherwise submit full Product Data for the following:

1. Fire-protection-rated glazed opening assemblies, 45-minute, interior.
2. Fire-resistance-rated storefront systems, 90 and 120-minute, interior and exterior.

C. Shop Drawings: For fire-rated glazed opening assemblies. 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. Verify actual locations and dimensions of structural supports for curtain walls by field measurements before fabrication and indicate measurements on Shop Drawings.
3. Show connection to and continuity with adjacent thermal, weather, air, and vapor barriers.
4. Show provisions for coordination with door hardware, electrically operated door hardware, and access control and security systems.

D. Samples: For each type of exposed finish required, in manufacturer's standard sizes.

E. Product Schedule: For fire-rated glazed opening assemblies. Use same designations as indicated on Drawings.

F. Delegated-Design Submittal: For fire-rated glazed opening assemblies indicated to comply with performance requirements and design criteria, including analysis data signed and sealed by the qualified professional engineer responsible for their preparation.

G. Sample Warranty: For special warranty.

1.7 INFORMATIONAL SUBMITTALS

A. Field quality-control reports.

1.8 CLOSEOUT SUBMITTALS

A. Maintenance Data: For fire-rated glazed opening assemblies to include in maintenance manuals.
B. Executed Warranty: For special warranty.
C. Record Documents: List of door numbers and applicable room name and number to which door accesses.

1.9 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.

1.10 COORDINATION

A. Coordinate requirements for installation of door hardware, electrified door hardware, and access control and security systems.

1.11 WARRANTY

A. Special Warranty: Manufacturer agrees to repair or replace components of fire-rated glazed opening assemblies 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. Deterioration of metals, metal finishes, and other materials beyond normal weathering.
d. Water penetration through fixed glazing and framing areas.
e. Failure of operating components.

2. Warranty Period: Five years from date of Substantial Completion.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Source Limitations: Obtain fire-rated glazed opening assemblies, including doors, frames, and other items essential for fire-rating from single source from single manufacturer. Obtain glazing from single manufacturer acceptable to the door assembly manufacturer, for each fire-rated glazed opening assembly.

2.2 PERFORMANCE REQUIREMENTS

A. Delegated Design: Engage a qualified professional engineer, as defined in Division 01 Section "Quality Requirements," to design fire-rated glazed opening assemblies.

B. General Performance: Comply with performance requirements specified, as determined by testing of fire-rated glazed opening assemblies representing those indicated for this Project without failure due to defective manufacture, fabrication, installation, or other defects in construction.

1. Fire-rated glazed opening assemblies 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.

C. Structural Loads:

1. Other Design Loads: As indicated on Drawings.

D. Fire-Protection-Rated Door Assemblies: Complying with NFPA 80 and listed and labeled by a qualified testing agency acceptable to authorities having jurisdiction for fire-protection ratings indicated, based on testing at positive pressure according to NFPA 252 or UL 10C.

E. Fire-Protection-Rated Window Assemblies: Complying with NFPA 80 and listed and labeled by a qualified testing agency acceptable to authorities having jurisdiction, for fire-protection ratings indicated, based on testing according to NFPA 257 or UL 9.

F. Fire-Resistance-Rated Assemblies: Complying with NFPA 80 and listed and labeled by a testing and inspecting agency acceptable to authorities having jurisdiction for fire-resistance ratings indicated, based on testing according to ASTM E119 or UL 263.

2.3 FIRE-RESISTANCE-RATED STOREFRONT SYSTEMS

A. Fire-Resistance-Rated Storefront Systems: 90-minute, interior, fire-resistance-rated storefront systems. Provide the following:

1. Aluminum-and-Steel Units:

a. Basis-of-Design Product: Subject to compliance with requirements, provide the following, or comparable product:

1) Safti First Fire Rated Glazing Solutions; GPX Architectural Series Fire Resistive Framing and Doors.

a) Glazing for Interior Units: Safti First Fire Rated Glazing Solutions; SuperLite II-XL 90 (Glass Type FRD) as specified in Division 08 Section “Glazing.”

b) Finish: High-performance organic finish.

B. Fire-Resistance-Rated Storefront Systems: 120-minute, exterior (at natatorium) and interior, fire-resistance-rated storefront systems. Provide the following:

1. Aluminum-and-Steel Units:

a. Products: Subject to compliance with requirements, available products that may be incorporated in the Work, include, but are not limited to:

1) Technical Glass Products; Fireframes Aluminum Series with extruded aluminum cover caps.

a) Glazing for Exterior Units: Insulating glass type FCE/FRD, where the indoor lite is Safti First Fire Rated Glazing Solutions; SuperLite II-XL 120 (Glass Type FRD) as specified in Division 08 Section “Glazing.”

b) Glazing for Interior Units: Technical Glass Products; Pilkington Pyrostop (Glass Type FRI) as specified in Division 08 Section “Glazing.”

c) Finish: High-performance organic finish.

2.4 DOOR HARDWARE

A. Door Hardware: Hardware not specified in this Section is specified in Division 08 Section "Door Hardware."

B. General: Provide door hardware and door hardware sets indicated in door and frame schedule for each entrance door, to comply with requirements in this Section.

1. Opening-Force Requirements:

    a. Egress Doors: Not more than 15 lbf to release the latch and not more than 30 lbf to set the door in motion and not more than 15 lbf to open the door to its minimum required width.

    b. Accessible Interior Doors: Not more than 5 lbf to fully open door.

C. Thresholds: BHMA A156.21 raised thresholds beveled with a slope of not more than 1:2, with maximum height of 1/2 inch.

2.5 GLAZING

A. Glazing: Comply with Division 08 Section "Glazing."
B. Glazing Gaskets: As recommended by manufacturer.
C. Glazing Sealants: As recommended by manufacturer.

2.6 MATERIALS

A. Aluminum:

1. Sheet and Plate: ASTM B 209.
2. Extruded Bars, Rods, Profiles, and Tubes: ASTM B 221.
3. Extruded Structural Pipe and Tubes: ASTM B 429/B 429M.
4. Structural Profiles: ASTM B 308/B 308M.

B. Steel:

1. Structural Shapes, Plates, and Bars: ASTM A 36/A 36M.

2. Cold-Rolled Sheet and Strip: ASTM A 1008/A 1008M.

3. Hot-Rolled Sheet and Strip: ASTM A 1011/A 1011M.

4. Primer: Manufacturer's standard zinc-rich, corrosion-resistant primer complying with SSPC-PS Guide No. 12.00; applied immediately after surface preparation and pretreatment. Select surface preparation methods according to recommendations in SSPC-SP COM, and prepare surfaces according to applicable SSPC standard.

2.7 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 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.

2.8 FABRICATION

A. Form or extrude aluminum shapes before finishing.

B. Weld in concealed locations to greatest extent possible to minimize distortion or discoloration of finish. Remove weld spatter and welding oxides from exposed surfaces by descaling or grinding.

C. 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.
6. Fasteners, anchors, and connection devices that are concealed from view to greatest extent possible.

D. Door Frames: Reinforce as required to support loads imposed by door operation and for installing door hardware.

E. Doors: Reinforce doors as required for installing door hardware.

F. Door Hardware Installation: Factory install door hardware to the greatest extent possible. Cut, drill, and tap for factory-installed door hardware before applying finishes.

G. After fabrication, clearly mark components to identify their locations in Project according to Shop Drawings

2.9 GENERAL FINISH REQUIREMENTS

A. Comply with NAAMM's "Metal Finishes Manual" for recommendations for applying and designating finishes.

B. Protect mechanical finishes on exposed surfaces from damage by applying a strippable, temporary protective covering before shipping.

C. Appearance of Finished Work: Noticeable variations in same piece are not acceptable. Variations in appearance of adjoining components are acceptable if they are within the range of approved Samples and are assembled or installed to minimize contrast.

2.10 ALUMINUM FINISHES

A. High-Performance Organic Finish: Two-coat fluoropolymer finish complying with AAMA 2605 and 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.

1. Color and Gloss: As selected by Architect from manufacturer's full range.

2.11 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.

B. High-Performance Organic Finish: Two-coat 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.

1. Color and Gloss: As selected by Architect from manufacturer's full range.

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. Proceed with installation only after unsatisfactory conditions have been corrected.
C. Beginning installation constitutes Contractor’s acceptance of substrates and conditions.

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.

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 Division 07 Section "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 Division 08 Section "Glazing."

G. Doors: Install doors to produce smooth operation and tight fit at contact points.

1. Field-Installed Door Hardware: Install surface-mounted door hardware according to door hardware manufacturers' written instructions using concealed fasteners to greatest extent possible.

3.3 ERECTION TOLERANCES

A. Erection Tolerances: Install fire-rated glazed opening assemblies to comply with the following maximum tolerances:

1. Plumb: 1/8 inch in 10 feet; 1/4 inch in 40 feet.

2. Level: 1/8 inch in 20 feet; 1/4 inch in 40 feet.

3. Alignment:

a. Where surfaces abut in line or are separated by reveal or protruding element up to 1/2 inch wide, limit offset from true alignment to 1/16 inch.
b. Where surfaces are separated by reveal or protruding element from 1/2 to 1 inch wide, limit offset from true alignment to 1/8 inch.
c. Where surfaces are separated by reveal or protruding element of 1 inch wide or more, limit offset from true alignment to 1/4 inch.

4. Location: Limit variation from plane to 1/8 inch in 12 feet; 1/2 inch over total length.

3.4 FIELD QUALITY CONTROL

A. Inspection Agency: Engage a qualified inspector to perform inspections and to furnish reports to Architect.

B. Inspections:

1. Fire-Rated Door Inspections: Inspect each fire-rated door according to NFPA 80, Section 5.2.

C. Correct or remove and replace installations where inspections indicate that they do not comply with specified requirements.

D. Reinspect corrected or replaced installations to determine if replaced or corrected door assembly installations comply with specified requirements.

E. Prepare and submit separate inspection report for each fire-rated door assembly indicating compliance with each item listed in NFPA 80.

3.5 ADJUSTING, CLEANING, AND PROTECTION

A. Final Adjustments: Check and readjust operating hardware items immediately before final inspection. Leave work in complete and proper operating condition. Remove and replace defective work, including hollow-metal work that is warped, bowed, or otherwise unacceptable.

B. Prime-Coat Touchup: Immediately after erection, sand smooth rusted or damaged areas of prime coat and apply touchup of compatible air-drying, rust-inhibitive primer.

3.6 MAINTENANCE SERVICE

A. Door Hardware:

1. Maintenance Tools and Instructions: Furnish a complete set of specialized tools and maintenance instructions as needed for Owner's continued adjustment, maintenance, and removal and replacement of door hardware.

END OF SECTION 08 46 00

SECTION 08 71 00 - DOOR HARDWARE

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. Mechanical door hardware for the following:

   a. Swinging doors.

2. Cylinders for door hardware specified in other Sections.

3. Electrified door hardware.

1.3 SUBMITTALS, GENERAL

A. General: Submit all action submittals (except Samples for Verification) and informational submittals required by this Section concurrently.

1.4 ACTION SUBMITTALS

A. Product Data: For each type of product indicated. Include construction and installation details, material descriptions, dimensions of individual components and profiles, and finishes.

1. Hinges.
2. Continuous hinges.
3. Mortise locks.
4. Electric strikes.
5. Exit devices and auxiliary items.
6. Lock cylinders.
7. Construction cores.
8. Keying system/keys.
9. Key control software.
10. Cross-index system.
11. Surface closers.
12. Wall stops.
13. Electromagnetic door holders.
14. Door gasketing.
15. Metal protective trim units.
16. Auxiliary hardware.

B. Shop Drawings: Details of electrified door hardware, indicating the following:

1. Wiring Diagrams: For power, signal, and control wiring and including the following:

   a. Details of interface of electrified door hardware and building safety and security systems.

2. Operation Narrative: Describe the operation of doors controlled by electrified door hardware.

C. Samples for Verification: For exposed door hardware of each type required, in each finish specified, prepared on Samples of size indicated below. Tag Samples with full description for coordination with the door hardware schedule.

1. Sample Size: Full-size units or minimum 2-by-4-inch Samples for sheet and 4-inch long Samples for other products.

D. Door Hardware Schedule: Prepared by or under the supervision of Installer, detailing fabrication and assembly of door hardware, as well as installation procedures and diagrams. Coordinate final door hardware schedule with doors, frames, and related work to ensure proper size, thickness, hand, function, and finish of door hardware.

1. Format: Use same scheduling sequence and format and use same door numbers as in the Contract Documents.

2. 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. Description of electrified door hardware sequences of operation and interfaces with other building control systems.
   e. Fastenings and other pertinent information.
   f. Explanation of abbreviations, symbols, and codes contained in schedule.
   g. Mounting locations for door hardware.

E. Keying Schedule: Prepared by or under the supervision of Installer, 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.

F. Warranty: Sample of special warranty specified in this Section.

1.5 INFORMATIONAL SUBMITTALS

A. Product Certificates: For electrified door hardware, from the manufacturer.

1. Certify that door hardware approved for use on types and sizes of labeled fire-rated doors complies with listed fire-rated door assemblies.

1.6 CLOSEOUT SUBMITTALS

A. Maintenance Data: For each type of door hardware to include in maintenance manuals. Include final hardware and keying schedule.

B. Warranty: Executed special warranty specified in this Section.

1.7 QUALITY ASSURANCE

A. Installer Qualifications: Supplier of products and an employer of workers trained and approved by product manufacturers and an Architectural Hardware Consultant who is available during the course of the Work to consult with Contractor, Architect, and Owner about door hardware and keying.

1. Scheduling Responsibility: Preparation of door hardware and keying schedules.

2. Engineering Responsibility: Preparation of data for electrified door hardware, including Shop Drawings, based on testing and engineering analysis of manufacturer's standard units in assemblies similar to those indicated for this Project.

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 follows:

1. For door hardware, an Architectural Hardware Consultant (AHC).

C. Source Limitations: Obtain each type of door hardware from a single manufacturer.

D. Fire-Rated Door Assemblies: Where fire-rated door assemblies are indicated, provide door hardware rated for use in assemblies complying with NFPA 80 that are listed and labeled by a qualified testing agency, for fire-protection ratings indicated, based on testing at positive pressure according to NFPA 252 or UL 10C, unless otherwise indicated.

E. Smoke- and Draft-Control Door Assemblies: Where smoke- and draft-control door assemblies are required, provide door hardware that meet 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. at the tested pressure differential of 0.3-inch wg of water.

F. Electrified Door Hardware: Listed and labeled as defined in NFPA 70, Article 100, by a testing agency acceptable to authorities having jurisdiction.

G. Means of Egress Doors: Latches do not require more than 15 lbf to release the latch. Locks do not require use of a key, tool, or special knowledge for operation.

H. Accessibility Requirements: For door hardware on doors in an accessible route, comply with the U.S. Architectural & Transportation Barriers Compliance Board's ADA-ABA Accessibility Guidelines, ICC/ANSI A117.1 and building code in effect for Project.

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.

2. Comply with the following maximum opening-force requirements:

a. Interior, Non-Fire-Rated Hinged Doors: 5 lbf applied perpendicular to door.
b. 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 high.

4. Adjust door closer sweep periods so that, from an open position of 70 degrees, the door will take at least 3 seconds to move to a point 3 inches from the latch, measured to the leading edge of the door.

I. Preinstallation Conference: Conduct conference at Project site.

1. Inspect and discuss preparatory work performed by other trades.
2. Inspect and discuss electrical roughing-in for electrified door hardware.
3. Review sequence of operation for each type of electrified door hardware.

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.

1.9 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.

B. Electrical System Roughing-In: Coordinate layout and installation of electrified door hardware with connections to power supplies and building safety and security systems.

C. Existing Openings: Where hardware components are scheduled for application to existing construction or where modifications to existing door hardware are required, field verify existing conditions and coordinate installation of door hardware to suit opening conditions and to provide proper door operation.

1.10 WARRANTY

A. Special Warranty: Manufacturer's standard form in which manufacturer agrees to repair or replace components of door hardware that fail in materials or workmanship within specified warranty period.

1. 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.

   a. Exit Devices: Two years from date of Substantial Completion.
   b. Manual Closers: Lifetime.
   c. Locksets: Lifetime
   d. Hinges: Lifetime

1.11 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.

PART 2 - PRODUCTS

2.1 SCHEDULED DOOR HARDWARE

A. Provide door hardware for each door as scheduled in Part 3 "Door Hardware Schedule" Article to comply with requirements in this Section.

1. Door Hardware Sets: Provide quantity, item, size, finish or color indicated, and named manufacturers' products or products equivalent in function and comparable in quality to named products.

2. Sequence of Operation: Provide electrified door hardware function, sequence of operation, and interface with other building control systems indicated.

3. Electric Locking Hardware: Exit hardware shall always remain fully operational manually regardless of the status of electric latch.

B. Designations: Requirements for design, grade, function, finish, size, and other distinctive qualities of each type of door hardware are indicated in Part 3 "Door Hardware Schedule" Article. Products are identified by using door hardware designations, as follows:

1. Named Manufacturers' Products: Manufacturer and product designation are listed for each door hardware type required for the purpose of establishing minimum requirements. Manufacturers' names are abbreviated in Part 3 "Door Hardware Schedule" Article.

2. References to BHMA Designations: Provide products complying with these designations and requirements for description, quality, and function.

2.2 HINGES

A. Hinges: BHMA A156.1. Provide template-produced hinges for hinges installed on hollow-metal doors and hollow-metal frames.

1. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:

a. Best
b. Hager
c. Stanley

2.3 CONTINUOUS HINGES

A. Continuous Hinges: BHMA A156.26; minimum 0.120-inch-thick, hinge leaves with minimum overall width of 4 inches; fabricated to full height of door and frame and to template screw locations; with components finished after milling and drilling are complete.

B. Continuous, Gear-Type Hinges: Extruded-aluminum, pinless, geared hinge leaves joined by a continuous extruded-aluminum channel cap; with concealed, self-lubricating thrust bearings.

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. ABH
b. Best
c. Select
d. Stanley

2.4 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. Mortise Locks: Minimum 3/4-inch latchbolt throw.

C. Lock Backset: 2-3/4 inches, unless otherwise indicated.

D. Lock Trim:

1. Levers:

a. 14H or, if provided by another manufacturer, provide designs that match those designated.

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.

F. Mortise Locks: BHMA A156.13; Operational and Security Grade 1; stamped steel case with steel or brass parts; Series 1000.

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. Best

2.5 ELECTRIC STRIKES

A. Electric Strikes: BHMA A156.31; Grade 1; with faceplate to suit lock and frame.

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. Dormakaba
b. Securitech
c. Von Duprin

2.6 EXIT DEVICES AND AUXILIARY ITEMS

A. Exit Devices and Auxiliary Items: BHMA A156.3.

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. Precision
b. Von Duprin

2.7 LOCK CYLINDERS

A. Lock Cylinders: Tumbler type, constructed from brass or bronze, stainless steel, or nickel silver.

1. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work:

a. Best

B. Construction Cores: Provide construction cores that are replaceable by permanent cores. Provide 10 construction master keys.

2.8 KEYING

A. Keying System: Factory registered, complying with guidelines in BHMA A156.28, Appendix A. Incorporate decisions made in keying conference.

1. Master Key System: Change keys and a master key operate cylinders.

2. Grand Master Key System: Change keys, a master key, and a grand master key operate cylinders.

3. Existing System:

a. Master key or grand master key locks to Owner's existing system.

B. Keys: Nickel silver.

1. Stamping: Permanently inscribe each key with a visual key control number and include the following notation:

a. Notation: "DO NOT DUPLICATE."

2. Quantity: In addition to one extra key blank for each lock, provide the following:

a. Cylinder Change Keys: Three.

b. Master Keys: Five.
c. Grand Master Keys: Five.

2.9 KEY CONTROL SYSTEM

A. Key Control Software: Provide as specified.

2.10 OPERATING TRIM

A. Operating Trim: As specified.

2.11 SURFACE CLOSERS

A. Surface Closers: BHMA A156.4; Cast iron with 1-1/2" minimum bore piston, rack-and-pinion hydraulic type with adjustable sweep and latch speeds controlled by key-operated valves and forged-steel main arm. Comply with manufacturer's written recommendations for size of door closers depending on size of door, exposure to weather, and anticipated frequency of use. Provide factory-sized closers, adjustable to meet field conditions and requirements for opening force.

1. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:

a. Best.
b. LCN.
c. Sargent.

2.12 MECHANICAL STOPS AND HOLDERS

A. Wall Stops: BHMA A156.16; brushed chrome plated.

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. ABH
b. Rockwood
c. Trimco

2.13 DOOR GASKETING

A. Door Gasketing: BHMA A156.22; air leakage not to exceed 0.50 cfm per foot of crack length for gasketing other than for smoke control, as tested according to ASTM E 283; with resilient or flexible seal strips that are easily replaceable and readily available from stocks maintained by manufacturer.

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. National Guard Products.
    b. Pemko.
    c. Reese.
    d. Zero.

2.14 METAL PROTECTIVE TRIM UNITS

A. Metal Protective Trim Units: BHMA A156.6; fabricated from 0.050-inch-thick stainless steel with manufacturer's standard machine or self-tapping screw fasteners.

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. ABH
    b. Rockwood
    c. Trimco.

2.15 AUXILIARY DOOR HARDWARE

A. Auxiliary Hardware: BHMA A156.16.

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. ABH
    b. Best
    c. Trimco

2.16 FABRICATION

A. Manufacturer's Nameplate: Do not provide products that have manufacturer's name or trade name displayed in a visible location except in conjunction with required fire-rated labels and as otherwise approved by Architect.

1. Manufacturer's identification is permitted on rim of lock cylinders only.

B. Base Metals: Produce door hardware units of base metal indicated, fabricated by forming method indicated, using manufacturer's standard metal alloy, composition, temper, and hardness. Furnish metals of a quality equal to or greater than that of specified door hardware units and BHMA A156.18.

C. Fasteners: Provide door hardware manufactured to comply with published templates prepared for machine, wood, and sheet metal screws. Provide screws that comply with commercially recognized industry standards for application intended, except aluminum fasteners are not permitted. Provide Phillips flat-head screws with finished heads to match surface of door hardware, unless otherwise indicated.

1. Concealed Fasteners: For door hardware units that are exposed when door is closed, except for units already specified with concealed fasteners. Do not use through bolts for installation where bolt head or nut on opposite face is exposed unless it is the only means of securely attaching the door hardware. Where through bolts are used on hollow door and frame construction, provide sleeves for each through bolt.
2. Fire-Rated Applications:

   a. Wood or Machine Screws: For the following:

      1) Hinges mortised to doors or frames; use threaded-to-the-head wood screws for wood doors.
      2) Strike plates to frames.
      3) Closers to doors and frames.

   b. Steel Through Bolts: For the following unless door blocking is provided:

      1) Surface hinges to doors.
      2) Closers to doors and frames.
      3) Surface-mounted exit devices.

3. Spacers or Sex Bolts: For through bolting of hollow-metal doors.

4. Fasteners for Wood Doors: Comply with requirements in DHI WDHS.2, "Recommended Fasteners for Wood Doors."

5. Gasketing Fasteners: Provide noncorrosive fasteners for exterior applications and elsewhere as indicated.

2.17 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.

B. Examine roughing-in for electrical power systems to verify actual locations of wiring connections before electrified door hardware installation.

C. Proceed with installation only after unsatisfactory conditions have been corrected.

D. Beginning installation constitutes Contractor’s acceptance of substrates and conditions.

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.

B. Wood Doors: Comply with DHI WDHS.5 "Recommended Hardware Reinforcement Locations for Mineral Core Wood Flush Doors."

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. Custom Steel Doors and Frames: HMMA 831.
2. Wood Doors: DHI WDHS.3, "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 specified in Division 09 Sections. Do not install surface-mounted items until finishes have been completed on substrates involved.

1. Set units level, plumb, and true to line and location. Adjust and reinforce attachment substrates as necessary for proper installation and operation.
2. Drill and countersink units that are not factory prepared for anchorage fasteners. Space fasteners and anchors according to industry standards.

C. Hinges: Install types and in quantities indicated in door hardware schedule but not fewer than the number recommended by manufacturer for application indicated or one hinge for every 30 inches of door height, whichever is more stringent.

D. Lock Cylinders: Install construction cores to secure building and areas during construction period.

1. Replace construction cores with permanent cores as indicated in keying schedule.

E. Key Control: Tag keys as determined by final keying schedule.

F. Stops: Provide wall stops for doors unless other type stops are indicated in door hardware schedule.

G. Perimeter Gasketing: Apply to head and jamb, forming seal between door and frame.

H. Meeting Stile Gasketing: Fasten to meeting stiles, forming seal when doors are closed.

I. Door Bottoms: Apply to bottom of door, forming seal with threshold when door is closed.

3.4 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. Electric Strikes: Adjust horizontal and vertical alignment of keeper to properly engage lock bolt.
2. Door Closers: Adjust sweep period to comply with accessibility requirements and requirements of authorities having jurisdiction.

B. Occupancy Adjustment: Approximately six 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.

3.5 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.

3.6 DEMONSTRATION

A. Engage a factory-authorized service representative to train Owner's maintenance personnel to adjust, operate, and maintain door hardware and door hardware finishes. Refer to Division 01 Section "Demonstration and Training."

3.7 DOOR HARDWARE SCHEDULE

A. Hardware items are referenced in the following hardware. Refer to the above specifications for special features, options, cylinders/keying, and other requirements.

B. Hardware Sets:

Set #1

Doors: 121/1, 122/1, 141/1, 142/1

3	Butt Hinge	CB1900R 4.5" x 4.5"	652	BE
1	Lockset	45H-7T14H PATD	630AM	BE
1	Door Closer	QDC111 DA	689	BE
1	Overhead Stop	N 4020	630	AB
1	Kick Plate	K0050 8"	630	TR
1	Gasketing	2525 B		NA

Set #2

Doors: 121/2, 122/2, 123D/1, 136.2/1, 136.3/1

3	Butt Hinge	CB1900R 4.5" x 4.5"	652	BE
1	Lockset	45H-7T14H PATD	630AM	BE
1	Door Closer	QDC113 DA	689	BE
1	Kick Plate	K0050 8"	630	TR
1	Gasketing	2525 B		NA

Set #3

Doors: 122B/1

3	Butt Hinge	CB1900R 4.5" x 4.5"	652	BE
1	Semi-Auto Flushbolt	3820 X 3810	630	TR
1	Dust Proof Strike	3911	630	TR
1	Keypad Lock	45HZ-7DV14KP PATD	626AM	BE
1	Coordinator	3090 SERIES X FILLER X BRACKETS	600	TR
1	Door Closer	QDC113	689	BE
1	Kick Plate	K0050 8"	630	TR
1	Gasketing	2525 B		NA

Set #4

Doors: 123A/1

6	Butt Hinge	CB1900R 4.5" x 4.5"	652	BE
1	Semi-Auto Flushbolt	3820 X 3810	630	TR
1	Dust Proof Strike	3911	630	TR
1	Lockset	45H-7T14H PATD	630AM	BE
1	Coordinator	3090 SERIES X FILLER	600	TR
2	Door Closer	QDC111 DA	689	BE
1	Overhead Stop	N 4020	630	AB
2	Kick Plate	K0050 8"	630	TR
1	Wall Bumper	1270CVSV	626	TR
1	Gasketing	2525 B		NA

NOTE: Astragal by door manufacturer.

Set #5

Doors: 123B/2, 123B/1, 136.8/1, 141/2

1	Padlock	41B-722T PATD M1	606	BE

Set #6

Doors: 123.1/1, 123.1/2, 123D/3, 136.3/2, 197/2

3	Butt Hinge	CB1900R 4.5" x 4.5"	652	BE
1	Lockset	45H-7T14H PATD	630AM	BE
1	Closer	QDC1111	689	BE
1	Wall Bumper	1270CVSV	626	TR
1	Gasketing	2525 B		NA
1	Coat Hook	AM801	630	AB

Set #7

Doors: 123.4/1, 184.4/1

3	Butt Hinge	CB1900R 4.5" x 4.5"	652	BE
1	Lockset	45H-7R14H PATD	630AM	BE
1	Door Closer	QDC111 DA	689	BE
1	Kick Plate	K0050 8"	630	TR
1	Wall Bumper	1270CVSV	626	TR
1	Gasketing	2525 B		NA

Set #8

Doors: 123D/2, 123.2/1

6	Butt Hinge	CB1900R 4.5" x 4.5"	652	BE
1	Semi-Auto Flushbolt	3820 X 3810	630	TR
1	Dust Proof Strike	3911	630	TR
1	Lockset	45H-7T14H PATD	630AM	BE
1	Coordinator	3090 SERIES X FILLER X BRACKETS	600	TR
2	Door Closer	QDC113	689	BE
2	Kick Plate	K0050 8"	630	TR
1	Gasketing	2525 B		NA

Set #9

Doors: 123.2/2, 143/1, 197/1

3	Butt Hinge	CB1900R 4.5" x 4.5"	652	BE
1	Lockset	45H-7T14H PATD	630AM	BE
1	Door Closer	QDC111 DA	689	BE
1	Kick Plate	K0050 8"	630	TR
1	Wall Bumper	1270CVSV	626	TR
1	Gasketing	2525 B		

Set #10

Doors: 142/2

3	Butt Hinge	CB1900R 4.5" x 4.5"	652	BE
1	Lockset	45H-7T14H PATD	630AM	BE
1	Overhead Stop	N 4020	630	AB
1	Gasketing	2525 B		NA

Set #11 - Exterior

Doors: 118/2, 123.99/1

2	Continuous Hinge	662HD	628	BE
1	Removable Mullion	KR822	689	PR
2	Exit Device	2103 CD	630AM	PR
3	Rim Cylinder	12E-72 PATD	626	BE
2	Mortise Cylinder	1E-74 PATD	626	BE
2	Flush Pull	1111C	630AM	TR
2	Door Closer	QDC114	689	BE
1	Lockdown Hardware	LDH100-PHI	RPC	TR
2	Door Sweep	C627 A		NA
2	Weatherstrip	700 ES		NA
1	Threshold	896 S 72"	AL	NA

Set #12

Doors: 118/1, **136/1, 136/2, 136/3, 136/4, 136/5, 195/3**

2	Continuous Hinge	662HD	628	BE
1	Removable Mullion	FLKR822	689	PR
2	Exit Device	FL 2110VI X 4908D	630AM	PR
3	Rim Cylinder	12E-72 PATD	626	BE
2	Door Closer	QDC111 EDA	689	BE
2	Kick Plate	K0050 8"	630	TR
2	Gasketing	2525 B		NA

Note: Provide 2100 RS wall magnet and EDA closer arm at hold open doors as indicated on door schedule. Typical.

Set #13

Doors: 184.3/1, 195.2/1, 195.3/1

3	Butt Hinge	CB1900R 4.5" x 4.5"	652	BE
1	Privacy Set	45H-0L14H	630AM	BE
1	Door Closer	QDC111	689	BE
1	Kick Plate	K0050 8"	630	TR
1	Mop Plate	KM050 4"	630	TR
1	Wall Bumper	1270CVSV	626	TR
1	Gasketing	2525 B		NA

Set #14

Doors: 181.1/1, 181/1

3	Butt Hinge	CB1900R 4.5" x 4.5"	652	BE
1	Privacy Set	45H-0L14H	630AM	BE
1	Door Closer	QDC111	689	BE
1	Kick Plate	K0050 8"	630	TR
1	Mop Plate	KM050 8"	630	TR
1	Wall Bumper	1270CVSV	626	TR
1	Gasketing	2525 B		NA

Set #15

Doors: **182.1/1**, **182.1/2**, **183.2/1**, **184.2/1, 195/2,** 266/1, 266/2

1	Continuous Hinge	662HD	628	BE
1	Exit Device	FL 2308 X M4908D	630AM	PR
1	Mortise Cylinder	1E-74 PATD	626	BE
1	Door Closer	QDC113	689	BE
1	Kick Plate	K0050 8"	630	TR
1	Gasketing	2525 B		NA

Note: Provide 2100 RS wall magnet and EDA closer arm at hold open doors as indicated on door schedule. Typical.

Set #16

Doors: 136.5/1, 266/3

6	Butt Hinge	CB1900R 4.5" x 4.5"	652	BE
1	Semi-Auto Flushbolt	3820 X 3810	630	TR
1	Dust Proof Strike	3911	630	TR
1	Lockset	45H-7R14H PATD	630AM	BE
2	Door Closer	QDC113	689	BE
1	Gasketing	2525 B		NA

NOTE: Astragal by door manufacturer.

Set #17

Doors: 182/1, **183/1**

3	Butt Hinge	CB1900R 4.5" x 4.5"	652	BE
1	Lockset	45H-7R14H PATD	630AM	BE
1	Door Closer	QDC113	689	BE
1	Kick Plate	K0050 8"	630	TR
1	Mop Plate	KM050 8"	630	TR
1	Wall Bumper	1270CVSV	626	TR
1	Gasketing	2525 B		NA

Note: Provide 2100 RS wall magnet and EDA closer arm at hold open doors as indicated on door schedule. Typical.

Set #18 – Always Locked

Doors: 181.2/1, 248/1

3	Butt Hinge	CB1900R 4.5" x 4.5"	652	BE
1	Lockset	45H-7D14H PATD	630AM	BE
1	Door Closer	QDC111	689	BE
1	Kick Plate	K0050 8"	630	TR
1	Wall Bumper	1270CVSV	626	TR
1	Gasketing	2525 B		NA

Set #19

Doors: **183.1/1**, **184.1/1, 184/1**

1	Continuous Hinge	662HD	628	BE
1	Push/Pull Classroom Set	J 6656 AM	630AM	AB
1	Mortise Cylinder	1E-74 PATD	626	BE
1	Door Closer	QDC114	689	BE
1	Kick Plate	K0050 8"	630	TR
1	Mop Plate	KM050 8"	630	TR
3	Silencer	1229A	GREY	TR

Note: Provide 2100 RS wall magnet and EDA closer arm at hold open doors as indicated on door schedule. Typical.

Set #20

Doors: 134.1/1, 136.4/1

2	Continuous Hinge	662HD	628	BE
1	Coordinator	3090 SERIES X FILLER	600	TR
1	Semi-Auto Flushbolt	3820 X 3810	630	TR
1	Dust Proof Strike	3911	630	TR
1	Push/Pull Classroom Set	6656 AM	630AM	AB
1	Mortise Cylinder	1E-74 PATD	626	BE
2	Door Closer	QDC111	689	BE
2	Kick Plate	K0050 8"	630	TR
1	Gasketing	2525 B		NA

NOTE: Astragal by door manufacturer.

Set #21

Doors: 195.4/1

2	Continuous Hinge	662HD	628	BE
1	Push/Pull Classroom Set	J 6656 AM	630AM	AB
1	Mortise Cylinder	1E-74 PATD	626	BE
1	Door Closer	QDC113 DA	689	BE
1	Kick Plate	K0050 8"	630	TR
1	Gasketing	2525 B		NA

Set #22 - Electrical (Outward Swinging)

Doors: 136.1/1

3	Butt Hinge	CB1900R 4.5" x 4.5"	652	BE
1	Exit Device	FL 2108 X 4908D	630AM	PR
1	Rim Cylinder	12E-72 PATD	626	BE
1	Door Closer	QDC113	689	BE
1	Kick Plate	K0050 8"	630	TR
1	Gasketing	2525 B		NA

Set #23

Doors: 140/1

1	Continuous Hinge	662HD	628	BE
1	Push/Pull Classroom Set	J 6656 AM	630AM	AB
1	Mortise Cylinder	1E-74 PATD	626	BE
1	Door Closer	QDC111 DA	689	BE
1	Kick Plate	K0050 8"	630	TR
1	Wall Bumper	1270CVSV	626	TR
1	Gasketing	2525 B		NA

Set #24

Doors: 140/2

3	Butt Hinge	CB1900R 4.5" x 4.5"	652	BE
1	Lockset	45H-7R14H PATD	630AM	BE
1	Closer	QDC111	689	BE
1	Kick Plate	K0050 8”	630	TR
1	Wall Bumper	1270CVSV	626	TR
1	Gasketing	2525 B		NA

Set #25

Doors: 141/3, 143/2, 205/1

3	Butt Hinge	CB1900R 4.5" x 4.5"	652	BE
1	Lockset	45H-7T14H PATD	630AM	BE
1	Wall Bumper	1270CVSV	626	TR
3	Silencer	1229A	GREY	TR

Set #26 - Existing

Doors: 250/1

3	Butt Hinge	CB1900R 4.5" x 4.5"	652	BE
1	Lockset	45H-7R14H PATD	630AM	BE
1	Door Closer	QDC111	689	BE
1	Gasketing	2525 B		NA

NOTE: Supplier to field confirm existing preps and conditions.

Set #27 - Roof

Doors: 300/1, 300/2

2	Continuous Hinge	662HD	628	BE
1	Semi-Auto Flushbolt	3820 X 3810	630	TR
1	Dust Proof Strike	3911	630	TR
1	Exit Device	2308 X M4908D	630AM	PR
1	Mortise Cylinder	1E-74 PATD	626	BE
2	Door Closer	QDC114	689	BE
2	Door Sweep	C627 A		NA
1	Weatherstrip	700 ES		NA
1	Astragal	158 SA		NA
1	Bulkhead Threshold	AS REQUIRED BY ROOF FLASHING DETAIL	628	NA

Set #28

Doors: 135.6/1

6	Butt Hinge	CB1900R 4.5" x 4.5"	652	BE
1	Semi-Auto Flushbolt	3820 X 3810	630	TR
1	Dust Proof Strike	3911	630	TR
1	Lockset	45H-7D14H PATD	630AM	BE
2	Door Closer	QDC113	689	BE
1	Gasketing	2525 B		NA

NOTE: Astragal by door manufacturer.

Set #29

Doors: 123A/2, 123C/1

3	Butt Hinge	CB1900R 4.5" x 4.5"	652	BE
1	Lockset	45H-7T14H PATD	630AM	BE
1	Wall Bumper	1270CVSV	626	TR
1	Gasketing	2525 B		NA
1	Auto Door Bottom	4447		NA

END OF SECTION 08 71 00

SECTION 08 80 00 - GLAZING

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. Glass products.
2. Laminated glass.
3. Fire-protection-rated glazing.
4. Fire-resistance-rated glazing.
5. Insulating glass.
6. Insulated spandrel panels.

1.3 DEFINITIONS

A. Fire-Protection-Rated Glazing: Glazing in rated doors and openings up to 45 minutes (with certain exceptions), limited in size, and not capable of blocking radiant heat.

B. Fire-Resistance-Rated Glazing: Glazing that prevents spread of fire and smoke and radiant heat; used in rated wall and door applications 60 minutes and above without size limitations (generally to maximum size tested).

C. Glazing Manufacturers: Firms that produce primary glazing, fabricated glazing, or both, as defined in referenced glazing publications.

D. Glass Thicknesses: Indicated by thickness designations in millimeters in accordance with ASTM C1036.

E. IBC: International Building Code.

F. Interspace: Space between lites of an insulating-glass unit.

G. SHGC: Solar Heat Gain Coefficient.

1.4 COORDINATION

A. Coordinate glazing channel dimensions to provide necessary bite on glazing, minimum edge and face clearances, and adequate sealant thicknesses, with reasonable tolerances to achieve proper safety margins for glazing retention under each design load case, load case combination, and service condition.

1. Coordinate framing types to provide proper framing fire rating.
2. Coordinate framing types to provide proper framing forced-entry-resistance rating.
3. Coordinate framing types to provide proper framing bullet-resistance rating.

1.5 PREINSTALLATION MEETINGS

A. Preinstallation Conference: Conduct conference at Project site.

1. Review and finalize construction schedule and verify availability of materials, Installer's personnel, equipment, and facilities needed to make progress.
2. Review, discuss, and coordinate the interrelationship of glazing with other components, including framing.
3. Review temporary protection requirements for glazing during and after installation.

1.6 SUBMITTALS, GENERAL

A. General: Submit all action submittals and informational submittals required by this Section and by Division 08 Sections “Hollow Metal Doors and Frames,” “Fire-Rated Glazed Opening Assemblies,” “Aluminum-Framed Entrances and Storefronts,” and “Glazed Aluminum Curtain Walls,” concurrently.

1.7 ACTION SUBMITTALS

A. Product Data: For each type of product indicated.

1. Laminated glass.
2. Insulating glass.
3. Insulated spandrel panels.

B. As-Specified Data: If the product to be incorporated in the Work is as specified by manufacturer name and product designation in this Specification Section, submit the “**As-Specified Verification Form**” (attached to Division 01 Section “Submittal Procedures”) for each item listed below; otherwise submit full Product Data for the following:

1. Glass products.
2. Fire-protection-rated glazing.
3. Fire-resistance-rated glazing.

C. Sustainable Design Submittals:

1. Product Data: For sealants, indicating VOC content.

D. Samples: For each type of the following products; 12 inches square.

1. Laminated glass.
2. Fire-protection-rated glazing.
3. Fire-resistance-rated glazing.
4. Insulating glass.
5. Insulated spandrel panels.

E. Glazing Schedule: List glazing types and thicknesses for each size opening and location. Use same designations indicated on Drawings.

F. Delegated Design Submittal: For glazing indicated to comply with performance requirements and design criteria, including analysis data signed and sealed by qualified professional engineer responsible for their preparation.

G. Sample Warranties: For special warranties.

1.8 CLOSEOUT SUBMITTALS

A. Maintenance Data: For glazing to include in maintenance manuals.
B. Warranties: Executed special warranties.

1.9 DELIVERY, STORAGE, AND HANDLING

A. Protect glazing materials in accordance with manufacturer's written instructions. Prevent damage to glass and glazing materials from condensation, temperature changes, direct exposure to sun, or other causes.

B. Maintain protective coverings on glazing to avoid exposures to abrasive substances, excessive heat, and other sources of possible deterioration.

1.10 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.

1.11 WARRANTY

A. Manufacturer's Special Warranty for Coated-Glass Products: Manufacturer or manufacturer/fabricator, as applicable, 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 Laminated Glass: Manufacturer or manufacturer/fabricator, as applicable, agrees to replace laminated-glass units that deteriorate within specified warranty period. Deterioration of laminated glass is defined as defects developed from normal use that are not attributed to glass breakage or to maintaining and cleaning laminated glass contrary to manufacturer's written instructions. Defects include edge separation, delamination materially obstructing vision through glass, and blemishes exceeding those allowed by referenced laminated-glass standard. “Laminated Glass”, as used in this paragraph, includes clear laminated glass, fire-protection-rated laminated ceramic glass, fire-protection-rated laminated glass with intumescent interlayer, and fire-resistance-rated laminated glass with intumescent interlayer.

1. Warranty Period: 5 years from date of Substantial Completion.

C. Manufacturer's Special Warranty on Tempered Glazing Units with Clear Intumescent Interlayer: Manufacturer or manufacturer/fabricator, as applicable, agrees to replace units that deteriorate within specified warranty period. Deterioration of tempered glazing units with clear intumescent interlayer is defined as failure of hermetic seal under normal use that is not attributed to glass breakage or to maintaining and cleaning glass contrary to manufacturer's written instructions. Evidence of failure is air bubbles within units, or obstruction of vision by contamination or deterioration of intumescent interlayer.

1. Warranty Period: 5 years from date of Substantial Completion.

D. Manufacturer's Special Warranty for Insulating Glass: Manufacturer or manufacturer/fabricator, as applicable, 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 obstruction of vision by dust, moisture, or film on interior surfaces of glass.

1. Where laminated glass is used as a component in an insulating-glass unit, deterioration of the laminated glass itself is covered by the paragraph “Manufacturer’s Special Warranty for Laminated Glass” above, and deterioration of the insulating glass due to failure of hermetic seal is covered by this paragraph “Manufacturer’s Special Warranty for Insulating Glass.”

2. Warranty Period: 10 years from date of Substantial Completion.

E. Manufacturer’s Special Warranty for Aluminum-Faced Insulated Spandrel Panels: Manufacturer agrees to replace insulated spandrel panels that deteriorate within specified warranty period.

1. Deterioration includes, but is not limited to, the following:

   a. Delamination of components or other failures of bond.
   b. Warping of components.

2. Warranty Period: 25 years from date of Substantial Completion.

F. Manufacturer’s Special Finish Warranty for Insulated Spandrel Panels: Manufacturer agrees to restore finishes or replace insulated spandrel panels that deteriorate within specified warranty period.

1. Deterioration includes, but is not limited to, the following:

a. Color fading more than 5 Delta E units when tested according to ASTM D2244.
b. Chalking in excess of a No. 8 rating when tested according to 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 MANUFACTURERS

A. Source Limitations for Glazing: For each glazing type, obtain from single manufacturer.
B. Source Limitations for Glazing Accessories: For each product and installation method, obtain from single manufacturer.

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 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. Delegated Design: Engage a qualified professional engineer, as defined in Division 01 Section "Quality Requirements," to design glazing.

C. Structural Performance: Glazing shall withstand the following design loads within limits and under conditions indicated determined in accordance with the IBC and ASTM E1300:

1. Wind Loads: As indicated on Drawings.

D. Safety Glazing: Where safety glazing is indicated, provide glazing that complies with 16 CFR 1201, Category II.

E. Thermal and Optical Performance Properties: Provide glazing with performance properties specified, as indicated in manufacturer's published test data, based on procedures indicated below:

1. For monolithic-glass lites, properties are based on units with lites 6 mm thick.

2. For laminated-glass lites, properties are based on products of construction indicated.

3. For insulating-glass units, properties are based on units of thickness indicated for overall unit and for each lite.

4. U-Factors: Center-of-glazing values, in accordance with NFRC 100 and based on most current non-beta version of LBL's WINDOW computer program, expressed as Btu/sq. ft. x h x deg F.

5. SHGC and Visible Transmittance: Center-of-glazing values, in accordance with NFRC 200 and based on most current non-beta version of LBL's WINDOW computer program.

2.3 GLAZING PRODUCTS, GENERAL

A. Glazing Publications: Comply with published recommendations of glazing 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. NGA Publications: "Glazing Manual."
2. FGIA Publication for Insulating Glass: IGMA 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 glazing, thickness, and safety glazing standard with which glazing complies.

C. Fire-Protection-Rated Glazing Labeling: Permanently mark fire-protection-rated glazing with certification label of a testing agency acceptable to authorities having jurisdiction. Label shall indicate manufacturer's name; test standard; whether glazing is permitted to be used in doors or openings; if permitted in openings, whether glazing has passed hose-stream test; whether glazing meets 450 deg F temperature-rise limitation; and fire-resistance rating in minutes.

D. Fire-Resistance-Rated Glazing Labeling: Permanently mark fire-resistance-rated glazing with certification label of a testing agency acceptable to authorities having jurisdiction. Label shall indicate manufacturer's name, test standard, that glazing is approved for use in walls, and fire-resistance rating in minutes.

E. Insulating-Glass Certification Program: Permanently marked either on spacers or on at least one component lite of units with appropriate certification label of the IGCC.

F. Thickness: Where glazing thickness is indicated, it is a minimum. Provide glazing that complies with performance requirements and is not less than thickness indicated.

1. Minimum Glass Thickness for Exterior Lites: 6 mm.
2. Thickness of Tinted Glass: Provide same thickness for each tint color indicated throughout Project.

G. Strength: Where heat-strengthened float glass is indicated, provide heat-strengthened float glass as needed to comply with "Performance Requirements" Article. Where fully tempered float glass is indicated, provide fully tempered float glass.

2.4 GLASS PRODUCTS

A. Clear Annealed Float Glass: ASTM C1036, Type I, Class 1 (clear), Quality-Q3.

B. Fully Tempered Float Glass: ASTM C1048, Kind FT (fully tempered), Condition A (uncoated) unless otherwise indicated, Type I, Class 1 (clear) or Class 2 (tinted) as indicated, Quality-Q3.

1. Fabrication Process: By horizontal (roller-hearth) process with roll-wave distortion horizontally parallel to bottom edge of glass as installed unless otherwise indicated.

2. Clear Glass:

a. Type **FC**: Fully tempered clear float glass.

1) Products: Subject to compliance with requirements, available products that may be incorporated in the Work, include, but are not limited to:

a) AGC Glass Company North America, Inc.; Clear Float.
b) Guardian Glass, LLC; Clear Float.
c) Vitro Architectural Glass; Clear.

2) Minimum Thickness: 6 mm.

3) Safety glazing required.

b. Type **FCE**: Fully tempered clear float glass with low-e coating, ASTM C1376.

1) Products: Subject to compliance with requirements, available products that may be incorporated in the Work, include, but are not limited to:

a) AGC Glass Company North America, Inc.; Energy Select 28.
b) Guardian Glass, LLC; SunGuard SNX 62/27 on Clear Float.
c) Vitro Architectural Glass; Solarban 70.

2) Minimum Thickness: 6 mm.

3) Safety glazing required.

C. Heat-Strengthened Float Glass: ASTM C1048, Kind HS (heat strengthened), Type I, Condition A (uncoated) unless otherwise indicated, Type I, Class 1 (clear), Quality-Q3.

1. Fabrication Process: By horizontal (roller-hearth) process with roll-wave distortion horizontally parallel to bottom edge of glass as installed unless otherwise indicated.

2.5 LAMINATED GLASS

A. Laminated Glass: ASTM C1172. 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 0.060 inch and as needed to comply with requirements.

3. Interlayer Color: Clear.

4. Appearance: Provide laminated glass without haze and with visual clarity and transparency indistinguishable from clear fully tempered float glass.

5. Type **HCL**: Clear laminated glass (two plies of clear heat-strengthened float glass laminated).

   a. Minimum Thickness of Each Ply: 4 mm.
   b. Safety glazing required.

2.6 FIRE-PROTECTION-RATED GLAZING

A. Fire-Protection-Rated Glazing: Listed and labeled by a testing agency acceptable to authorities having jurisdiction, for fire-protection ratings indicated, based on positive-pressure testing according to NFPA 257 or UL 9, including hose-stream test, and shall comply with NFPA 80.

B. Appearance: Provide fire-protection-rated glazing without haze and with visual clarity and transparency indistinguishable from clear fully tempered float glass.

C. Fire-Protection-Rated Laminated Ceramic Glazing: Laminated glass made from two plies of clear, ceramic glass; complying with 16 CFR 1201, Category II.

   1. Type **FPC**: Fire-protection-rated laminated ceramic glazing.

      a. Products: Subject to compliance with requirements, available products that may be incorporated in the Work include, but are not limited to:

         1) Safti First Fire Rated Glazing Solutions; SuperClear 45-HS and SuperLite X-60.
         2) Technical Glass Products; FireLite Plus.

      b. Rating: 20 minutes 45 minutes.

      c. Thickness: 8-9 mm.

      d. Safety glazing required.

D. Fire-Protection-Rated Laminated Glass with Intumescent Interlayer: Laminated glass made from multiple plies of uncoated, ultraclear (low-iron) float glass; with intumescent interlayers; complying with 16 CFR 1201, Category II.

   1. Type **FPI**: Fire-protection-rated laminated glass with intumescent interlayer.

      a. Products: Subject to compliance with requirements, available products that may be incorporated in the Work include, but are not limited to:

         1) Safti First Fire Rated Glazing Solutions; SuperLite II-XL45.

2) Technical Glass Products; Pilkington Pyrostop.
3) Vetrotech Saint-Gobain; Contraflam 45.

b. Rating: 45 minutes.

c. Thickness: 16-20 mm.

d. Safety glazing required.

2.7 FIRE-RESISTANCE-RATED GLAZING

A. Fire-Resistance-Rated Glazing: Listed and labeled by a testing agency acceptable to authorities having jurisdiction, for fire-resistance ratings indicated, based on testing according to ASTM E 119 or UL 263.

B. Fire-Resistance-Rated Laminated Glass with Intumescent Interlayers: Laminated glass made from multiple plies of uncoated, ultraclear (low-iron) float glass; with intumescent interlayers; complying with 16 CFR 1201, Category II.

1. Type **FRI**: Fire-resistance-rated laminated glass with intumescent interlayer.

a. Products: Subject to compliance with requirements, available products that may be incorporated in the Work include, but are not limited to:

1) Safti First Fire Rated Glazing Solutions; SuperLite II-XL 90 120.
2) Technical Glass Products; Pilkington Pyrostop.
3) Vetrotech Saint-Gobain; Contraflam 90 120.

b. Rating: 90 minutes 120 minutes.

c. Thickness: As required for rating.

d. Safety glazing required.

C. Fire-Resistance-Rated Tempered Glazing Units with Clear Intumescent Interlayer: Glazing units made from two or more lites of uncoated, fully tempered, ultraclear (low-iron) float glass; with a perimeter edge seal enclosing a cavity filled with optically clear, intumescent polymer; complying with 16 CFR 1201, Category II.

1. Type **FRD**: Fire-resistance-rated tempered glazing units with clear intumescent interlayer.

a. Products: Subject to compliance with requirements, available products that may be incorporated in the Work include, but are not limited to:

1) Safti First Fire Rated Glazing Solutions; SuperLite II-XL 90, SuperLite II-XL 120.

b. Rating: 90 minutes and 120 minutes**.**

c. Thickness: 39 mm.

d. Safety glazing required.

2.8 INSULATING GLASS

A. Insulating-Glass Units: Factory-assembled units consisting of sealed lites of glass separated by a dehydrated interspace, qualified in accordance with ASTM E2190.

1. Sealing System: Dual seal, with manufacturer's standard primary and secondary sealants.
2. Perimeter Spacer: Manufacturer's standard spacer material and construction.
3. Desiccant: Molecular sieve or silica gel, or a blend of both.
4. Interspace Content: Argon (90 percent)/air (10 percent) mix.

B. Insulating Vision Glass:

1. Type **FCE/FC**: Low-e-coated, clear insulating glass.

a. Overall Unit Thickness: 1 inch.

b. Outdoor Lite: Fully tempered clear float glass with low-e coating, Type FCE.

c. Low-E Coating: Sputtered on second surface.

d. Interspace Content: Argon.

e. Indoor Lite: Fully tempered clear float glass, Type FC.

f. Glass Unit Performance Values:

1) Winter Nighttime U-Factor: 0.24 Btu/sq. ft. x h x deg F maximum.
2) SHGC: 0.28 maximum.
3) Visible Light Transmittance: 62 percent minimum.

C. Insulating Laminated Glass:

1. Type **FCE/HCL**: Low-e-coated, clear insulating laminated glass.

a. Overall Unit Thickness: 1 inch.

b. Outdoor Lite: Fully tempered clear float glass with low-e coating, Type FCE.

c. Low-E Coating: Sputtered on second surface.

d. Interspace Content: Argon.

e. Indoor Lite: Clear laminated glass with two plies of heat-strengthened float glass, HCL.

f. Glass Unit Performance Values:

1) Winter Nighttime U-Factor: 0.24 Btu/sq. ft. x h x deg F maximum.
2) SHGC: 0.27 maximum.
3) Visible Light Transmittance: 61 percent minimum.

2.9 INSULATED SPANDREL PANELS

A. Insulated Spandrel Panels: Laminated, rabbeted, aluminum-faced flat panels with no deviations in plane exceeding 0.8 percent of panel dimension in width or length.

1. Basis-of-Design Product: Subject to compliance with requirements, provide Mapes Industries, Inc.; Mapes-R+ 8-ply, or comparable product, including, but not limited to, products by:

   a. Nudo Products.

2. Overall Panel Thickness: 2-inch (including 1-inch glazing leg).

3. Exterior Skin: Aluminum.

   a. Thickness: 0.032-inch.
   b. Finish: High-performance organic finish.
   c. Texture: Smooth.
   d. Backing Sheet: 0.157-inch-thick, cement board.

4. Exterior Skin: Heat-strengthened clear float glass, ceramic-coated spandrel glass.

   a. Thickness: 0.25-inch.
   b. Opaque Coating Location: Second surface.
   c. Coating Color: As selected by Architect from manufacturer’s full range.

5. Glazing Leg Core: Same as thermal insulation core, with smooth aluminum skin.

6. Thermal Insulation Core: Manufacturer's standard rigid, closed-cell, polyisocyanurate board.

7. Interior Skin: Aluminum.

   a. Thickness: 0.032-inch.
   b. Finish: High-performance organic finish.
   c. Texture: Smooth.
   d. Backing Sheet: 1/2-inch-thick, gypsum board with proprietary fire-resistance-rated core.

8. Overall U-factor: 0.24 Btu/sq. ft. x h x deg F maximum.

9. Surface Burning Characteristics: Comply with ASTM E 84; testing by a qualified testing agency. Identify products with appropriate markings of applicable testing agency.

   a. Flame Spread Index: 25 or less.
   b. Smoke-Developed Index: 450 or less.

2.10 GLAZING SEALANTS

A. General:

1. Compatibility: Compatible with one another and with other materials they contact, including glazing products, seals of insulating-glass units, and glazing channel substrates, under conditions of service and application, as demonstrated by sealant manufacturer based on testing and field experience.

2. Suitability: Comply with sealant and glazing manufacturers' written instructions for selecting glazing sealants suitable for applications indicated and for conditions existing at time of installation.

3. Sealant shall have a VOC content of 250 g/L or less.

4. Colors of Exposed Glazing Sealants: As selected by Architect from manufacturer's full range of industry colors.

2.11 GLAZING TAPES

A. Back-Bedding Mastic Glazing Tapes: Preformed, butyl-based, 100 percent solids elastomeric tape; nonstaining and nonmigrating in contact with nonporous surfaces; with or without spacer rod as recommended in writing by tape and glazing manufacturers for application indicated; and complying with ASTM C1281 and AAMA 800 for products indicated below:

1. AAMA 806.3 tape, for glazing applications in which tape is subject to continuous pressure.
2. AAMA 807.3 tape, for glazing applications in which tape is not subject to continuous pressure.

B. Expanded Cellular Glazing Tapes: Closed-cell, PVC foam tapes; factory coated with adhesive on both surfaces; and complying with AAMA 800 for the following types:

1. AAMA 810.1, Type 1, for glazing applications in which tape acts as primary sealant.
2. AAMA 810.1, Type 2, for glazing applications in which tape is used in combination with a full bead of liquid sealant.

2.12 MISCELLANEOUS GLAZING MATERIALS

A. General: Provide products of material, size, and shape complying with referenced glazing standard, recommended in writing by 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:

1. Elastomeric material with Shore A durometer hardness of 85, plus or minus 5.
2. Type recommended in writing by sealant or glazing manufacturer.

D. Spacers:

1. Elastomeric blocks or continuous extrusions of hardness required by glazing manufacturer to maintain glazing lites in place for installation indicated.
2. Type recommended in writing by sealant or glazing manufacturer.

E. Edge Blocks:

1. Elastomeric material with Shore A durometer hardness per manufacturer's written instructions.
2. Type recommended in writing by sealant or glazing manufacturer.

F. Cylindrical Glazing Sealant Backing: ASTM C1330, Type O (open-cell material), of size and density to control glazing sealant depth and otherwise produce optimum glazing sealant performance.

2.13 GLAZING ACCESSORIES FOR FIRE-RATED GLAZING PRODUCTS

A. Provide glazing gaskets, glazing sealants, glazing tapes, setting blocks, spacers, edge blocks, and other glazing accessories that are compatible with glazing products and each other and are approved by testing agencies that listed and labeled fire-rated glazing products with which products are used for applications and fire ratings indicated.

B. Glazing Sealants for Fire-Rated Glazing Products: Neutral-curing silicone glazing sealant complying with ASTM C920, Type S, Grade NS, Class 50, Use NT. Comply with sealant and glass manufacturers’ written instructions for selecting glazing sealants suitable for applications indicated.

1. Colors of Exposed Glazing Sealants: As selected by Architect from manufacturer’s full range.

C. Perimeter Insulation for Fire-Rated Glazing: Product that is approved by testing agency that listed and labeled fire-rated glazing product with which it is used for application and fire rating indicated.

2.14 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 framing members and glazing components.

a. Temperature Change: 120 deg F, ambient; 180 deg F, material surfaces.

B. Grind smooth and polish exposed glass edges and corners.

2.15 ALUMINUM FINISHES

A. High-Performance Organic Finish: Two-coat fluoropolymer finish complying with AAMA 2605 and 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.

1. Color and Gloss: As selected by Architect from manufacturer's full range.

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. Minimum required bite.
5. Effective sealing between joints of framing members.

B. Proceed with installation only after unsatisfactory conditions have been corrected.

C. Beginning installation constitutes Contractor’s acceptance of substrates and conditions.

3.2 PREPARATION

A. Clean glazing channels and other framing members receiving glazing 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.

C. For fire-rated glazing units, examine glazing units to locate fire side and protected side. Label or mark units as needed so that fire side and protected side 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 glazing, sealants, gaskets, and other glazing materials, unless more stringent requirements are indicated, including those in referenced glazing publications.

B. Protect glazing edges from damage during handling and installation. Remove damaged glazing from Project site and legally dispose of off Project site. Damaged glazing includes glazing with edge damage or other imperfections that, when installed, could weaken glazing, 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 glazing manufacturer. Set blocks in thin course of compatible sealant suitable for heel bead.

E. Do not exceed edge pressures stipulated by glazing manufacturers for installing glazing lites.

F. Provide spacers for glazing lites where length plus width is larger than 50 inches.

1. Locate spacers directly opposite each other on both inside and outside faces of glazing. 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-minimum bite of spacers on glazing 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 glazing lites from moving sideways in glazing channel, as recommended in writing by glazing manufacturer and in accordance with requirements in referenced glazing publications.

H. Set glazing lites in each series with uniform pattern, draw, bow, and similar characteristics.

I. Set glazing lites with proper orientation so that coatings face exterior or interior as specified.

J. For fire-resistant glazing, set glass lites with proper orientation so that surfaces face fire side or protected side as specified.

K. Where wedge-shaped gaskets are driven into one side of channel to pressurize sealant or gasket on opposite side, provide adequate anchorage so gasket cannot walk out when installation is subjected to movement.

L. Square cut wedge-shaped gaskets at corners and install gaskets in a manner recommended by gasket manufacturer to prevent corners from pulling away; seal corner joints and butt joints with sealant recommended in writing by gasket manufacturer.

3.4 TAPE GLAZING

A. Position tapes on fixed stops so that, when compressed by glazing, their exposed edges are flush with or protrude slightly above sightline of stops.

B. Install tapes continuously, but not necessarily in one continuous length. Do not stretch tapes to make them fit opening.

C. Cover vertical framing joints by applying tapes to heads and sills first, then to jambs. Cover horizontal framing joints by applying tapes to jambs, then to heads and sills.

D. Place joints in tapes at corners of opening with adjoining lengths butted together, not lapped. Seal joints in tapes with compatible sealant approved by tape manufacturer.

E. Do not remove release paper from tape until right before each glazing unit is installed.

F. Apply heel bead of elastomeric sealant.

G. Center glazing lites in openings on setting blocks, and press firmly against tape 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.

H. Apply cap bead of elastomeric sealant over exposed edge of tape.

3.5 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 glazing 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 glazing 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 in writing by gasket manufacturer.

D. Installation with Pressure-Glazing Stops: Center glazing 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 in writing by gasket manufacturer.

E. Install gaskets so they protrude past face of glazing stops.

3.6 SEALANT GLAZING (WET)

A. Install continuous spacers, or spacers combined with cylindrical sealant backing, between glazing lites and glazing stops to maintain glazing face clearances and to prevent sealant from extruding into glazing channel and blocking weep systems until sealants cure. Secure spacers or spacers and backings in place and in position to control depth of installed sealant relative to edge clearance for optimum sealant performance.

B. Force sealants into glazing channels to eliminate voids and to ensure complete wetting or bond of sealant to glazing and channel surfaces.

C. Tool exposed surfaces of sealants to provide a substantial wash away from glazing.

3.7 CLEANING AND PROTECTION

A. Immediately after installation, remove nonpermanent labels and clean surfaces.

B. Protect glazing from contact with contaminating substances resulting from construction operations. Examine glazing 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 contact with glazing, remove substances immediately as recommended in writing by glazing manufacturer. Remove and replace glazing that cannot be cleaned without damage to coatings.

C. Remove and replace glazing that is damaged during construction period.

D. Wash glazing on both exposed surfaces not more than four days before date scheduled for inspections that establish date of Substantial Completion. Wash glazing as recommended in writing by glazing manufacturer.

END OF SECTION 08 80 00

SECTION 09 22 16 - NON-STRUCTURAL METAL FRAMING

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. Non-load-bearing steel framing systems for interior partitions.
2. Suspension systems for interior ceilings and soffits.
3. Grid suspension systems for gypsum board ceilings.

1.3 SUBMITTALS, GENERAL

A. General: Submit all action submittals and informational submittals required by this Section concurrently.

1.4 ACTION SUBMITTALS

A. Product Data: For each type of product indicated.

1. Steel studs and tracks.
2. Slip-type head joints.
3. Flat strap and backing plate.
4. Cold-rolled channel bridging.
5. Hat-shaped, rigid furring channels.
6. Cold-rolled furring channels.
7. Tie wire.
8. Hanger attachments to concrete.
9. Wire hangers.
10. Flat hangers.
11. Carrying channels (main runners).
12. Furring channels (furring members).
13. Isolation strip at exterior walls.

B. As-Specified Data: If the product to be incorporated into Project is as specified by manufacturer name and product designation in Part 2 of this Specification Section, submit the "**As-Specified Verification Form**" (attached to Division 01 Section "Submittal Procedures") for each item listed below, otherwise submit full Product Data for the following:

1. Grid suspension system for gypsum board ceilings.

1.5 INFORMATIONAL SUBMITTALS

A. Product Certificates: For each type of code-compliance certification for studs and tracks.

1.6 QUALITY ASSURANCE

A. Code-Compliance Certification of Studs and Tracks: Provide documentation that framing members are certified according to the product-certification program of the Certified Steel Stud Association or the Steel Framing Industry Association.

PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

A. Fire-Test-Response Characteristics: For fire-resistance-rated assemblies that incorporate non-load-bearing steel framing, provide materials and construction identical to those tested in assembly indicated, according to ASTM E119 by an independent testing agency.

2.2 FRAMING SYSTEMS

A. Framing Members, General: Comply with ASTM C754 for conditions indicated.

1. Steel Sheet Components: Comply with ASTM C645 requirements for steel unless otherwise indicated.
2. Protective Coating: ASTM A653/A653M, G40, hot-dip galvanized unless otherwise indicated.

B. Studs and Tracks: ASTM C645.

1. Steel Studs and Tracks:

a. Minimum Base-Steel Thickness: 0.0329 inch.
b. Depth: As indicated on Drawings.
c. Minimum Track Leg Length: 1-1/4 inches.

C. Slip-Type Head Joints: Where indicated, provide the following:

1. Deflection Track: Steel sheet top track manufactured to prevent cracking of finishes applied to interior partition framing resulting from deflection of structure above; with minimum track leg length of 2-1/2 inches; in thickness not less than indicated for studs and in width to accommodate depth of studs.

D. Flat Strap and Backing Plate: Steel sheet for blocking and bracing in length and width indicated.

1. Minimum Base-Steel Thickness: 0.0538 inch.

E. Cold-Rolled Channel Bridging: Steel, 0.0538-inch minimum base-steel thickness, with minimum 1/2-inch-wide flanges.

1. Depth: 1-1/2 inches.
2. Clip Angle: Not less than 1-1/2 by 1-1/2 inches, 0.068-inch-thick, galvanized steel.

F. Hat-Shaped, Rigid Furring Channels: ASTM C645.

1. Minimum Base-Steel Thickness: 0.0329 inch.
2. Depth: 7/8 inch.

2.3 SUSPENSION SYSTEMS

A. Tie Wire: ASTM A641/A641M, Class 1 zinc coating, soft temper, 0.062-inch-diameter wire, or double strand of 0.048-inch-diameter wire.

B. Hanger Attachments to Concrete:

1. Post-Installed Anchors: Fastener systems with an evaluation report acceptable to authorities having jurisdiction, based on ICC-ES AC58 or AC308 as appropriate for the substrate.

a. Uses: Securing hangers to structure.
b. Type: torque-controlled, adhesive anchor or adhesive anchor.
c. Material for Interior Locations: Carbon-steel components zinc-plated to comply with ASTM B633 or ASTM F1941, Class Fe/Zn 5, unless otherwise indicated.

2. Power-Actuated Anchors: Fastener systems with an evaluation report acceptable to authorities having jurisdiction, based on ICC-ES AC70.

C. Wire Hangers: ASTM A641/A641M, Class 1 zinc coating, soft temper, 0.16 inch in diameter.

D. Flat Hangers: Steel sheet, 1 by 3/16 inch by length indicated.

E. Carrying Channels (Main Runners): Cold-rolled, commercial-steel sheet with a base-steel thickness of 0.0538 inch and minimum 1/2-inch-wide flanges.

1. Depth: As indicated on Drawings.

F. Furring Channels (Furring Members):

1. Hat-Shaped, Rigid Furring Channels: ASTM C645, 7/8 inch deep.

a. Minimum Base-Steel Thickness: 0.0329 inch.

G. Grid Suspension System for Gypsum Board Ceilings: ASTM C645, direct-hung system composed of main beams and cross-furring members that interlock.

1. Products: Subject to compliance with requirements, available products that may be incorporated into the Work include, but are not limited to, the following:

a. Armstrong World Industries, Inc.; Drywall Grid System.
b. CertainTeed Ceilings; 1-1/2" Drywall System.
c. USG Corporation; Drywall Suspension System.

2.4 AUXILIARY MATERIALS

A. General: Provide auxiliary materials that comply with referenced installation standards.

1. Fasteners for Steel Framing: Of type, material, size, corrosion resistance, holding power, and other properties required to fasten steel members to substrates.

B. Isolation Strip at Exterior Walls: Provide the following:

1. Foam Gasket: Adhesive-backed, closed-cell vinyl foam strips that allow fastener penetration without foam displacement, 1/8 inch thick, in width to suit steel stud size.

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.

C. Beginning installation constitutes Contractor's acceptance of substrates and conditions.

3.2 PREPARATION

A. Suspended Assemblies: Coordinate installation of suspension systems with installation of overhead structure to ensure that inserts and other provisions for anchorages to building structure have been installed to receive hangers at spacing required to support the Work and that hangers will develop their full strength.

1. Furnish concrete inserts and other devices indicated to other trades for installation in advance of time needed for coordination and construction.

3.3 INSTALLATION, GENERAL

A. Installation Standard: ASTM C754.

1. Gypsum Board Assemblies: Also comply with requirements in ASTM C840 that apply to framing installation.

B. Install framing and accessories plumb, square, and true to line, with connections securely fastened.

C. Install supplementary framing, and blocking to support fixtures, equipment services, heavy trim, grab bars, toilet accessories, furnishings, or similar construction.

D. Install bracing at terminations in assemblies.

E. Do not bridge building control and expansion joints with non-load-bearing steel framing members. Frame both sides of joints independently.

3.4 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.

1. Single-Layer Application: 16 inches o.c. unless otherwise indicated.
2. Multilayer Application: 16 inches o.c. unless otherwise indicated.
3. Tile Backing Panels: 16 inches o.c. unless otherwise indicated.

B. Where studs are installed directly against exterior masonry walls or dissimilar metals at exterior walls, install isolation strip between studs and exterior wall.

C. Install studs so flanges within framing system point in same direction.

D. Install tracks at floors and overhead supports. Extend framing full height to structural supports or substrates above suspended ceilings. Continue framing around ducts that penetrate partitions above ceiling.

1. Slip-Type Head Joints: Where framing extends to overhead structure, install to produce joints at tops of framing systems that prevent axial loading of finished assemblies.

2. Door Openings: Screw vertical studs at jambs to jamb anchor clips on door frames; install track section (for cripple studs) at head and secure to jamb studs for opening widths less than 4 feet; install two tracks and stud head member for opening widths 4 feet and wider.

   a. Install two studs at each jamb unless otherwise indicated.

   b. Install cripple studs at head adjacent to each jamb stud, with a minimum 1/2-inch clearance from jamb stud to allow for installation of control joint in finished assembly.

3. 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.

4. Fire-Resistance-Rated Partitions: Install framing to comply with fire-resistance-rated assembly indicated and support closures and to make partitions continuous from floor to underside of solid structure.

E. Direct Furring:

1. Attach to concrete or masonry with stub nails, screws designed for masonry attachment, or powder-driven fasteners spaced 24 inches o.c.

F. Installation Tolerance: Install each framing member so fastening surfaces vary not more than 1/8 inch from the plane formed by faces of adjacent framing.

3.5 INSTALLING CEILING SUSPENSION SYSTEMS

A. Install suspension system components according to spacings indicated, but not greater than spacings required by referenced installation standards for assembly types.

B. Isolate suspension systems from building structure where they abut or are penetrated by building structure to prevent transfer of loading imposed by structural movement.

C. Suspend hangers from building structure as follows:

1. Install hangers plumb and free from contact with insulation or other objects within ceiling plenum that are not part of supporting structural or suspension system.

   a. Splay hangers only where required to miss obstructions and offset resulting horizontal forces by bracing, countersplaying, or other equally effective means.

2. Where width of ducts and other construction within ceiling plenum produces hanger spacings that interfere with locations of hangers required to support standard suspension system members, install supplemental suspension members and hangers in the form of trapezes or equivalent devices.

   a. Size supplemental suspension members and hangers to support ceiling loads within performance limits established by referenced installation standards.

3. Wire Hangers: Secure by looping and wire tying, either directly to structures or to inserts, eye screws, or other devices and fasteners that are secure and appropriate for substrate, and in a manner that will not cause hangers to deteriorate or otherwise fail.

4. Flat Hangers: Secure to structure, including intermediate framing members, by attaching to inserts, eye screws, or other devices and fasteners that are secure and appropriate for structure and hanger, and in a manner that will not cause hangers to deteriorate or otherwise fail.

5. Do not attach hangers to steel roof deck.

6. Do not attach hangers to permanent metal forms. Furnish cast-in-place hanger inserts that extend through forms.

7. Do not attach hangers to rolled-in hanger tabs of composite steel floor deck.

8. Do not connect or suspend steel framing from ducts, pipes, or conduit.

D. Fire-Resistance-Rated Assemblies: Wire tie furring channels to supports.

E. Seismic Bracing: Sway-brace suspension systems with hangers used for support.

F. Grid Suspension Systems: Attach perimeter wall track or angle where grid suspension systems meet vertical surfaces. Mechanically join main beam and cross-furring members to each other and butt-cut to fit into wall track.

G. Installation Tolerances: Install suspension systems that are level to within 1/8 inch in 12 feet measured lengthwise on each member that will receive finishes and transversely between parallel members that will receive finishes.

3.6 PRE-ENCLOSURE REVIEW

A. Notify Architect prior to installing enclosing construction to allow observation of non-structural metal framing installation, including supplementary framing and blocking.

END OF SECTION 09 22 16

SECTION 09 29 00 - GYPSUM BOARD

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. Interior gypsum board.
2. Tile backing panels.

1.3 SUBMITTALS, GENERAL

A. General: Submit all action submittals required by this Section concurrently.

1.4 ACTION SUBMITTALS

A. Product Data: For each type of product.

1. Interior trim.
2. Aluminum trim.
3. Joint treatment materials.
4. Sound-attenuation blankets.

B. As-Specified Data: If the product to be incorporated into Project is a specified by manufacturer name and product designation in Part 2 of this Specification Section, submit "**As-Specified Verification Form**" (attached to Division 01 Section "Submittal Procedures") for each item listed below; otherwise submit full Product Data for the following:

1. Gypsum wallboard.
2. Gypsum board, Type X.
3. Abuse-resistant gypsum board.
4. Mold-resistant gypsum board.
5. Cementitious backer units.

1.5 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.

1.6 FIELD CONDITIONS

A. Environmental Limitations: Comply with ASTM C840 requirements or gypsum board manufacturer's written instructions, 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, 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.

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 E119 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. Gypsum Wallboard: ASTM C1396/C1396M.

1. Products: Subject to compliance with requirements, available products that may be incorporated into the Work include, but are not limited to, the following:

a. CertainTeed Gypsum, Saint-Gobain; Regular Gypsum Board.
b. National Gypsum Company; Gold Bond Brand Gypsum Board.
c. USG Corporation; Sheetrock Brand Gypsum Panels.

2. Thickness: 1/2 inch.

3. Long Edges: Tapered.

B. Gypsum Board, Type X: ASTM C1396/C1396M.

1. Products: Subject to compliance with requirements, available products that may be incorporated into the Work include, but are not limited to, the following:

a. CertainTeed Gypsum, Saint-Gobain; Type X Gypsum Board.

b. National Gypsum Company; Gold Bond Brand Fire-Shield Gypsum Board.
c. USG Corporation; Sheetrock Brand Firecode X Panels.

2. Thickness: 5/8 inch.

3. Long Edges: Tapered.

C. Abuse-Resistant Gypsum Board: ASTM C1396/C1396M gypsum board, tested according to ASTM C1629/C1629M.

1. Products: Subject to compliance with requirements, available products that may be incorporated into the Work include, but are not limited to, the following:

a. CertainTeed Gypsum, Saint-Gobain; Extreme Abuse Board.
b. National Gypsum Company; Gold Bond Brand Hi-Abuse XP Gypsum Board.
c. USG Corporation; Sheetrock Brand Mold Tough AR Firecode X Panels.

2. Core: 5/8 inch, Type X.

3. Surface Abrasion: ASTM C1629/C1629M, meets or exceeds Level 2 requirements.

4. Indentation: ASTM C1629/C1629M, meets or exceeds Level 1 requirements.

5. Soft-Body Impact: ASTM C1629/C1629M, meets or exceeds Level 2 requirements.

6. Long Edges: Tapered.

7. Mold Resistance: ASTM D3273, score of 10 as rated according to ASTM D3274.

D. Mold-Resistant Gypsum Board: ASTM C1396/C1396M. With moisture- and mold-resistant core and paper surfaces.

1. Products: Subject to compliance with requirements, available products that may be incorporated into the Work include, but are not limited to, the following:

a. CertainTeed Gypsum, Saint-Gobain; M2Tech Moisture and Mold Resistant Gypsum Board Type X.
b. National Gypsum Company; Gold Bond Brand XP Fire-Shield Gypsum Board.
c. USG Corporation; Sheetrock Brand Mold Tough Panels Firecode X.

2. Core: 5/8 inch, Type X.

3. Long Edges: Tapered.

4. Mold Resistance: ASTM D3273, score of 10 as rated according to ASTM D3274.

2.4 TILE BACKING PANELS

A. Cementitious Backer Units: ANSI A118.9 and ASTM C1288 or ASTM C1325, with manufacturer's standard edges.

1. Products: Subject to compliance with requirements, available products that may be incorporated into the Work include, but are not limited to, the following:

    a. National Gypsum Company; PermaBase Cement Board.
    b. USG Corporation; Durock Brand Cement Board with EdgeGuard.

2. Thickness: 1/2 inch.

3. Mold Resistance: ASTM D3273, score of 10 as rated according to ASTM D3274.

2.5 TRIM ACCESSORIES

A. Interior Trim: ASTM C1047.

1. Material: Galvanized or aluminum-coated steel sheet or rolled zinc.

2. Shapes:

    a. Cornerbead.
    b. LC-Bead: J-shaped; exposed long flange receives joint compound.
    c. L-Bead: L-shaped; exposed long flange receives joint compound.
    d. Expansion (control) joint.

2.6 JOINT TREATMENT MATERIALS

A. General: Comply with ASTM C475/C475M.

B. Joint Tape:

1. Interior Gypsum Board: Paper.
2. 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 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.
3. Fill Coat: For second coat, use drying-type, all-purpose compound.
4. Finish Coat: For third coat, use drying-type, all-purpose compound.
5. Skim Coat: For final coat of Level 5 finish, use drying-type, all-purpose compound.

D. Joint Compound for Tile Backing Panels:

1. Cementitious Backer Units: As recommended by backer unit manufacturer.

2.7 AUXILIARY MATERIALS

A. General: Provide auxiliary materials that comply with referenced installation standards and manufacturer's written instructions.

B. Steel Drill Screws: ASTM C1002 unless otherwise indicated.

1. Use screws complying with ASTM C954 for fastening panels to steel members from 0.033 to 0.112 inch thick.
2. For fastening cementitious backer units, use screws of type and size recommended by panel manufacturer.

C. Sound-Attenuation Blankets: ASTM C665, 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 Sealant: As specified in Division 07 Section “Joint Sealants.”

E. Thermal Insulation: As specified in Division 07 Section "Thermal Insulation."

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine areas and substrates including welded hollow-metal frames and support framing, with Installer present, for compliance with requirements and other conditions affecting performance of the Work.

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.

D. Beginning installation constitutes Contractor’s acceptance of substrates and conditions.

3.2 PRE-ENCLOSURE REVIEW

A. Notify Architect prior to applying panels to allow observation of framing installation, including supplementary framing and blocking.

3.3 APPLYING AND FINISHING PANELS, GENERAL

A. Comply with ASTM C840.

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 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. 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-wide joints to install sealant.

G. Isolate perimeter of gypsum board applied to non-load-bearing partitions at structural abutments. Provide 1/4- to 1/2-inch-wide spaces at these locations and trim edges with edge trim where edges of panels are exposed. Seal joints between edges and abutting structural surfaces with acoustical sealant.

H. Attachment to Steel Framing: Attach panels so leading edge or end of each panel is attached to open (unsupported) edges of stud flanges first.

I. Stud Partition Assemblies: Seal construction at perimeters, behind control joints, and at openings and penetrations with a continuous bead of acoustical sealant. Install acoustical sealant at both faces of partitions at perimeters and through penetrations. Comply with ASTM C919 and with manufacturer's written instructions for locating edge trim and closing off sound-flanking paths around or through assemblies, including sealing partitions above acoustical ceilings.

J. Install sound attenuation blankets before installing gypsum panels unless blankets are readily installed after panels have been installed on one side.

3.4 APPLYING INTERIOR GYPSUM BOARD

A. Install interior gypsum board in the following locations:

1. Wallboard Type: As indicated on Drawings.
2. Type X: All surfaces unless otherwise indicated.

3. Abuse-Resistant Type: As indicated on Drawings.
4. Mold-Resistant 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.
b. At stairwells and other high walls, install panels horizontally unless otherwise indicated or required by fire-resistance-rated assembly.

3. Fastening Methods: Apply gypsum panels to supports with steel drill screws.

C. Multilayer Application:

1. On partitions/walls, apply gypsum board indicated for base layers and face layers vertically (parallel to framing) with joints of base layers located over stud or furring member and face-layer joints offset at least one stud or furring member with base-layer joints unless otherwise indicated or required by fire-resistance-rated assembly. Stagger joints on opposite sides of partitions.

2. Fastening Methods: Fasten base layers and face layers separately to supports with screws.

3.5 APPLYING TILE BACKING PANELS

A. Cementitious Backer Units: ANSI A108.11, at locations indicated to receive tile.
B. Where tile backing panels abut other types of panels in same plane, shim surfaces to produce a uniform plane across panel surfaces.

3.6 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 C840 and in specific locations approved by Architect for visual effect.

C. Interior Trim: Install in the following locations:

1. Cornerbead: Use at outside corners unless otherwise indicated.
2. LC-Bead: Use at exposed panel edges.
3. L-Bead: Use where indicated.

D. Aluminum Trim: Install in locations indicated on Drawings.

3.7 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 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 C840:

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**].

E. Cementitious Backer Units: Finish according to manufacturer's written instructions.

3.8 PROTECTION

A. Protect adjacent surfaces from drywall compound and promptly remove from floors and other non-drywall surfaces. Restore 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 09 29 00

SECTION 09 30 13 – CERAMIC TILING

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. Ceramic tile.
2. Stone thresholds.
3. Waterproof membrane.
4. Waterproof shower system.
5. Metal edge strips.

1.3 DEFINITIONS

A. General: Definitions in the current ANSI A108 A118, series of tile installation standards and in the current ANSI A137.1 apply to Work of this Section unless otherwise specified.

B. ISO 13007; Standards for Ceramic Tiles, Grouts and Adhesives.

1.4 PERFORMANCE REQUIREMENTS

A. Coefficient of Friction: For tile installed on walkway surfaces, provide products with the following values as determined by testing identical products per the DCOF AcuTest in accordance with ANSI A137.1 – 2012 standard.

1. Level Surfaces: Minimum 0.42 wet.
2. Step Treads.
3. Ramp Surfaces.

1.5 SUBMITTALS, GENERAL

A. General: Submit all action submittals (except Samples for Verification) and informational submittals required by this Section concurrently.

1.6 ACTION SUBMITTALS

A. Product Data: For each type of product indicated.

1. Factory-mounted unglazed ceramic mosaic tile: CFT1.

2. Glazed wall tile: CWT1.
3. Marble thresholds.
4. Chlorinated polyethylene sheet.
5. Latex-portland cement.
6. Portland cement mortar (thickset) installation materials.
7. Latex-portland cement mortar (thin set).
8. Water-cleanable, tile-setting epoxy.
9. Polymer-modified tile grout.
10. Trowelable underlayments and patching compounds.
11. Metal edge strips.
12. Tile cleaner.
13. Grout sealer.

B. Shop Drawings: Show locations of each type of tile and tile pattern. Show widths, details, and locations of expansion, contraction, control, and isolation joints in tile substrates and finished tile surfaces.

1. Show base details.
2. Show locations of floor drains and sloped slabs.
3. Show threshold locations and types.
4. Show all divider strip locations control and expansion joints.

C. Samples for Verification and Initial Color Selection:

1. Full-size units of each type and composition of tile and for each color and finish required. For ceramic mosaic tile in color blend patterns, provide full sheets of each color blend.

2. Full-size units of each type of trim and accessory for each color and finish required.

3. Stone thresholds in 6-inch lengths.

4. Metal edge strips in 6-inch lengths.

1.7 INFORMATIONAL SUBMITTALS

A. Qualification Data: For qualified Installer.
B. Master Grade Certificates: For each shipment, type, and composition of tile, signed by tile manufacturer and Installer.
C. Product Certificates: For each type of product, signed by product manufacturer.

1.8 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.

1.9 QUALITY ASSURANCE

A. Source Limitations for Tile: Obtain tile of each type and color or finish from one 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 one manufacturer and each aggregate from one source or producer.

C. Source Limitations for Other Products: Obtain each of the following products specified in this Section from a single manufacturer for each product:

1. Stone thresholds.
2. Waterproof membrane.
3. Metal edge strips.

1.10 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 current 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.

E. Handle tile that has temporary protective coating on exposed surfaces to prevent coated surfaces from contacting backs or edges of other units. If coating does contact bonding surfaces of tile, remove coating from bonding surfaces before setting tile.

1.11 PROJECT 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 PRODUCTS, GENERAL

A. ANSI Ceramic Tile Standard: Provide tile that complies with most current ANSI A137.1 for types, compositions, and other characteristics indicated.

1. Provide tile complying with Standard grade requirements unless otherwise indicated.

B. ANSI Standards for Tile Installation Materials: Provide materials complying with most current 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. ISO 13007 Standards for Ceramic Tiles, Grouts and Adhesives: Provide materials complying with ISO 13007-1, 13007-2, 13007-3, 13007-4.

D. 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.

E. Mounting: For factory-mounted tile, provide back- or edge-mounted tile assemblies as standard with manufacturer unless otherwise indicated.

2.2 TILE PRODUCTS

A. Tile Type CFT1: Factory-Mounted Unglazed Ceramic Mosaic Tile

1. Basis-of-Design Product: Subject to compliance with requirements, provide Daltile; Division of Dal-Tile International Inc.; Keystones or comparable product by one of the following:

   a. American Olean Inc.

2. Composition: ceramic mosaic porcelain.

3. Module Size: 2 by 2 inches.

4. Thickness: 1/4 inch.

5. Face: Plain with cushion edges.

6. Surface: Smooth.

7. Tile Color and Pattern: As selected by Architect, as follows:

   a. Field Tile: Daltile Keystones, price groups 1 and 2.
   b. Accent Tile: Daltile Keystones, all price groups.

c. Provide accent tile equal to 30 percent of total tile area, with the remainder as field tile.

8. Grout Color: As selected by Architect from manufacturer's full range.

B. Tile Type CWT 1: Glazed Wall Tile

1. Basis-of-Design Product: Subject to compliance with requirements, provide Daltile; Division of Dal-Tile International Inc.; Color Wheel Matte and Semi-Gloss or comparable product by one of the following:

   a. American Olean Inc.

2. Module Size: 4 inches by 12 inches

3. Thickness: 5/16 inch.

4. Face: Plain with cushion edges.

5. Finish: Matte Semi-gloss glaze.

6. Tile Color and Pattern: As selected by Architect, as follows:

   a. Field Tile: Daltile Color Wheel Classic, price groups 1 and 2.
   b. Accent Tile: Daltile Color Wheel Classic, all price groups.
   c. Provide accent tile equal to 30 percent of total tile area, with the remainder as field tile.

7. Grout Color: As selected by Architect from manufacturer's full range.

8. 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 Portland Cement Mortar Installations: Coved, module size 4-1/4 by 4-1/4 inches 6 by 6 inches.
   b. Base for Thin-Set Mortar Installations: Straight, module size 4-1/4 by 4-1/4 inches 6 by 6 inches.
   c. Wainscot Cap for Portland Cement Mortar Installations: Bullnose cap, module size 4-1/4 by 4-1/4 inches 6 by 6 inches.
   d. Wainscot Cap for Thin-Set Mortar Installations: Surface bullnose, module size 4-1/4 by 4-1/4 inches 6 by 6 inches.
   e. Wainscot Cap for Flush Conditions: Regular flat tile for conditions where tile wainscot is shown flush with wall surface above it, same size as adjoining flat tile.
   f. External Corners for Portland Cement Mortar Installations: Bullnose shape with radius of at least 3/4 inch unless otherwise indicated.
   g. External Corners for Thin-Set Mortar Installations: Surface bullnose, same size as adjoining flat tile.
   h. Internal Corners: Field-butted square corners. For coved base and cap use angle pieces designed to fit with stretcher shapes.

C. Tile Type CWT 1: Glazed Wall Tile

1. Basis-of-Design Product: Subject to compliance with requirements, provide Daltile "Linear - color wheel collection Glazed ceramic tile;" Division of Dal-Tile International Inc.; Color Wheel Linear or comparable product by one of the following:

   a. American Olean Inc.

2. Module Size: 4 x 8 inches.

3. Thickness: 5/16 inch.

4. Face: Plain with cushion edges.

5. Finish: Matte Semi-gloss glaze.

6. Tile Color and Pattern: As selected by Architect, as follows:

   a. Field Tile: Daltile Color Wheel, Matte and Semi-Gloss, price groups 1 and 2.
   b. Accent Tile: Daltile Color Wheel Linear all price groups including price groups.
   c. Provide accent tile equal to 30 percent of total tile area, with the remainder as field tile.

7. Grout Color: As selected by Architect from manufacturer's full range.

8. 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. External Corners for Thin-Set Mortar Installations: Surface bullnose, same size as adjoining flat tile.
   b. Internal Corners: Field-butted square corners. For coved base and cap use angle pieces designed to fit with stretcher shapes.

D. General: Fabricate to sizes and profiles indicated or required to provide transition between adjacent floor finishes.

1. Bevel edges at 1:2 slope, with lower edge of bevel aligned with or up to 1/16 inch above adjacent floor surface. Finish bevel to match top surface of threshold. Limit height of threshold to 1/2 inch or less above adjacent floor surface.

E. Marble Thresholds: ASTM C 503, with a minimum abrasion resistance of 12 per ASTM C 1353 or ASTM C 241 and with honed finish.

1. Description: As selected by Architect from manufacturer's full range.

2.3 WATERPROOF MEMBRANE

A. General: Manufacturer's standard product, selected from the following, that complies with ANSI A118.10 and is recommended by the manufacturer for the application indicated. Include reinforcement and accessories recommended by manufacturer.

B. Chlorinated Polyethylene Sheet: Nonplasticized, chlorinated polyethylene faced on both sides with nonwoven polyester fabric; 0.030-inch nominal thickness.

1. Products: Subject to compliance with requirements, available product that may be incorporated into the Work includes, but is not limited to, the following:

a. Noble Company (The); Nobleseal TS.
b. Laticrete Hydro Ban Sheet Membrane

C. Cement Based Waterproofing and Crack Isolation Membrane: Flexible mortar consisting of cement-based mix and latex additive.

1. Products: Subject to compliance with requirements, available products that may be incorporated into the Work include, but are not limited to, the following:

a. Laticrete Hydro Ban Cementous Waterproof Membrane.
b. MAPEI Corporation; Mapelastic 315.
c. TEC; a subsidiary of H. B. Fuller Company; Triple Flex Waterproofing, Crack Isolation Membrane & Mortar.

D. Latex Based Waterproofing and Crack Isolation Membrane: fast setting, flexible, thin, load-bearing, waterproofing membrane system consisting of a premixed, quick-drying liquid latex, for installation under ceramic tile or complying with ANSI A118.10 and ANSI A118.12; and having IAMPO certification as a shower pan liner

1. Products: Subject to compliance with requirements, available products that may be incorporated into the Work include, but are not limited to, the following:

a. Laticrete International; Hydro ban.
b. MAPEI- Mapelastic Aquadefense.
c. Custom Building Products; Red Gard.

2.4 WATERPROOF MEMBRANE – SHOWERS

A. General: Manufacturer's standard product that complies with ANSI A118.10 and is recommended by the manufacturer for the application indicated. Include reinforcement and accessories recommended by manufacturer.

B. Polyethylene Sheet: Polyethylene faced on both sides with polypropylene fleece; 0.008-inch nominal thickness. Provide matching pipe seals and mixing valve seals. Provide matching stainless-steel drain, sized as indicated on Drawings.

1. Basis-of-Design Product: Subject to compliance with requirements, provide Schluter Systems, L.P.; Schluter-KERDI, or comparable product.

C. Seaming Membrane: Polyethylene faced on both sides with polypropylene fleece, seams and corners; 0.004-inch nominal thickness.

1. Basis-of-Design Product: Subject to compliance with requirements, provide Schluter Systems, L.P.; Schluter-KERDI-BAND, or comparable product.

D. Preformed Seamless Corners: Polyethylene faced on both sides with polypropylene fleece, seams, and corners; 0.004-inch nominal thickness.

1. Basis-of-Design Product: Subject to compliance with requirements, provide Schluter Systems, L.P.; Schluter-KERDI-KERECK-F, inside and outside corners or comparable product.

2. Basis-of-Design Product: Subject to compliance with requirements, provide Schluter Systems, L.P.; Schluter-KERDI-KER-B, 135-degree angles, or comparable product.

3. Basis-of-Design Product: Subject to compliance with requirements, provide Schluter Systems, L.P.; Schluter-KERDI-KERS, floor/wall/shower base connection in curbless shower applications, or comparable product.

4. Basis-of-Design Product: Subject to compliance with requirements, provide Schluter Systems, L.P.; Schluter-KERDI-SEAL-PS/-MV, prefabricated overmolded rubber seal gaskets, or comparable product.

2.5 ISOLATION (UNCOUPLING) MEMBRANE - FLOOR

A. General: Manufacturer's standard product that complies with ANSI A118.10 and is recommended for application indicated. Include reinforcement and accessories recommended by manufacturer.

B. Polyethylene: Polyethylene membrane with grid structure of square cavities, each cut back in a dovetail-shaped configuration and with anchoring fleece on the underside; 1/8-inch nominal thickness.

1. Basis-of-Design Product: Subject to compliance with requirements, provide Schluter Systems, L.P.; Schluter-DITRA, or comparable product.

C. Seaming Membrane: Polyethylene faced on both sides with polypropylene fleece, seams and corners; 0.004-inch nominal thickness.

1. Basis-of-Design Product: Subject to compliance with requirements, provide Schluter Systems, L.P.; Schluter-KERDI-BAND, or comparable product.

2.6 SETTING MATERIALS

A. Portland Cement Mortar (Thickset) Installation Materials: ANSI A108.02.

1. Cleavage Membrane: Asphalt felt, ASTM D 226, Type I (No. 15); or polyethylene sheeting, ASTM D 4397, 4.0 mils thick.

2. Reinforcing Wire Fabric: Galvanized, welded wire fabric, 2 by 2 inches by 0.062-inch diameter; comply with ASTM A 185 and ASTM A 82 except for minimum wire size.

3. Expanded Metal Lath: Diamond-mesh lath complying with ASTM C 847.

   a. Base Metal and Finish for Interior Applications: Uncoated or zinc-coated (galvanized) steel sheet, with uncoated steel sheet painted after fabrication into lath.

   b. Configuration over Solid Surfaces: Self furring.

   c. Weight: 2.5 lb/sq. yd.

4. Latex Additive: Manufacturer's standard acrylic resin water emulsion, serving as replacement for part or all of gaging water, of type specifically recommended by latex-additive manufacturer for use with field-mixed portland cement and aggregate mortar bed.

   a. Basis-of-Design Product: Subject to compliance with requirements, provide Laticrete International; Laticrete 3701 Mortar Admix or comparable product by one of the following:

      1) MAPEI-Planicrete AC.
      2) Laticrete 3701 Fortified Mortar Bed or 3701 Admix w/226 Thick Bed Mortar.
      3) TEC; a subsidiary of H. B. Fuller Company.
      4) Custom Building Products.

B. Latex-Portland Cement Mortar (Thin Set): ISO 13007; C2ES2P2 and ANSI A118.4

1. Basis-of-Design Product: Subject to compliance with requirements, provide Laticrete International; Laticrete 254 platinum or comparable product by one of the following:

   a. MAPEI- Ultra Flex 3.
   b. TEC; a subsidiary of H. B. Fuller Company.
   c. Custom Building Products.

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.

C. Wall Tile Primer for smooth surface, glazed block:

1. Product: Subject to compliance with requirements, available products that may be incorporated into the Work include, but are not limited to, the following:

   a. Ardex P 4.
   b. MAPEI ECO Primgrip.

D. Latex-Portland Cement- Large and heavy Tile mortar: LHT mortar: ANSI A118.4. ANSI 118.5

1. Basis-of-Design Product: Subject to compliance with requirements, provide MAPEI Corporation; UltraFlex LFT System or comparable product by one of the following:

   a. Laticrete International, Inc.- 4XLT

2. Provide prepackaged, dry-mortar mix containing dry, re-dispersible, 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 non-sagging mortar in addition to the other requirements in ANSI A118.4.

2.7 GROUT MATERIALS

A. Polymer-Modified Tile Grout: ISO 13007; CG2WAF and ANSI A118.7.

1. Basis-of-Design Product: Subject to compliance with requirements, provide Laticrete International; Permacolor or comparable product by one of the following:

   a. MAPEI-Ultra Color Plus FA.
   b. TEC; a subsidiary of H. B. Fuller Company.
   c. Custom building Products.

2. Polymer Type: Ethylene vinyl acetate or acrylic additive, in dry, redispersible form, prepackaged with other dry ingredients.

2.8 MISCELLANEOUS MATERIALS

A. Trowelable Underlayments and Patching Compounds: Latex-modified, portland cement-based formulation provided or approved by manufacturer of tile-setting materials for installations indicated.

1. Laticrete NXT Surface Prep Line.

B. Metal Edge Strips: Angle or L-shape, height to match tile and setting-bed thickness, metallic or combination of metal and PVC or neoprene base, designed specifically for flooring applications; exposed-edge material.

1. Manufacturers: Subject to compliance with requirements, available manufacturers offering products as shown but not limited to all associated required accessories, that may be incorporated into the Work include, but are not limited to, the following:

   a. Schluter Systems L.P.

C. 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.

1. Laticrete Stonetech Stone and Tile Cleaner.

D. Grout Sealer: Manufacturer's standard product for sealing grout joints and that does not change color or appearance of grout.

1. Products: Subject to compliance with requirements, provide one of the following:

a. Laticrete International; Stonetech Heavy Duty Grout Sealer.
b. MAPEI- Ultra Penetrating Plus Stone tile and Grout Sealer.
c. TEC; a subsidiary of H. B. Fuller Company; TA-256 Penetrating Silicone TA-257 Silicone Grout Sealer.

2.9 MIXING MORTARS AND GROUT

A. Mix mortars and grouts to comply with referenced standards and mortar and grout manufacturers' written instructions.

B. Add materials, water, and additives in accurate proportions.

C. Obtain and use type of mixing equipment, mixer speeds, mixing containers, mixing time, and other procedures to produce mortars and grouts of uniform quality with optimum performance characteristics for installations indicated.

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 installed tile.

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 current ANSI A108.01 for installations indicated.

2. Verify that concrete substrates for tile floors installed with mortar, comply with surface finish requirements in ANSI A108.01 for installations indicated.

a. Verify that surfaces that received a steel trowel finish have been mechanically scarified.
b. Verify that protrusions, bumps, and ridges have been removed by sanding or grinding.

3. Verify that installation of grounds, anchors, recessed frames, electrical and mechanical units of work, and similar items located in or behind tile has been completed.

4. Verify that joints and cracks in tile substrates are coordinated with tile joint locations; if not coordinated, adjust joint locations in consultation with Architect.

B. Proceed with installation only after unsatisfactory conditions have been corrected.

C. Beginning installation constitutes Contractor’s acceptance of substrates and conditions.

3.2 PREPARATION

A. Fill cracks, holes, and depressions in concrete substrates for tile installed with suitable products made to be trowelable with trowelable leveling and patching compound specifically recommended by tile-setting material manufacturer.

B. Where indicated, prepare substrates to receive waterproofing by applying a reinforced mortar bed that complies with current ANSI A108.1A and is sloped 1/4 inch per foot toward drains.

C. 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 TILE INSTALLATION

A. Comply with current TCNA's "Handbook for Ceramic Tile Installation" for current TCNA installation methods specified in tile installation schedules. Comply with parts of the current ANSI A108 Series "Specifications for Installation of Ceramic Tile" that are referenced in current TCNA installation methods, specified in tile installation schedules, and apply to types of setting and grouting materials used.

1. For the following installations, follow procedures in the current ANSI A108 Series of tile installation standards for providing 95 percent mortar coverage:

a. Tile floors in wet areas.

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. For tile mounted in sheets, make joints between tile sheets same width as joints within tile sheets so joints between sheets are not apparent in finished work.

2. Where adjoining tiles on floor, base, walls, or trim are specified or indicated to be same size, align joints.
3. Where tiles are specified or indicated to be whole integer multiples of adjoining tiles on floor, base, walls, or trim, align joints unless otherwise indicated.
4. Grout coverage for tile mounted sheets must have a minimum of 2/3, verify in field prior to installation that tile tabs are no more than 1/3 of the tile height.

F. Joint Widths: Unless otherwise indicated, install tile with the following joint widths:

1. Ceramic Mosaic Tile: 1/16 inch.
2. Glazed Wall Tile: 1/16 inch.

G. Lay out tile wainscots to dimensions indicated or to next full tile beyond dimensions indicated.

H. Expansion Joints: Provide expansion joints and other sealant-filled joints, including control, contraction, and isolation joints, where indicated and as per all current TCNA, EJ171 standards. Form joints during installation of setting materials, mortar beds, and tile. Do not saw-cut joints after installing tiles.

1. Where joints occur in concrete substrates, locate joints in tile surfaces directly above and at same width and as per current TCNA EJ171.

I. Stone Thresholds: Install stone thresholds in same type of setting bed as adjacent floor unless otherwise indicated.

1. At locations where mortar bed (thickset) would otherwise be exposed above adjacent floor finishes, set thresholds in latex-portland cement mortar (thin set).

2. Do not extend cleavage membrane/waterproofing under thresholds set in latex-portland cement mortar. Fill joints between such thresholds and adjoining tile set on cleavage membrane/ waterproofing with elastomeric sealant.

J. Metal Edge Strips: Install at locations indicated where exposed edge of tile flooring meets carpet, wood, or other flooring that finishes flush with or below top of tile and no threshold is indicated.

K. Grout Sealer: Apply grout sealer to cementitious grout joints in tile floors 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 WATERPROOFING INSTALLATION

A. Install ANSI A118.10 waterproofing to comply with ANSI A108.13 and manufacturer's written instructions to produce waterproof membrane of uniform thickness and bonded securely to substrate.

B. Do not install tile or setting materials over waterproofing until waterproofing has cured and been tested to determine that it is watertight.

3.5 CLEANING AND PROTECTING

A. Cleaning: On completion of placement and grouting, clean all ceramic tile surfaces so they are free of foreign matter.

1. Remove all 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. Remove temporary protective coating by method recommended by coating manufacturer and that is acceptable to tile and grout manufacturer. Trap and remove coating to prevent drain clogging.

B. 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.

C. Prohibit foot and wheel traffic from tiled floors for at least seven days after grouting is completed.

D. Before final inspection, remove protective coverings and rinse neutral protective cleaner from tile surfaces.

3.6 INTERIOR TILE INSTALLATION SCHEDULE

A. Interior Floor Installations, Concrete Subfloor:

1. Tile Installation F114: Cement mortar bed (thickset) with cleavage membrane; epoxy grout; TCNA F114, ANSI A108.1B

   a. Tile Type: CFT1
   b. Thin-Set Mortar for Cured-Bed Method: Latex-portland cement mortar.
   c. Grout: Water-cleanable epoxy grout.

2. Tile Installation F115: Thin-set mortar; epoxy grout; TCNA F115, ANSI AA108.5

   a. Tile Type: CFT1.
   b. Thin-Set Mortar: Latex-portland cement mortar.
   c. Grout: Water-cleanable epoxy grout.

3. Tile Installation F121: Cement mortar bed (thickset) on waterproof membrane; TCNA F121 and ANSI A108.1C.

   a. Tile Type: CFT1.
   b. Thin-Set Mortar for Cured-Bed Method: Latex-portland cement mortar.
   c. Grout: Polymer-modified sanded grout.

4. Tile Installation F131: Water-cleanable, tile-setting epoxy; epoxy grout; TCNA F131, ANSI A108.6.

   a. Tile Type: <Insert tile-type designation>.
   b. Grout: Water-cleanable epoxy grout.

B. Interior Wall Installations:

1. Tile Installation W202: Thin-set mortar; TCNA W202, ANSI A108.1A

   a. Tile Type: CWT1.
   b. Thin-Set Mortar: Latex-portland cement mortar.
   c. Grout: Polymer-modified sanded grout.

C. Shower Receptor and Wall Installations:

1. Tile Installation B414: Cement mortar bed (thickset); TCNA B414 and ANSI A108.1C.

   a. Tile Type: CFT1.
   b. Bond Coat Mortar for Wet-Set Method: Latex-portland cement mortar.
   c. Thin-Set Mortar for Cured-Bed Method: Latex-portland cement mortar.
   d. Grout: Polymer-modified sanded grout.

END OF SECTION 09 30 13

SECTION 09 51 13 - ACOUSTICAL PANEL CEILINGS

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 acoustical panels and exposed suspension systems for interior ceilings.

1.3 DEFINITIONS

A. CAC: Ceiling Attenuation Class.
B. LR: Light Reflectance.
C. NRC: Noise Reduction Coefficient.

1.4 PREINSTALLATION MEETINGS

A. Preinstallation Conference: Conduct conference at Project site.

1.5 SUBMITTALS, GENERAL

A. General: Submit all action submittals and informational submittals required by this Section concurrently.

1.6 ACTION SUBMITTALS

A. Product Data: For each type of product indicated.

1. Attachment devices.
2. Wire hangers, braces and ties.
3. Hanger rods.
4. Flat hangers.
5. Angle hangers.
6. Hold-down clips.
7. Roll-formed, sheet-metal edge moldings and trim.

B. As-Specified Data: If the product to be incorporated into Project is as specified by manufacturer name and product designation in Part 2 of this Specification Section, submit the "**As-Specified Verification Form**" (attached to Division 01 Section "Submittal Procedures") for each item listed below; otherwise submit full Product Data for the following:

1. Acoustical panels for ceiling type A1 and A2.
2. Mesh panels for ceiling type A3.
3. Metal suspension system for ceiling types A1, A2 and A3.
4. Extruded-aluminum or roll-formed, steel sheet metal edge moldings and trim.

C. Samples for Verification: If proposing products other than those specifically named in Part 2 of this Section, for each component indicated and for each exposed finish required, prepared on Samples of sizes indicated below:

1. Acoustical Panels: Set of 6-inch-square Samples of each type, color, pattern, and texture.
2. Exposed Suspension-System Members, Moldings, and Trim: Set of 6-inch-long Samples of each type, finish, and color.

1.7 INFORMATIONAL SUBMITTALS

A. Coordination Drawings: Reflected ceiling plans, drawn to scale, on which the following items are shown and coordinated with each other, using input from installers of the items involved:

1. Ceiling suspension-system members.

2. Structural members to which suspension systems will be attached.

3. Method of attaching hangers to building structure.

4. Items penetrating finished ceiling and ceiling-mounted items including the following:

   a. Lighting fixtures.
   b. Diffusers.
   c. Grilles.
   d. Speakers.
   e. Sprinklers.
   f. Access panels.
   g. Detectors.

1.8 CLOSEOUT SUBMITTALS

A. Maintenance Data: For finishes to include in maintenance manuals.

1.9 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. Acoustical Ceiling Units: Full-size panels equal to 2 percent of quantity installed of each acoustical panel type.
2. Suspension-System Components: Quantity of each exposed component equal to 2 percent of quantity installed of each metal suspension system type.
3. Hold-Down Clips: Equal to 2 percent of quantity installed.

1.10 DELIVERY, STORAGE, AND HANDLING

A. Deliver acoustical panels, suspension-system components, and accessories to Project site and store them in a fully enclosed, conditioned space where they will be protected against damage from moisture, humidity, temperature extremes, direct sunlight, surface contamination, and other causes.

B. Before installing acoustical panels, permit them to reach room temperature and a stabilized moisture content.

1.11 FIELD CONDITIONS

A. Environmental Limitations: Do not install acoustical panel ceilings until spaces are enclosed and weathertight, wet-work in spaces is complete and dry, work above ceilings is complete, and ambient temperature and humidity conditions are maintained at the levels indicated for Project when occupied for its intended use.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Source Limitations: Match each type of acoustical ceiling panel with a supporting suspension system of the same manufacturer.

2.2 PERFORMANCE REQUIREMENTS

A. Surface-Burning Characteristics: Comply with ASTM E84; testing by a qualified testing agency. Identify products with appropriate markings of applicable testing agency.

1. Flame-Spread Index: Class A according to ASTM E1264.
2. Smoke-Developed Index: 50 or less.

2.3 ACOUSTICAL PANELS, GENERAL

A. Acoustical Panel Standard: Provide manufacturer's standard panels according to ASTM E1264 and designated by type, form, pattern, acoustical rating, and light reflectance unless otherwise indicated.

B. Color: White.

C. Antimicrobial Treatment: Manufacturer's standard broad spectrum, antimicrobial formulation that inhibits fungus, mold, mildew, and gram-positive and gram-negative bacteria and showing no mold, mildew, or bacterial growth when tested according to ASTM D3273, ASTM D3274, or ASTM G21 and evaluated according to ASTM D3274 or ASTM G21.

2.4 STANDARD ACOUSTICAL PANELS FOR WIDE-FACE SUSPENSION SYSTEMS

A. Acoustical Panels for Ceiling Type A1:

1. Products: Subject to compliance with requirements, available products that may be incorporated into the Work include, but are not limited to:

   a. Armstrong World Industries, Inc.; Tundra 301.
   b. CertainTeed Ceilings; School Board FFSB-157.
   c. USG Corporation; Touchstone Panels 5893.

2. Type and Form: Type III, mineral base with painted finish; Form 2, water felted.

3. Pattern: As indicated by manufacturer's designation.

4. Modular Size: 24 by 24 inches.

5. Thickness: 5/8 inch.

6. Edge Detail: Square.

7. NRC: Not less than 0.50.

8. CAC: Not less than 30.

9. LR: Not less than 0.80.

10. Recycled Content: Not less than 30 percent.

B. Acoustical Panels for Ceiling Type A2:

1. Products: Subject to compliance with requirements, available products that may be incorporated into the Work include, but are not limited to:

   a. Armstrong World Industries, Inc.; School Zone Fine Fissured 1717.
   b. CertainTeed Ceilings; Fine Fissured High NRC HHF-454 HNRC.
   c. USG Corporation; Radar High-NRC Panels 22121.

2. Type and Form: Type III, mineral base with painted finish; Form 2, water felted.

3. Pattern: As indicated by manufacturer's designation.

4. Modular Size: 24 by 24 inches.

5. Thickness: 3/4 inch.

6. Edge Detail: Angled tegular.

7. NRC: Not less than 0.70.

8. CAC: Not less than 35.

9. LR: Not less than 0.80.

10. Recycled Content: Not less than 55 percent.

C. Metal Mesh Panels for Ceiling Type A3:

1. Products: Subject to compliance with requirements, available products that may be incorporated into the Work include, but are not limited to:

a. Armstrong World Industries, Inc.; Trellis 6138AM.

2. Type: Expanded metal

3. Pattern: As indicated by manufacturer's designation.

4. Modular Size: 24 by 48 inches.

5. Thickness: 1/4 inch.

6. Edge Detail: Square.

7. Open Area: 70%.

8. CAC: Not less than 35.

2.5 METAL SUSPENSION SYSTEMS, GENERAL

A. Metal Suspension-System Standard: Provide manufacturer's standard, direct-hung, metal suspension system and accessories according to ASTM C635/C635M and designated by type, structural classification, and finish indicated.

2.6 WIDE-FACE METAL SUSPENSION SYSTEMS

A. Wide-Face Suspension System for Ceiling Types A1 and A2:

1. Products: Subject to compliance with requirements, available products that may be incorporated into the Work include, but are not limited to, the following:

a. Armstrong World Industries, Inc.; Prelude XL 15/16-inch Exposed Tee System.
b. CertainTeed Ceilings; 15/16-inch EZ Stab Classic System.
c. USG Corporation; Donn Brand DX Acoustical Suspension System.

2. Wide-Face, Capped, Double-Web, Steel Suspension System: Main and cross runners roll formed from cold-rolled steel sheet; hot-dip galvanized, G30 coating designation; with prefinished 15/16-inch-wide metal caps on flanges.

3. Structural Classification: Intermediate-duty system.

4. End Condition of Cross Runners: Override (stepped) type.

5. Face Design: Flat, flush.

6. Cap Material: Cold-rolled steel.

7. Cap Finish: Painted white.

B. Wide-Face Suspension System for Ceiling Types A3:

1. 360° Painted Grid System color to match mesh panels.

2. Products: Subject to compliance with requirements, available products that may be incorporated into the Work include, but are not limited to, the following:

a. Armstrong World Industries, Inc.; Prelude 360 Painted Grid XL 15/16-inch Exposed Tee System.

3. Wide-Face, Capped, Double-Web, Steel Suspension System: Main and cross runners roll formed from cold-rolled steel sheet; hot-dip galvanized, G30 coating designation; powder coated.

4. Structural Classification: Intermediate-duty system.

5. End Condition of Cross Runners: Override (stepped) type.

6. Face Design: Flat, flush.

7. Cap Material: Cold-rolled steel.

8. Cap Finish: powder coated.

2.7 ACCESSORIES

A. Attachment Devices: Size for five times the design load indicated in ASTM C635/C635M, Table 1, "Direct Hung," unless otherwise indicated.

1. Anchors in Concrete: Anchors of type and material indicated below, with holes or loops for attaching hangers of type indicated and with capability to sustain, without failure, a load equal to five times that imposed by ceiling construction, as determined by testing according to ASTM E488/E488M or ASTM E1512 as applicable, conducted by a qualified testing and inspecting agency.

a. Type: Postinstalled expansion or Postinstalled bonded anchors.

b. Corrosion Protection: Carbon-steel components zinc plated according to ASTM B633, Class SC 1 (mild) service condition.

B. Wire Hangers, Braces, and Ties: Provide wires as follows:

1. Zinc-Coated, Carbon-Steel Wire: ASTM A641/A641M, Class 1 zinc coating, soft temper.

2. Size: Wire diameter sufficient for its stress at three times hanger design load (ASTM C635/C635M, Table 1, "Direct Hung") will be less than yield stress of wire, but not less than 0.106-inch- diameter wire.

C. Hanger Rods: Mild steel, zinc coated or protected with rust-inhibitive paint.

D. Flat Hangers: Mild steel, zinc coated or protected with rust-inhibitive paint.

E. Angle Hangers: Angles with legs not less than 7/8 inch wide; formed with 0.04-inch-thick, galvanized-steel sheet complying with ASTM A653/A653M, G90 coating designation; with bolted connections and 5/16-inch-diameter bolts.

F. Hold-Down Clips: Manufacturer's standard hold-down.

2.8 METAL EDGE MOLDINGS AND TRIM

A. Extruded-Aluminum or Roll-Formed Steel Sheet-Metal Edge Moldings and Trim: Where indicated for ceiling clouds or fasciae, provide manufacturer's extruded-aluminum or roll-formed steel sheet-metal edge moldings and trim of profile indicated or referenced by manufacturer's designations, including splice plates, corner pieces, and attachment and other clips, complying with seismic design requirements.

1. Products: Subject to compliance with requirements, available products that may be incorporated into the Work include, but are not limited to, the following:

a. Armstrong World Industries, Inc.; Axiom Classic Trim.
b. USG Corporation; Compasso Suspension Trim.

2. Baked-Enamel or Powder-Coat Finish: Minimum dry film thickness of 1.5 mils. Comply with ASTM C635/C635M and coating manufacturer's written instructions for cleaning, conversion coating, and applying and baking finish.

2.9 ACOUSTICAL SEALANT

A. Acoustical Sealant: As specified in Division 07 Section " Joint Sealants."

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine substrates, areas, and conditions, including structural framing to which acoustical panel ceilings attach or abut, with Installer present, for compliance with requirements specified in this and other Sections that affect ceiling installation and anchorage and with requirements for installation tolerances and other conditions affecting performance of acoustical panel ceilings.

B. Examine acoustical panels before installation. Reject acoustical panels that are wet, moisture damaged, or mold damaged.

C. Proceed with installation only after unsatisfactory conditions have been corrected.

D. Beginning installation constitutes Contractor’s acceptance of substrates and conditions.

3.2 PREPARATION

A. Measure each ceiling area and establish layout of acoustical panels to balance border widths at opposite edges of each ceiling. Avoid using less-than-half-width panels at borders unless otherwise indicated, and comply with layout shown on reflected ceiling plans.

B. Lay out openings for penetrations centered on the penetrating items.

3.3 INSTALLATION

A. Install acoustical panel ceilings according to ASTM C636/C636M and manufacturer's written instructions.

B. Suspend ceiling hangers from building's structural members and as follows:

1. Install hangers plumb and free from contact with insulation or other objects within ceiling plenum that are not part of supporting structure or of ceiling suspension system.

2. Splay hangers only where required to miss obstructions; offset resulting horizontal forces by bracing, countersplaying, or other equally effective means.

3. Where width of ducts and other construction within ceiling plenum produces hanger spacings that interfere with location of hangers at spacings required to support standard suspension-system members, install supplemental suspension members and hangers in form of trapezes or equivalent devices.

4. Secure wire hangers to ceiling-suspension members and to supports above with a minimum of three tight turns. Connect hangers directly to structure or to inserts, eye screws, or other devices that are secure and appropriate for substrate and that will not deteriorate or otherwise fail due to age, corrosion, or elevated temperatures.

5. Secure flat, angle, channel, and rod hangers to structure by attaching to inserts, eye screws, or other devices that are secure and appropriate for both the structure to which hangers are attached and the type of hanger involved. Install hangers in a manner that will not cause them to deteriorate or fail due to age, corrosion, or elevated temperatures.

6. Do not support ceilings directly from permanent metal forms or floor deck. Fasten hangers to cast-in-place hanger inserts, postinstalled mechanical or adhesive anchors, or power-actuated fasteners that extend through forms into concrete.

7. When steel framing does not permit installation of hanger wires at spacing required, install carrying channels or other supplemental support for attachment of hanger wires.

8. Do not attach hangers to steel deck tabs.

9. Do not attach hangers to steel roof deck. Attach hangers to structural members.

10. Space hangers not more than 48 inches o.c. along each member supported directly from hangers unless otherwise indicated; provide hangers not more than 8 inches from ends of each member.

11. Size supplemental suspension members and hangers to support ceiling loads within performance limits established by referenced standards.

C. Secure bracing wires to ceiling suspension members and to supports with a minimum of four tight turns. Suspend bracing from building's structural members as required for hangers, without attaching to permanent metal forms, steel deck, or steel deck tabs. Fasten bracing wires into concrete with cast-in-place or postinstalled anchors.

D. Install edge moldings and trim of type indicated at perimeter of acoustical ceiling area and where necessary to conceal edges of acoustical panels.

1. Apply acoustical sealant in a continuous ribbon concealed on back of vertical legs of moldings before they are installed.
2. Screw attach moldings to substrate at intervals not more than 16 inches o.c. and not more than 3 inches from ends. Miter corners accurately and connect securely.
3. Do not use exposed fasteners, including pop rivets, on moldings and trim.

E. Install suspension-system runners so they are square and securely interlocked with one another. Remove and replace dented, bent, or kinked members.

F. Install acoustical panels with undamaged edges and fit accurately into suspension-system runners and edge moldings. Scribe and cut panels at borders and penetrations to provide precise fit.

1. For square-edged panels, install panels with edges fully hidden from view by flanges of suspension-system runners and moldings.

2. For reveal-edged panels on suspension-system runners, install panels with bottom of reveal in firm contact with top surface of runner flanges.

3. For reveal-edged panels on suspension-system members with box-shaped flanges, install panels with reveal surfaces in firm contact with suspension-system surfaces and panel faces flush with bottom face of runners.

4. Paint cut edges of panel remaining exposed after installation; match color of exposed panel surfaces using coating recommended in writing for this purpose by acoustical panel manufacturer.

5. Install hold-down clips in corridors; space according to panel manufacturer's written instructions unless otherwise indicated.

   a. Hold-Down Clips: Space 24 inches o.c. on all cross runners.

3.4 FIELD QUALITY CONTROL

A. Special Inspections: Owner will engage a qualified special inspector to perform the following special inspections:

   1. Periodic inspection during the installation of suspended ceiling grids according to ASCE/SEI 7.

B. Acoustical panel ceiling hangers, anchors, and fasteners will be considered defective if they do not pass tests and inspections.

3.5 CLEANING

A. Clean exposed surfaces of acoustical panel ceilings, including trim, edge moldings, and suspension-system members. Comply with manufacturer's written instructions for cleaning and touchup of minor finish damage.

B. Remove and replace ceiling components that cannot be successfully cleaned and restored to permanently eliminate evidence of damage.

END OF SECTION 09 51 13

SECTION 09 64 66 - WOOD ATHLETIC FLOORING

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. This Section includes wood athletic flooring.

1.3 COORDINATION

A. Coordinate layout and installation of slab depressions to accommodate layout and height of wood athletic flooring assembly.
B. Coordinate layout and installation of flooring with floor inserts for gymnasium equipment.

1.4 SUBMITTALS, GENERAL

A. General: Submit all action submittals (except Samples for Verification) required by this Section concurrently.

1.5 ACTION SUBMITTALS

A. Product Data: For each type of product indicated. Include construction details, material descriptions, and dimensions of individual components and profiles.

1. Vapor retarder.
2. Resilient wall base.
3. Fasteners.
4. Trowelable leveling and patching compound.

B. As-Specified Data: If the product to be incorporated in the Work is as specified by manufacturer name and product designation in this Specification Section, submit the "**As-Specified Verification Form**" (attached to Division 01 Section "Submittal Procedures") for each item listed below; otherwise submit full Product Data for the following:

1. Wood athletic flooring system.
2. Floor finish system.

C. Shop Drawings: For each type of floor assembly, include the following:

1. Plans, sections, and attachment details.
2. Expansion provisions and trim details.

3. Layout, colors, widths, and dimensions of game lines and markers, logos, and text, in color.
4. Locations of floor inserts for athletic equipment installed through flooring assembly.

D. Samples for Initial Selection: Manufacturer's color charts showing colors available for game line and marker paints.

E. Samples for Verification: For each type of wood athletic flooring and accessory required; approximately 12 inches long and of same thickness and material indicated for the Work.

1. Include Sample sets showing the full range of normal color and texture variations expected in wood flooring.
2. Include Sample sets showing finishes and game-line and marker paints applied to wood flooring.

1.6 CLOSEOUT SUBMITTALS

A. Maintenance Data: For wood athletic flooring and finish systems to include in maintenance manuals.

1.7 QUALITY ASSURANCE

A. Installer Qualifications: A firm or individual that has been approved by MFMA as an accredited Installer according to the MFMA Accreditation Program and is acceptable to manufacturer of wood athletic flooring system.

1. Installer responsibilities include installation and field finishing of wood athletic flooring components and accessories, and application of game lines and markers.

1.8 DELIVERY, STORAGE, AND HANDLING

A. Deliver floor assembly materials in unopened cartons or bundles.
B. Protect wood from exposure to moisture. Do not deliver wood components until after concrete, masonry, plaster, ceramic tile, and similar wet-work is complete and dry.
C. Store wood components in a dry, warm, well-ventilated, weathertight location and in a horizontal position.

1.9 FIELD CONDITIONS

A. Conditioning period begins not less than seven days before wood athletic flooring installation, is continuous through installation, and continues not less than seven days after installation.

1. Environmental Conditioning: Maintain ambient temperature between 65 and 75 deg F and relative humidity planned for building occupants, but not less than 35 percent or more than 50 percent, in spaces to receive wood athletic flooring during the conditioning period.

2. Wood Conditioning: Move wood components into spaces where they will be installed, no later than beginning of the conditioning period.

    a. Do not install wood athletic flooring until wood components adjust to relative humidity of, and are at same temperature as, spaces where they are to be installed.
    b. Open sealed packages to allow wood components to acclimatize immediately on moving wood components into spaces in which they will be installed.

B. After conditioning period, maintain relative humidity and ambient temperature planned for building occupants.

C. Install wood athletic flooring after other finishing operations, including painting, have been completed.

PART 2 - PRODUCTS

2.1 SYSTEM DESCRIPTION

A. System Type: Anchored resilient.
B. Overall System Height: 2”

2.2 WOOD ATHLETIC FLOORING SYSTEMS

A. Basis-of-Design Products: Subject to compliance with requirements, provide the following products, or comparable products:

    1. Robbins Sports Surfaces; Eclipse SB.

B. Maple Flooring: Comply with MFMA grading rules for species, grade, and cut.

    1. Certification: Provide flooring that carries MFMA mark on each bundle or piece.

    2. Finger-Jointed Strip Flooring: Northern hard maple (Acer saccharum), kiln dried, tongue and groove, and end matched.

        a. Grade: MFMA-FJ Second and Better.
        b. Cut: Edge.
        c. Thickness: 25/32 inch.
        d. Face Width: 2-1/4 inches.

    3. Sleeper Anchors: Manufacturer's standard drive pins recommended by anchor manufacturer to achieve minimum 900-lbf pullout strength in 3000-psi concrete.

    4. Resilient Pads: With air voids for resiliency and installed at manufacturer's standard spacing for product designation indicated above.

2.3 FINISHES

A. Basis-of-Design Products: Subject to compliance with requirements, provide the following products, or comparable products:

1. Floor Sealer: Bona US; Bona SuperSport DTS.
2. Finish Coats: Bona US; Bona SuperSport HD.
3. Game-Line and Marker Paint: Bona US; Bona SuperSport Paint.

B. Floor-Finish System: System of compatible components recommended in writing by flooring manufacturer, and MFMA approved.

1. Floor-Sealer Formulation: Pliable, penetrating type. MFMA Group 1, Sealers.

2. Finish-Coat Formulation: Formulated for gloss finish indicated and multicoat application.

   a. Type: MFMA Group 5, Water-Based Finishes.

3. Game-Line and Marker Paint: Water-based game-line paint compatible with finish coats and recommended in writing by manufacturers of sealer and finish coats for this use.

   a. Colors: As selected by Architect from manufacturer's complete line of standard and custom colors.

2.4 ACCESSORIES

A. Vapor Retarder: ASTM D4397, polyethylene sheet not less than 6 mils thick.

B. Resilient Wall Base: Molded, vented, rubber or vinyl cove base; 4 by 3 by 48 inches; with premolded outside corners.

1. Color: Black.

C. Fasteners: Type and size recommended by manufacturer, but not less than those recommended by MFMA for application indicated.

D. Trowelable Leveling and Patching Compound: Latex-modified, hydraulic-cement-based formulation approved by wood athletic flooring manufacturer.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine substrates, areas, and conditions, with Installer present, for compliance with requirements for maximum moisture content, installation tolerances, and other conditions affecting performance of the Work.

B. Proceed with installation only after unsatisfactory conditions have been corrected.

C. Concrete Slabs: Verify that concrete substrates are dry and moisture-vapor emissions are within acceptable levels according to manufacturer's written instructions.

1. Moisture Testing: Perform tests so that each test area does not exceed 1000 sq. ft., and perform no fewer than three tests in each installation area and with test areas evenly spaced in installation areas.

a. Relative Humidity Test: Using in situ probes, ASTM F2170. Proceed with installation only after substrates have a maximum 80 percent relative humidity level measurement.

b. Perform additional moisture tests recommended by manufacturer. Proceed with installation only after substrates pass testing.

D. Beginning installation constitutes Contractor's acceptance of substrates and conditions.

3.2 PREPARATION

A. Concrete Slabs:

1. Grind high spots and fill low spots on concrete substrates to produce a maximum 1/8-inch deviation in any direction when checked with a 10-foot straight edge.
2. Use trowelable leveling and patching compounds, according to manufacturer's written instructions, to fill cracks, holes, and depressions in substrates.

B. Broom and vacuum clean substrates to be covered immediately before product installation. After cleaning, examine substrates for moisture, alkaline salts, carbonation, or dust. Proceed with installation only after unsatisfactory conditions have been corrected.

3.3 INSTALLATION

A. Comply with wood athletic flooring manufacturer's written instructions, but not less than written recommendations of MFMA applicable to flooring type indicated.

B. Pattern: Lay flooring parallel with long dimension of space to be floored unless otherwise indicated.

C. Expansion Spaces: Provide 2" (50mm) expansion voids at the perimeter and at all vertical obstructions.

1. Cover expansion spaces with base molding, trim, and saddles, as indicated on Drawings.

D. Vapor Barrier

1. Install polyethylene with joints lapped a minimum of 6" (150mm) and sealed and turned up 4" (100mm) at the walls.

E. Subfloor

1. Position Eclipse-SB subfloor panels per manufacturer's instructions, integrating top layer with adjacent panels. Allow for a ¼" (6mm) gap at subfloor panel end joints. Provide 1-½" to 2" (40 to 50mm) expansion void at the perimeter and all vertical obstructions.

2. Install solid blocking at doorways, under bleachers in the stacked position, and below portable goals.

3. Install Bleacher Blocking per manufacturer's recommendations.

4. Properly anchor subfloor panels at each factory designated location.

F. Flooring

1. Machine nail maple flooring along each edge of the Eclipse-SB panel's upper layer, driving up all end joints and proper spacing provided for humidity conditions in specific regions. Consult your local Robbins "Certified" contractor.

3.4 SANDING AND FINISHING

A. Allow installed flooring to acclimate to ambient conditions before sanding.

B. Follow applicable recommendations in MFMA's "Industry Recommendations for Sanding, Sealing, Court Lining, Finishing, and Resurfacing of Maple Gym Floors."

C. Machine sand with coarse, medium, and fine grades of sandpaper to achieve a level, smooth, uniform surface without ridges or cups. Remove sanding dust by tack or vacuum.

D. Finish: Apply seal and finish coats of finish system according to finish manufacturer's written instructions. Provide no fewer than five coats total consisting of two sealer coats and three finish coats.

1. Water-Based Finishes: Use finishing methods recommended by finish manufacturer to reduce grain raise and sidebonding effect.

2. Game-Line and Marker Paint: Apply game-line and marker paint between final seal coat and first finish coat according to paint manufacturer's written instructions.

a. Mask flooring at game lines and markers, and apply paint to produce lines and markers with sharp edges.
b. Where game lines cross, break minor game line at intersection; do not overlap lines.
c. Apply game lines and markers, logos, and text in widths, configurations, and colors according to requirements indicated on Drawings.
d. Apply finish coats after game-line and marker paint is fully cured.

3.5 PROTECTION

A. Protect wood athletic flooring during remainder of construction period to allow finish to cure and to ensure that flooring and finish are without damage or deterioration at time of Substantial Completion.

1. Do not cover flooring after finishing until finish reaches full cure and not before seven days after applying last finish coat.

2. Do not move heavy and sharp objects directly over flooring. Protect fully cured floor finishes and surfaces with plywood or hardboard panels to prevent damage from storing or moving objects over flooring.

END OF SECTION 09 64 66

SECTION 09 65 13 - RESILIENT BASE AND ACCESSORIES

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. Resilient base.
2. Resilient vent cove base.
3. Resilient stair accessories.
4. Abrasive safety strips.
5. Resilient molding accessories.

1.3 SUBMITTALS, GENERAL

A. General: Submit all action submittals (except Samples for Verification) required by this Section concurrently.

1.4 ACTION SUBMITTALS

A. Product Data: For each type of product indicated.

1. Resilient base: rubber RB.
2. Resilient one-piece stair tread and riser units.
3. Abrasive safety strips.
4. Reducers.
5. Edge guards.
6. Adapters.
7. Nosing for resilient floor coverings.
8. Trowelable leveling and patching compounds.
9. Concrete slab primer.
10. Adhesives.
11. Stair-tread-nose filler.

B. Samples for Verification and Initial Color Selection:

1. For each type of product indicated, in manufacturer's standard-size Samples but not less than 2-1/2 inches long, of each resilient product color, texture, and pattern required.

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. Furnish not less than 10 linear feet for every 500 linear feet or fraction thereof, of each type, color, pattern, and size of resilient product installed.

1.6 QUALITY ASSURANCE

A. Source Limitations for Resilient Base and Accessories: Obtain each type of resilient base and accessories from a single source with resources to provide materials of consistent quality in appearance and physical properties.

B. Fire-Test-Response Characteristics: As determined by testing identical products according to ASTM E 648 or NFPA 253 by a qualified testing agency.

1. Critical Radiant Flux Classification: Class I, not less than 0.45 W/sq. cm.

1.7 DELIVERY, STORAGE, AND HANDLING

A. Store resilient products and installation materials in dry spaces protected from the weather, with ambient temperatures maintained within range recommended by manufacturer, but not less than 55 deg F or more than 90 deg F.

1.8 PROJECT CONDITIONS

A. Maintain ambient temperatures within range recommended by manufacturer, but not less than 70 deg F or more than 90 deg F, in spaces to receive resilient products 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 or more than 90 deg F.

C. Install resilient products after other finishing operations, including painting, have been completed.

PART 2 - PRODUCTS

2.1 RESILIENT BASE: RUBBER RB

A. Resilient Base:

1. Products: Subject to compliance with requirements, available products that may be incorporated into the Work include, but are not limited to the following:

a. Mannington Commercial; Premium Rubber Edge.
b. Johnsonite; Rubber Wall Base.
c. Roppe Corporation, USA; Pinnacle Series Rubber Wall Base.

B. Resilient Base Standard: ASTM F 1861.

1. Material Requirement: Type TP (rubber, thermoplastic).
2. Manufacturing Method: Group I (solid, homogeneous).
3. Style: Cove (base with toe).

C. Minimum Thickness: 0.125 inch.

D. Height: 4 inches.

E. Lengths: Coils in manufacturer's standard length, not less than 100 feet.

F. Outside Corners: Job formed.

G. Inside Corners: Job formed.

H. Colors and Patterns: As selected by Architect from full range of industry colors.

2.2 RESILIENT VENT COVE BASE: RUBBER VCB

A. Resilient Vent Cove Base:

1. Products: Subject to compliance with requirements, available products that may be incorporated into the Work include, but are not limited to the following:

a. Johnsonite; Rubber Wall Base.

B. Resilient Base Standard: ASTM F 1861.

1. Material Requirement: Rubber.
2. Manufacturing Method: Group I (solid, homogeneous).
3. Style: Cove (base with toe and vertical, semi-circular vents).

C. Minimum Thickness: 5/16 inch.

D. Height: 4 inches.

E. Lengths: 4’ length sections.

F. Outside Corners: Pre-formed.

G. Inside Corners: Job formed.

H. Colors and Patterns: As selected by Architect from full range of industry colors.

2.3 RESILIENT STAIR ACCESSORIES: RUBBER RS

A. Resilient One-piece Stair Tread and Riser Units:

1. Basis-of-Design Product: Subject to compliance with requirements, provide Johnsonite; Hammered Surface Texture Rubber Stair Tread with Integrated Riser VIHTR or comparable product by one of the following :

   a. Mannington Commercial.
   b. Nora Rubber Flooring; Freudenberg Building Systems, Inc.

B. Resilient Stair Treads Standard: ASTM F 2169.

1. Material Requirement: Type TS (rubber, vulcanized thermoset).

2. Surface Design:

   a. Class 2, Pattern: Hammered, with abrasive strips, with contrasting color for the visually impaired.

C. Nosing Style: Square.

D. Nosing Height: 2 inches.

E. Thickness: 0.210 inch and tapered to back edge of 0.113 inch.

F. Size: Lengths and depths to fit each stair tread in one piece or, for treads exceeding maximum lengths manufactured, in equal-length units, with integral riser.

G. Stringers: 0.080 inch thickness, height and length after cutting to fit risers and treads and to cover stair stringers; produced by same manufacturer as treads and recommended by manufacturer for installation with treads.

H. Warranty: 10 years.

I. Colors and Patterns: As selected by Architect from full range of industry colors.

2.4 ABRASIVE SAFETY STRIPS

A. Abrasive Safety Strips:

1. Basis-of-Design Product: Subject to compliance with requirements, provide 3M; Safety-Walk General Purpose Tapes and Treads 600 Series or comparable product by one of the following:

   a. Sure Foot Industries Corp.
   b. Wooster Products.

2. Slip-resistant abrasive particles bonded to polymer backing; reverse side coated with pressure-sensitive adhesive.

3. Colors: As selected by Architect from full range of industry colors.

2.5 RESILIENT MOLDING ACCESSORY

A. Resilient Molding Accessory:

1. Products: Subject to compliance with requirements, available products that may be incorporated into the Work include, but are not limited to, the following:

   a. Reducer:

      1) Johnsonite; RR-XX Series Reducers.
      2) Roppe Corporation, USA; Reducer 1/8 inch.

   b. Edge Guards:

      1) Johnsonite; EG-XX Series Edge Guard.
      2) Roppe Corporation, USA; Carpet Edge 1/4-inch.

   c. Adapters:

      1) Johnsonite; CTA-XX Series Adapter.
      2) Roppe Corporation, USA; Tile and Carpet Joiner.

   d. Cove Caps:

      1) Johnsonite; CCC-XX Series Cove Cap.
      2) Roppe Corporation, USA; Carpet Cove Caps.

   e. Nosing for Resilient Floor Covering:

      1) Johnsonite; VIRCN-XX-B2 Vinyl Stair Nosing.
      2) Roppe Corporation, USA; #9 Underlap Stair Nosing.

B. Material: Vinyl or rubber.

C. Profile and Dimensions: As indicated.

D. Colors and Patterns: As selected by Architect from full range of industry colors.

2.6 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.

1. Basis-of-Design Products: Subject to compliance with requirements, provide the following Ardex product or a comparable product:

a. Portland Cement-Based Flash Patching and Skim Coating: SD-F Feather Finish.
b. Portland Cement-Based Patching: SD-P Insta Patch.
c. Portland Cement-Based Self-Leveling Underlayment: K-10/K-60 Self-Leveling Underlayment Concrete.

B. Concrete Slab Primer: Non-staining type recommended by resilient accessories manufacturer.

C. Adhesives: Water-resistant type recommended by manufacturer to suit resilient products and substrate conditions indicated.

1. Adhesives shall have a VOC content of 50 g/L or less when calculated according to 40 CFR 59, Subpart D (EPA Method 24).

2. Adhesives shall comply with the testing and product requirements of the California Department of Health Services' "Standard Practice for the Testing of Volatile Organic Emissions from Various Sources Using Small-Scale Environmental Chambers."

D. Stair-Tread-Nose Filler: Two-part epoxy compound recommended by resilient tread manufacturer to fill nosing substrates that do not conform to tread contours.

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 resilient products.

C. Proceed with installation only after unsatisfactory conditions have been corrected.

D. Beginning installation constitutes Contractor’s acceptance of substrates and conditions.

3.2 PREPARATION

A. Prepare substrates according to manufacturer's written instructions to ensure adhesion of resilient products.

B. Concrete Substrates for Resilient Stair Treads and Accessories: 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.

4. Moisture Testing: Perform tests recommended by manufacturer and as follows. Proceed with installation only after substrates pass testing.

a. Perform anhydrous calcium chloride test, ASTM F 1869. Proceed with installation only after substrates have maximum moisture-vapor-emission rate of 3 lb of water/1000 sq. ft. in 24 hours.

b. Perform relative humidity test using in situ probes, ASTM F 2170. Proceed with installation only after substrates have maximum 75 percent relative humidity level measurement.

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 resilient products until they are same temperature as the 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. Following cleaning, examine substrates for moisture, alkaline salts, carbonation, or dust.

3.3 RESILIENT BASE INSTALLATION

A. Comply with manufacturer's written instructions for installing resilient base.

B. Apply resilient base to walls, columns, pilasters, casework and cabinets in toe spaces, and other permanent fixtures in rooms and areas where base is required.

C. Install resilient base in lengths as long as practicable without gaps at seams and with tops of adjacent pieces aligned.

D. Tightly adhere resilient base to substrate throughout length of each piece, with base in continuous contact with horizontal and vertical substrates.

E. Do not stretch resilient base during installation.

F. On masonry surfaces or other similar irregular substrates, fill voids along top edge of resilient base with manufacturer's recommended adhesive filler material.

G. Job-Formed Corners- using manufactures approved methods and tools:

1. Outside Corners: Use straight pieces of maximum lengths possible. Form without producing discoloration (whitening) at bends.

2. Inside Corners: Use straight pieces of maximum lengths possible. Use scribing and cutting measures approved by base manufacturer. Inside corners that are not scribed to fit will be rejected.

3. Use Crane #532 top-set gouger tool for all required for tight wrap and curved corners.

3.4 RESILIENT ACCESSORY INSTALLATION

A. Comply with manufacturer's written instructions for installing resilient accessories.

B. Resilient Stair Accessories:

1. Use stair-tread-nose filler to fill nosing substrates that do not conform to tread contours.
2. Tightly adhere to substrates throughout length of each piece.
3. For treads installed as separate, equal-length units, install to produce a flush joint between units.

C. Abrasive Safety Strips:

1. Apply two abrasive safety strips full width to each stair tread as indicated, one inch from nosing edge, and one inch apart.
2. Apply abrasive safety strips full width to ramp as indicated, at every six inches on center.

D. Resilient Molding Accessories: Butt to adjacent materials and tightly adhere to substrates throughout length of each piece. Install reducer strips at edges of carpet and resilient floor covering that would otherwise be exposed.

3.5 CLEANING AND PROTECTION

A. Comply with manufacturer's written instructions for cleaning and protection of resilient products.

B. Perform the following operations immediately after completing resilient product 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.
4. Do not wash floor until after the period recommended by manufacturer.

C. Protect resilient products from mars, marks, indentations, and other damage from construction operations and placement of equipment and fixtures during remainder of construction period.

D. Cover resilient products until Substantial Completion.

END OF SECTION 09 65 13

SECTION 09 65 19 - RESILIENT TILE FLOORING

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. Luxury vinyl floor tile
2. Rubber floor tile.
3. Vinyl composition floor tile.
4. Movement joint.

1.3 SUBMITTALS, GENERAL

A. General: Submit all action submittals (except Samples for Verification) and informational submittals required by this Section concurrently.

1.4 ACTION SUBMITTALS

A. Product Data: For each type of product indicated.

1. Luxury vinyl tile LVT
2. Rubber floor tile RF1.
3. Vinyl composition floor tile VCT1.
4. Trowelable leveling and patching compounds.
5. Concrete slab primer.
6. Adhesives.
7. Movement Joint
8. Floor polish.

B. Shop Drawings: For each type of floor tile. Include floor tile layouts, edges, columns, doorways, enclosing partitions, built-in furniture, cabinets, and cutouts.

1. Show details of patterns.
2. Show base details.
3. Show locations of divider strips, control and expansion joints.
4. Show locations of floor drains and sloped slabs.
5. Show threshold locations and types.

C. Samples for Verification and Initial Color Selection: Full-size units of each color and pattern of floor tile required.

1.5 INFORMATIONAL SUBMITTALS

A. Qualification Data: For qualified Installer.

1.6 CLOSEOUT SUBMITTALS

A. Maintenance Data: For each type of floor tile to include in maintenance manuals.

1.7 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 50 boxes or fraction thereof, of each type, color, and pattern of floor tile installed.

1.8 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. Engage an installer who employs workers for this Project who are trained or certified by manufacturer for installation techniques required.

B. Source Limitations for Resilient Tile: Obtain each type of resilient tile from a single source with resources to provide materials of consistent quality in appearance and physical properties.

C. Fire-Test-Response Characteristics: As determined by testing identical products according to ASTM E 648 or NFPA 253 by a qualified testing agency.

1. Critical Radiant Flux Classification: Class I, not less than 0.45 W/sq. cm.

D. Mockups: Build mockups to verify selections made under sample submittals and to demonstrate aesthetic effects and set quality standards for materials and execution.

1. Build mockups for floor tile including accessories.

a. Size: Minimum 100 sq. ft. for each type, color, and pattern in locations directed by Architect.

1.9 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 55 deg F or more than 90 deg F. Store floor tiles on flat surfaces.

1.10 PROJECT CONDITIONS

A. Maintain ambient temperatures within range recommended by manufacturer, but not less than 70 deg F or more than 90 deg F, 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 or more than 90 deg F.

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 PERFORMANCE REQUIREMENTS

A. Low-Emitting Materials: Flooring system shall comply with the testing and product requirements of the California Department of Health Services' "Standard Practice for the Testing of Volatile Organic Emissions from Various Sources Using Small-Scale Environmental Chambers."

2.2 HIGH PERFORMANCE LUXURY VINYL TILE -LVT

A. Products: Subject to compliance with requirements, available products that may be incorporated into the Work include, but are not limited to, the following:

1. Tarkett: iD Latitude Series.

B. Tile Standard: ASTM F 1700.

1. Class: Class III, printed film vinyl tile.
2. Type: Type B, embossed surface.

C. Thickness: 3.0mm.

D. Size: 6” x 48”.

E. Colors and Patterns: As selected by Architect from full range of industry colors, up to 4 colors per building.

2.3 RUBBER FLOOR TILE RF1

A. Products: Subject to compliance with requirements, available products that may be incorporated into the Work include, but are not limited to, the following:

1. Mannington Commercial Flooring Products ; Colorscape tile flooring – Round, Square, Sculptured rubber tile.
2. Johnsonite; Roundel tile flooring- Raised round, Raised Square, Hammered rubber tile.
3. Nora Rubber Flooring, Freudenberg Building Systems, Inc.; Norament tile flooring – Studded, Hammered rubber tile.

B. Tile Standard: ASTM F 1344, Class I-A, homogeneous rubber tile, solid color.

C. Hardness: Not less than 85 as required by ASTM F 1344, measured using Shore, Type A durometer per ASTM D 2240.

D. Wearing Surface: Smooth Textured Molded pattern.

1. Molded-Pattern Figure: Raised discs, Raised squares, Hammered.

E. Thickness: 0.125 inch.

F. Size: 18.125 x 18.125 inches, 24 x 24 inches, 19.8 x 19.8 inches.

G. Seaming Method: Heat welded, Chemically bonded, Standard.

H. Colors and Patterns: As selected by Architect from full range of industry colors.

2.4 VINYL COMPOSITION FLOOR TILE: VCT1

A. Products: Subject to compliance with requirements, available products that may be incorporated into the Work include, but are not limited to, the following:

1. Field Tile:

a. Armstrong World Industries, Inc.; Standard Excelon Imperial Texture (including Imperial Texture Classics) and Standard Excelon MultiColor.
b. Johnsonite Flooring – the Azrock collection, (including standard, textile and solids collections).

2. Accent Tile 30%:

a. Armstrong World Industries, Inc.; Standard Excelon Imperial Texture (including Imperial Texture Classics), Standard Excelon MultiColor, and Standard Excelon Rave.

b. Johnsonite Flooring – the Azrock collection, (including standard, textile and solids collections).

B. Tile Standard: ASTM F 1066, Class 2, through-pattern tile.

C. Wearing Surface: Smooth.

D. Thickness: 0.125 inch, 1/8inch.

E. Size: 12 by 12 inches.

F. Colors and Patterns: As selected by Architect from full range of industry colors.

1. Provide accent tile equal to 30 percent of total vinyl composition floor tile area, with the remainder as field tile.

2.5 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.

1. Basis-of-Design Products: Subject to compliance with requirements, provide the following Ardex product or a comparable product:

a. Portland Cement-Based Flash Patching and Skim Coating: SD-F Feather Finish.
b. Portland Cement-Based Self-Leveling Underlayment: K-10/K60 Self-Leveling Underlayment Concrete.

B. Concrete Slab Primer: Non-staining type recommended by resilient tile flooring manufacturer.

C. Adhesives: Water-resistant type recommended by manufacturer to suit floor tile and substrate conditions indicated.

1. Adhesives shall comply with the following limits for VOC content when calculated according to 40 CFR 59, Subpart D (EPA Method 24):

a. VCT Adhesives: Not more than 50 g/L.
b. Rubber Floor Adhesives: Not more than 60 g/L.

2. Adhesives shall comply with the testing and product requirements of the California Department of Health Services' "Standard Practice for the Testing of Volatile Organic Emissions from Various Sources Using Small-Scale Environmental Chambers."

D. Floor Polish: Provide protective liquid floor polish products as recommended by manufacturer, containing not less than 16 to 25 percent solids.

2.6 METAL MOVEMENT JOINT

A. Metal Movement Joint: Surface joint profile to match tile and setting-bed thickness, Aluminum or Stainless steel with soft thermoplastic rubber movement zone. Profile and thickness to be determined per material specified.

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. Schluter Systems L.P. – Dilex Movement Joints.

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.

D. Beginning installation constitutes Contractor’s acceptance of substrates and conditions.

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 and as follows. Proceed with installation only after substrates pass testing.

    a. Perform anhydrous calcium chloride test, ASTM F 1869. Proceed with installation only after substrates have maximum moisture-vapor-emission rate of 3 lb of water/1000 sq. ft. in 24 hours.

        1) At a minimum, test concrete substrates in at least 3 locations in separate parts of the floor for applications of 2000 square feet or less; provide one additional test location for each additional 1000 square feet, or fraction thereof.

b. Perform relative humidity test using in situ probes, ASTM F 2170. Proceed with installation only after substrates have maximum 75 percent relative humidity level measurement.

C. Wood Subfloors:

1. Verify that underlayment over subfloor complies with requirements in Section 06 16 00, “Sheathing.”
2. Verify underlayment surface is free of surface irregularities and substances with potential to interfere with adhesive bond, show through surface, or stain tile.

D. Existing Floors: Condition of existing subfloor is unknown prior to removal of existing flooring. If, after removal of existing flooring, subfloor requires leveling, patching, or filling, notify Architect in writing.

1. Asbestos Abatement Areas: In areas where removal of existing flooring is included in asbestos abatement procedures, coordinate with entity responsible for abatement to ensure patching and repair is compatible with requirements for installation of resilient tile flooring.

E. Comply with resilient tile manufacturer’s written instructions to prepare substrates.

1. 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.

2. Ensure patching and repair materials are compatible with resilient tile.

3. Levelness Tolerances: Apply patching and repair materials to provide levelness of floor substrate within 1/4 inch in 10 feet, unless more stringent levelness is recommended or required by resilient tile manufacturer.

4. Flash Patching and Skim Coating: Apply flash patching material to areas with 1/8 inch or less depression.

5. Patching: Apply patching material to areas with 1/8 inch or greater depression.

6. Self-Leveling Underlayment: Apply self-leveling material to areas where flash patching and patching described above cannot provide smooth, level surface acceptable to receive resilient tile flooring.

F. 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.

G. Sweep and vacuum clean substrates to be covered by resilient products immediately before installation. Following cleaning, examine substrates for moisture, alkaline salts, carbonation, or dust.

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 in pattern indicated.

C. Laser cut Murals: Provide laser cut murals as indicated on drawings.

   1. Artwork for Mural location is as shown on Architectural drawings. Mural to be laser cut/etched will be submitted to manufacture as a file during construction. Mural is to be provided by client.

   2. Full color computer drawing from manufacture, will be submitted to designer for full approval including all mounting and assembly instructions.

   3. Deliver mural to site with dot mounted backing, paper faced and numbered for easy installation. Contractor to provide proper storage until installation.

D. 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 as follows: 12” x 12”

      a. Field Tile: With grain direction alternating in adjacent tiles (basket-weave pattern) in pattern of colors and sizes indicated.
      b. Accent Tile: With grain direction alternating in adjacent tiles (basket-weave pattern) in pattern of colors and sizes indicated.

E. 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.

   1. Cut rubber floor tile using water-jet cut method only. Template cuts are prohibited.

F. Extend floor tiles into toe spaces, door reveals, closets, and similar openings. Extend floor tiles to center of door openings.

G. Maintain reference markers, holes, and openings that are in place or marked for future cutting by repeating on floor tiles as marked on substrates. Use chalk or other nonpermanent, non-staining marking device.

H. Install floor tiles on covers for telephone and electrical ducts, building expansion-joint covers, and similar items in finished floor areas. Maintain overall continuity of color and pattern between pieces of tile installed on covers and adjoining tiles. Tightly adhere tile edges to substrates that abut covers and to cover perimeters.

I. Apply concrete slab primer, if recommended by resilient tile manufacturer, prior to applying adhesive. Apply according to manufacturer’s written instructions.

J. 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.
4. Do not wash floor until after the period recommended by resilient tile manufacturer.

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.

E. Cover floor tile until Substantial Completion.

F. Perform the following operations in each area of Project upon completion of floor installation and as recommended by manufacturer.

1. Rubber Floor Tile:

a. Scrub floor with a neutral detergent solution at 4 oz per gallon to remove factory finish. Scrub floor using soft nylon brushes or red pad as recommended by rubber floor tile manufacturer.

b. Use stripping solutions at badly soiled or scratched areas, as recommended by rubber floor tile manufacturer.

c. Thoroughly rinse floor, wet vacuum and dry floor. Floor must be free from all dust, dirt and any particles that may become lodged in final polish application.

d. Apply a maintainer coat of Taski Wiwax solution as recommended by resilient tile and polish manufacturer. Dry buff using a disc rotary machine, white pad or soft nylon brush, not to exceed 300 rpm, after rubber floor tile dries.

2. Vinyl Composition Floor Tile:

a. Scrub floor with a neutral detergent solution at 4 to 6 oz per gallon. Scrub floor using pads or brushes as recommended by vinyl composition floor tile manufacturer.

b. Use stripping solutions at badly soiled or scratched areas, as recommended by vinyl composition floor tile manufacturer.

c. Thoroughly rinse floor, wet vacuum and dry floor. Floor must be free from all dust, dirt and any particles that may become lodged in final polish application.

d. Apply five coats of commercial floor polish. Apply each coat as recommended by product manufacturer.

END OF SECTION 09 65 19

SECTION 09 65 66 - RESILIENT ATHLETIC FLOORING

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. Rubber sheet flooring.

1.3 SUBMITTALS, GENERAL

A. General: Submit all action submittals (except Samples for Verification) and informational submittals required by this Section concurrently.

1.4 ACTION SUBMITTALS

A. Product Data: For each type of product indicated.

B. Shop Drawings: Show installation details and locations of the following:

1. Floor patterns.
2. Layout, colors, widths, and dimensions of game lines and markers.
3. Locations of floor inserts for athletic equipment installed through flooring.
4. Seam locations for sheet flooring.

C. Samples for Verification and Initial Color Selection: For each type, color, and pattern of flooring indicated, 6-inch-square Samples of same thickness and material indicated for the Work.

1. Game-Line- and Marker-Paint Samples: Include Sample sets showing game-line- and marker-paint colors and glosses applied to flooring.

2. Provide actual paint samples on 8-1/2” x 11” draw card material. Draw card samples to be selected per Architect’s request from full line of standard colors.

3. Seam Samples: For each vinyl sheet flooring color and pattern required; with seam running lengthwise and in center of 6-by-9-inch Sample applied to a rigid backing and prepared by Installer for this Project.

1.5 INFORMATIONAL SUBMITTALS

A. Qualification Data: For qualified flooring Installer.

1.6 CLOSEOUT SUBMITTALS

A. Maintenance Data: For flooring to include in maintenance manuals.

1.7 MAINTENANCE MATERIAL SUBMITTALS

A. Furnish extra materials, before installation begins, that match products installed and that are packaged with protective covering for storage and identified with labels describing contents.

1. Floor Tile: Furnish no fewer than 1 box for each 50 boxes or fraction thereof, of each type, color, pattern, and size of floor tile installed.
2. Sheet Flooring: Furnish full-width rolls of not less than 10 linear feet for each 500 linear feet or fraction thereof, of each type, color, and pattern of flooring installed.

1.8 QUALITY ASSURANCE

A. Flooring Installer Qualifications: An experienced Installer who has completed flooring installations using methods indicated for this Project and similar in material, design, and extent to that indicated for this Project; who is acceptable to manufacturer; and whose work has resulted in installations with a record of successful in-service performance.

1.9 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 storing.

B. Store materials to prevent deterioration. Store rolls upright.

1.10 FIELD CONDITIONS

A. Adhesively Applied Products:

1. Maintain temperatures during installation within range recommended in writing by manufacturer, but not less than 70 deg F or more than 95 deg F, in spaces to receive flooring 48 hours before installation, during installation, and 48 hours after installation unless longer period is recommended in writing by manufacturer.

2. After postinstallation period, maintain temperatures within range recommended in writing by manufacturer, but not less than 55 deg F or more than 95 deg F.

3. Close spaces to traffic during flooring installation.

4. Close spaces to traffic for 48 hours after flooring installation unless manufacturer recommends longer period in writing.

B. Install flooring after other finishing operations, including painting, have been completed.

1.11 COORDINATION

A. Coordinate layout and installation of flooring with floor inserts for gymnasium equipment.

PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

A. FloorScore Compliance: Resilient athletic flooring shall comply with requirements of FloorScore Standard.

B. Low-Emitting Materials: Flooring system shall comply with the testing and product requirements of the California Department of Health Services' "Standard Practice for the Testing of Volatile Organic Emissions from Various Sources Using Small-Scale Environmental Chambers."

2.2 RUBBER SHEET FLOORING: SMOOTH/LIGHT TEXTURE SURFACE

A. Gymnasium; Multipurpose Applications:

1. Products: Subject to compliance with requirements, available products that may be incorporated into the Work include, but are not limited to, the following:

   a. Mondo America Inc.; Advance New Generation.
   b. Robbins Sports Surfaces; Durathon Sport Surface.

2. Description: Rubber athletic flooring provided as rolled goods for adhered installation.

3. Material: Rubber; or rubber wear layer and rubber shock-absorbent layer(s), vulcanized together.

4. Fire-Test-Response Characteristics: ASTM E 648; greater than 0.31 W/cm2, Class 2.

5. Traffic-Surface Texture: Smooth/light texture.

6. Roll Size: Not less than 48 inches wide by longest length that is practical to minimize splicing during installation.

7. Thickness: 6 mm.

8. Color and Pattern: As selected by Architect from manufacturer's full range.

2.3 RUBBER SHEET FLOORING: INDOOR RUNNING TRACK TEXTURED SURFACE

A. Products: Subject to compliance with requirements, available products that may be incorporated into the Work include, but are not limited to, the following:

1. Mondo America Inc.; Super X Performance.
2. Robbins Sports Surfaces; Durathon Elite Track.

B. Description: Rubber athletic flooring provided as rolled goods for adhered installation.

C. Material: Rubber wear layer and rubber shock-absorbent layer, vulcanized together.

D. Fire-Test-Response Characteristics: ASTM E 648; greater than 0.45 W/cm2, Class 1.

E. Traffic-Surface Texture: Textured, suitable for indoor running track application.

F. Roll Size: Not less than 48 inches wide by longest length that is practical to minimize splicing during installation.

G. Thickness: 13 mm.

H. Color and Pattern: As selected by Architect from manufacturer's full range.

2.4 ACCESSORIES

A. Trowelable Leveling and Patching Compound: Latex-modified, hydraulic-cement-based formulation approved by flooring manufacturer.

1. Basis-of-Design Products: Subject to compliance with requirements, provide the following Ardex product or a comparable product:

a. Portland Cement-Based Flash Patching and Skim Coating: SD-F Feather Finish.
b. Portland Cement-Based Patching: SD-P Insta Patch.
c. Portland Cement-Based Self-Leveling Underlayment: K-10/K-60 Self-Leveling Underlayment Concrete.

B. Adhesives: Water-resistant type recommended in writing by manufacturer for substrate and conditions indicated.

1. Adhesives shall have a VOC content of **60** g/L or less when calculated according to 40 CFR 59, Subpart D (EPA Method 24).

2. Adhesives shall comply with the testing and product requirements of the California Department of Health Services' "Standard Practice for the Testing of Volatile Organic Emissions from Various Sources Using Small-Scale Environmental Chambers."

C. Game-Line and Marker Paint: Complete system including primer, if any, compatible with flooring and recommended in writing by flooring and paint manufacturers for use indicated.

1. VOC Content: Not more than 150 g/L when calculated according to 40 CFR 59, Subpart D (EPA Method 24).

2. Paint shall comply with the testing and product requirements of the California Department of Health Services' "Standard Practice for the Testing of Volatile Organic Emissions from Various Sources Using Small-Scale Environmental Chambers."

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine substrates, with Installer present, for compliance with requirements for installation tolerances, 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 resilient products.

B. Proceed with installation only after unsatisfactory conditions have been corrected.

C. Beginning installation constitutes Contractor’s acceptance of substrates and conditions.

3.2 PREPARATION

A. Prepare substrates according to manufacturer's written recommendations to ensure adhesion of flooring.

B. Concrete Substrates: Prepare according to ASTM F 710.

1. Verify that substrates are dry and free of curing compounds, sealers, and hardeners.

2. Alkalinity Testing: Perform pH testing according to ASTM F 710. Proceed with installation only if pH readings are not less than 7.0 and not greater than 8.5.

3. Moisture Testing:

a. Perform anhydrous calcium chloride test, ASTM F 1869. Proceed with installation only after substrates have maximum moisture-vapor-emission rate of 3 lb of water/1000 sq. ft. in 24 hours.

1) Perform tests so that each test area does not exceed 200 sq. ft., and perform no fewer than two tests in each installation area and with test areas evenly spaced in installation areas.

b. Perform relative humidity test using in-situ probes, ASTM F 2170. Proceed with installation only after substrates have a maximum 75 percent relative humidity level measurement.

C. Remove substrate coatings and other substances that are incompatible with adhesives and that contain soap, wax, oil, or silicone, using mechanical methods recommended in writing by manufacturer. Do not use solvents.

D. Use trowelable leveling and patching compound to fill cracks, holes, and depressions in substrates.

E. Move flooring and installation materials into spaces where they will be installed at least 48 hours in advance of installation unless manufacturer recommends a longer period in writing.

1. Do not install flooring until they are same temperature as space where they are to be installed.

F. Sweep and vacuum clean substrates to be covered by flooring immediately before installation. After cleaning, examine substrates for moisture, alkaline salts, carbonation, and dust.

G. Proceed with installation only after unsatisfactory conditions have been corrected.

3.3 FLOORING INSTALLATION, GENERAL

A. Comply with manufacturer's written installation instructions.
B. Scribe, cut, and fit flooring to butt neatly and tightly to vertical surfaces, equipment anchors, floor outlets, and other interruptions of floor surface.
C. Extend flooring into toe spaces, door reveals, closets, and similar openings unless otherwise indicated.
D. Maintain reference markers, holes, and openings that are in place or marked for future cutting by repeating subfloor markings on flooring. Use nonpermanent, nonstaining marking device.

3.4 SHEET FLOORING INSTALLATION

A. Unroll sheet flooring and allow it to stabilize before cutting and fitting.

B. Lay out sheet flooring as follows:

1. Maintain uniformity of flooring direction.
2. Minimize number of seams; place seams in inconspicuous and low-traffic areas, at least 6 inches away from parallel joints in flooring substrates.
3. Match edges of flooring for color shading at seams.
4. Locate seams per approved Shop Drawings.

C. Adhered Flooring: Adhere products to substrates using a full spread of adhesive applied to substrate to comply with adhesive and flooring manufacturers' written instructions, including those for trowel notching, adhesive mixing, and adhesive open and working times.

1. Provide completed installation without open cracks, voids, raising and puckering at joints, telegraphing of adhesive spreader marks, and other surface imperfections.

D. Vinyl Sheet Flooring Seams: Prepare and finish seams to produce surfaces flush with adjoining flooring surfaces.

1. Heat-Welded Seams: Comply with ASTM F 1516. Rout joints and use welding bead to permanently fuse sections into a seamless flooring.

3.5 GAME LINES AND MARKERS

A. Mask flooring at game lines and markers, and apply paint to produce sharp edges. Where crossing, break minor game line at intersection; do not overlap lines.

B. Lay out game lines and markers to comply with rules and diagrams published by National Federation of State High School Associations for athletic activities indicated.

3.6 CLEANING AND PROTECTING

A. Perform the following operations immediately after completing flooring installation:

1. Remove adhesive and other blemishes from flooring surfaces.
2. Sweep and vacuum flooring thoroughly.
3. Damp-mop flooring to remove marks and soil after time period recommended in writing by manufacturer.

B. Protect flooring from mars, marks, indentations, and other damage from construction operations and placement of equipment and fixtures during remainder of construction period. Use protection methods recommended in writing by manufacturer.

1. Do not move heavy and sharp objects directly over flooring. Protect flooring with plywood or hardboard panels to prevent damage from storing or moving objects over flooring.

END OF SECTION 09 65 66

SECTION 09 66 23 - RESINOUS MATRIX TERRAZZO FLOORING

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. Thin-set, epoxy-resin matrix terrazzo flooring – poured epoxy.
2. Epoxy-resin matrix terrazzo base - Precast.

1.3 DEFINITIONS

A. Aggregate: Marble, Glass and Granite chips.

1.4 PREINSTALLATION MEETINGS

A. Preinstallation Conference: Conduct conference at Project site.

1. Review methods and procedures related to terrazzo including, but not limited to, the following:

a. Inspect and discuss condition of substrate and other preparatory work performed by other trades.
b. Review and finalize construction schedule and verify availability of materials, Installer's personnel, equipment, and facilities needed to make progress.
c. Review special terrazzo designs and patterns.

1.5 SUBMITTALS, GENERAL

A. General: Submit all action submittals (except Samples for Verification) and informational submittals required by this Section concurrently.

1.6 ACTION SUBMITTALS

A. Product Data: For each type of product.

1. Thin-set, epoxy-resin matrix terrazzo flooring- poured epoxy.
2. Epoxy- resin matrix terrazzo base- precast.
3. Thin-set divider strips.

4. Control-joint strips.
5. Accessory strips.
6. Strip adhesive.
7. Anchoring devices.
8. Patching and fill material.
9. Joint compound.
10. Resinous matrix terrazzo cleaner.
11. Sealer.

B. Shop Drawings: Submit set of drawings showing complete floor patterns in all areas indicated on Drawings to receive terrazzo. Submit drawings for Architect review prior to starting installation. Shop drawings are to including but not limited to:

1. Floor plans showing all patterns, precast base locations and details.
2. Layouts showing locations of divider strips, control and expansion joints.
3. Locations of all floor drains including sloped slab locations.
4. Marble threshold location.
5. Photocopies of Tetra Tech documentation not acceptable.
6. Divider strips.
7. Control-joint strips.
8. Accessory strips.
9. Precast terrazzo jointing and edge configurations.
10. Terrazzo patterns.

C. Samples for Verification and Initial Color Selection: For each type, material, color, and pattern of terrazzo and accessory required showing the full range of color, texture, and pattern variations expected. Label each terrazzo sample to identify manufacturer's matrix color and aggregate types, sizes, and proportions. Prepare Samples of same thickness and from same material to be used for the Work, in size indicated below:

1. Poured Terrazzo: 6-inch-square Samples.
2. Precast Terrazzo: 6-inch-square Samples.
3. Accessories: 6-inch-long Samples of each exposed strip item required.
4. NTMA color plates showing the full range of colors and patterns available for each terrazzo type.

1.7 INFORMATIONAL SUBMITTALS

A. Qualification Data: For Installer.
B. Material Certificates: For each type of terrazzo material or product, from manufacturer.
C. Installer Certificates: Signed by manufacturers certifying that installers comply with requirements.

1.8 CLOSEOUT SUBMITTALS

A. Maintenance Data: For terrazzo to include in maintenance manuals.

1.9 QUALITY ASSURANCE

A. Installer Qualifications:

1. Engage an installer who is a contractor member of NTMA.
2. Engage an installer who is certified in writing by terrazzo manufacturer as qualified to install manufacturer's products.

B. Source Limitations: Obtain primary terrazzo materials from single source from single manufacturer. Provide secondary materials including patching and fill material, joint sealant, and repair materials of type and from source recommended by manufacturer of primary materials.

C. Source Limitations for Aggregates: Obtain each color, grade, type, and variety of granular materials from single source with resources to provide materials of consistent quality in appearance and physical properties.

D. Mockups: Build mockups to verify selections made under Sample submittals and to demonstrate aesthetic effects and set quality standards for materials and execution.

1. Build mockups for terrazzo including accessories.

a. Size: Minimum 100 sq. ft. of typical poured-in-place flooring condition for each color and pattern in locations directed by Architect.
b. Include base.

2. Approval of mockups does not constitute approval of deviations from the Contract Documents contained in mockups unless Architect specifically approves such deviations in writing.

1.10 DELIVERY, STORAGE, AND HANDLING

A. Deliver materials to Project site in supplier's original wrappings and containers, labeled with source's or manufacturer's name, material or product brand name, and lot number if any.
B. Store materials in their original, undamaged packages and containers, inside a well-ventilated area protected from weather, moisture, soiling, extreme temperatures, and humidity.

1.11 FIELD CONDITIONS

A. Environmental Limitations: Comply with manufacturer's written instructions for substrate temperature, ambient temperature, moisture, ventilation, and other conditions affecting terrazzo installation.

B. Field Measurements: Verify actual dimensions of construction contiguous with precast terrazzo by field measurements before fabrication.

C. Provide permanent lighting or, if permanent lighting is not in place, simulate permanent lighting conditions during terrazzo installation.

D. Close spaces to traffic during terrazzo application and for not less than 24 hours after application unless manufacturer recommends a longer period.

E. Control and collect water and dust produced by grinding operations. Protect adjacent construction from detrimental effects of grinding operations.

PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

A. NTMA Standards: Comply with NTMA's "Terrazzo Specifications and Design Guide" and with written recommendations for terrazzo type indicated unless more stringent requirements are specified.

2.2 EPOXY-RESIN MATRIX TERRAZZO-POURED EPOXY

A. Thin-set, Epoxy-Resin Matrix Terrazzo: Comply with NTMA's "Terrazzo Specifications and Design Guide" and manufacturer's written instructions for matrix and aggregate proportions and mixing.

1. Products: Subject to compliance with requirements, available products that may be incorporated into the Work include, but are not limited to, the following:

   a. General Polymers Corporation; Terrazzo 1100.
   b. Key Resin Company; Key Epoxy Terrazzo.
   c. Master Terrazzo Technologies LLC; Morricite.
   d. TEC Specialty Construction Brands, Inc.; Tuff-Lite Epoxy Terrazzo.
   e. Terrazzo & Marble Supply Companies; Terroxy Resin Systems.

2. Thickness: 3/8 inch nominal.

3. Formulated Mix Color and Pattern: To match existing Retain "Custom Mix Color and Pattern" Subparagraph below for custom design mixes. If needed for decorative effect, insert requirements for toppings that include art objects or aggregates other than marble chips, such as granite, quartz, pea gravel, mother-of-pearl, recycled glass, or other suitable granules. Not all granular material is compatible with every matrix; consult NTMA for recommendations.

4. Custom Mix Color and Pattern: Match existing.

5. Aggregate and Matrix colors to be selected by architect. Matrix color to be selected from entire line of Sherwin Williams colors.

B. Materials:

1. Crack Isolation Membrane with Scrim: A two component, 100 percent solid flexible epoxy membrane applied at 40 square feet per gallon, yielding 40 mils in thickness. Provide Crack Isolation Membrane over 100% of surface to be covered with epoxy flooring- all floor levels. Provide scrim over all new and existing cracks as per manufactures recommendations. For all second and third floor applications, provide scrim over 100% of surface to be covered with epoxy flooring.

   a. Similar to “Epoflex” by General Polymers, Cincinnati Ohio.

2. Primer: Manufacturer's product recommended for substrate and use indicated.

3. Thin-set Epoxy-Resin Matrix-Poured Epoxy: Manufacturer's standard recommended for use indicated and in color required for mix indicated.

   a. Physical Properties without Aggregates:

      1) Hardness: 60 to 85 per ASTM D 2240, Shore D.

      2) Minimum Tensile Strength: 3000 psi per ASTM D 638 for a 2-inch specimen made using a "C" die per ASTM D 412.

      3) Minimum Compressive Strength: 10,000 psi per ASTM D 695, Specimen B cylinder.

      4) Chemical Resistance: No deleterious effects by contaminants listed below after seven-day immersion at room temperature per ASTM D 1308.

         a) Distilled water.
         b) Mineral water.
         c) Isopropanol.
         d) Ethanol.
         e) 0.025 percent detergent solution.
         f) 1.0 percent soap solution.
         g) 10 percent sodium hydroxide.
         h) 10 percent hydrochloric acid.
         i) 30 percent sulfuric acid.
         j) 5 percent acetic acid.

   b. Physical Properties with Aggregates: For resin blended with Georgia white marble, ground, grouted, and cured per requirements in NTMA's "Terrazzo Specifications and Design Guide"; comply with the following:

      1) Flammability: Self-extinguishing, maximum extent of burning 1/4 inch per ASTM D 635.
      2) Thermal Coefficient of Linear Expansion: 0.0025 inch/inch per deg F for temperature range of minus 12 to plus 140 deg F per ASTM D 696.

4. Aggregates: Comply with NTMA gradation standards for mix indicated and contain no deleterious or foreign matter.

   a. Abrasion and Impact Resistance: Less than 40 percent loss per ASTM C 131.
   b. 24-Hour Absorption Rate: Less than 0.75 percent.
   c. Dust Content: Less than 1.0 percent by weight.

5. Finishing Grout: Resin based.

2.3 EPOXY-RESIN MATRIX TERRAZZO BASE-PRECAST

A. Epoxy Resin Matrix Terrazzo Base- Precast: Minimum 3/8-inch-thick, reinforced epoxy resin matrix terrazzo base- precast cast in maximum lengths possible, but not less than 36 inches. Comply with NTMA's written recommendations for fabricating precast terrazzo base units in sizes and profiles indicated.

   1. Type: Refer to details.
   2. Top Edge: Radius edge with polished top surface.
   3. Outside Corner Units: With finished returned edges at outside corner.
   4. Aggregate and Matrix colors to be selected by architect. Matrix color to be selected from entire line of Sherwin Williams colors.

2.4 STRIP MATERIALS

A. Thin-Set Divider Strips: L-type angle, 1/4 inch deep.

   1. Material: White-zinc, alloy Brass.
   2. Top Width: 1/8 inch, 1/4 inch.

B. Control-Joint Strips: Separate, double L-type angles, positioned back-to-back, that match material and color of divider strips and in depth required for topping thickness indicated.

C. Accessory Strips: Match divider-strip width, material, and color unless otherwise indicated. Use the following types of accessory strips as required to provide a complete installation:

   1. Base-bead strips for exposed top edge of terrazzo base.
   2. Edge-bead strips for exposed edges of terrazzo.

2.5 MISCELLANEOUS ACCESSORIES

A. Anchoring Devices:

   1. Strips: Provide mechanical anchoring devices or adhesives for strip materials as recommended by manufacturer and required for secure attachment to substrate.

   2. Precast Epoxy Resin Matric Terrazzo: Provide mechanical anchoring devices as recommended by fabricator for proper anchorage and support of units for conditions of installation and support.

B. Patching and Fill Material: Terrazzo manufacturer's resinous product approved and recommended by manufacturer for application indicated.

C. Joint Compound: Terrazzo manufacturer's resinous product approved and recommended by manufacturer for application indicated.

D. Resinous Matrix Terrazzo Cleaner: Chemically neutral cleaner with pH factor between 7 and 10 that is biodegradable, phosphate free, and recommended by sealer manufacturer for use on terrazzo type indicated.

E. Sealer: Slip- and stain-resistant, penetrating-type sealer that is chemically neutral; does not affect terrazzo color or physical properties; is recommended by sealer manufacturer; and complies with NTMA's "Terrazzo Specifications and Design Guide" for terrazzo type indicated.

1. Surface Friction: Not less than 0.6 according to ASTM D 2047.
2. Acid-Base Properties: With pH factor between 7 and 10.
3. Sealers shall have a VOC content of 200 g/L or less when calculated according to 40 CFR 59, Subpart D (EPA Method 24).

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine substrates and 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, including levelness tolerances, have been corrected.
C. Beginning installation constitutes Contractor’s acceptance of substrates and conditions.

3.2 PREPARATION

A. Clean substrates of substances, including oil, grease, and curing compounds, that might impair terrazzo bond. Provide clean, dry, and neutral substrate for terrazzo application.

B. Concrete Slabs:

1. Provide sound concrete surfaces free of laitance, glaze, efflorescence, curing compounds, form-release agents, dust, dirt, grease, oil, and other contaminants incompatible with terrazzo.

a. Shot-blast surfaces with an apparatus that abrades the concrete surface, contains the dispensed shot within the apparatus, and recirculates the shot by vacuum pickup.

b. Repair damaged and deteriorated concrete according to terrazzo manufacturer's written recommendations.

c. Use patching and fill material to fill holes and depressions in substrates according to terrazzo manufacturer's written instructions.

C. Verify that concrete substrates are dry and moisture-vapor emissions are within acceptable levels according to manufacturer's written instructions.

1. Moisture Testing: Perform tests indicated below.

a. Calcium Chloride Test: Perform anhydrous calcium chloride test per ASTM F 1869. Proceed with installation only after substrates have maximum moisture-vapor-emission rate of 3 lb of water/1000 sq. ft. in 24 hours.

1) Perform tests so that each test area does not exceed 200 sq. ft., and perform not less than two tests in each installation area and with test areas evenly spaced in installation areas.

b. In-Situ Probe Test: Perform relative-humidity test using in-situ probes per ASTM F 2170. Proceed with installation only after substrates have a maximum 75 percent relative-humidity-level measurement.

c. Proceed with installation only after substrates pass testing.

D. Protect other work from water and dust generated by grinding operations. Control water and dust to comply with environmental protection regulations.

1. Erect and maintain temporary enclosures and other suitable methods to limit water damage and dust migration and to ensure adequate ambient temperatures and ventilation conditions during installation.

3.3 EPOXY-RESIN MATRIX TERRAZZO INSTALLATION- POURED EPOXY

A. Comply with NTMA's written recommendations for terrazzo and accessory installation.

B. Place, rough grind, grout, cure grout, fine grind, and finish terrazzo according to manufacturer's written instructions and NTMA's "Terrazzo Specifications and Design Guide."

C. Installation Tolerance: Limit variation in terrazzo surface from level to 1/4 inch in 10 feet; noncumulative.

D. Ensure that matrix components and fluids from grinding operations do not stain terrazzo by reacting with divider and control-joint strips.

E. Delay fine grinding until heavy trade work is complete and construction traffic through area is restricted.

F. Flexible Reinforcing Membrane:

1. Prepare and prefill substrate cracks with membrane material.
2. Install membrane to produce full substrate coverage in areas to receive terrazzo.
3. Reinforce membrane with fiberglass scrim at substrate cracks and at all slabs other than slabs-on-grade.
4. Prepare membrane according to manufacturer's written instructions before applying substrate primer.

G. Primer: Apply to terrazzo substrates according to manufacturer's written instructions.

H. Strip Materials:

1. Divider and Control-Joint Strips:

a. Locate divider strips in locations indicated.

b. Install control-joint strips back to back directly above concrete-slab control joints.

c. Install control-joint strips with 1/4-inch gap between strips, and install sealant in gap.

d. Install strips in adhesive setting bed without voids below strips, or mechanically anchor strips as required to attach strips to substrate, as recommended by strip manufacturer.

2. Accessory Strips: Install as required to provide a complete installation and in locations indicated.

3. Abrasive Strips: Install with surface of abrasive strip positioned 1/16 inch higher than terrazzo surface.

3.4 EPOXY RESIN MATRIX TERRAZZO INSTALLATION BASE-PRECAST

A. Install epoxy resin matrix terrazzo base-precast using method recommended by NTMA and manufacturer unless otherwise indicated.
B. Do not install base-precast that are chipped, cracked, discolored, or not properly finished.
C. Seal joints between base-precast with joint compound matching precast terrazzo matrix.

3.5 REPAIR

A. Cut out and replace terrazzo areas that evidence lack of bond with substrate. Cut out terrazzo areas in panels defined by strips and replace to match adjacent terrazzo, or repair panels according to NTMA's written recommendations, as approved by Architect.

3.6 CLEANING AND PROTECTION

A. Cleaning:

1. Remove grinding dust from installation and adjacent areas.

2. Wash surfaces with cleaner according to NTMA's written recommendations and manufacturer's written instructions; rinse surfaces with water and allow them to dry thoroughly.

B. Sealing:

1. Seal surfaces according to NTMA's written recommendations.

2. Apply sealer according to sealer manufacturer's written instructions.

C. Protection: Provide final protection and maintain conditions, in a manner acceptable to Installer, that ensure that terrazzo is without damage or deterioration at time of Substantial Completion.

END OF SECTION 09 66 23

SECTION 09 68 13 - TILE CARPETING

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. Carpet tile.

1.3 SUBMITTALS, GENERAL

A. General: Submit all action submittals (except Samples for Verification) and informational submittals required by this Section concurrently.

1.4 ACTION SUBMITTALS

A. Product Data: For each type of product. Include manufacturer's written data on physical characteristics, durability, and fade resistance. Include installation recommendations for each type of substrate.

1. Carpet tile.
2. Trowelable leveling and patching compounds.
3. Adhesives.
4. Metal edge/transition strip.

B. Shop Drawings: Show the following:

1. Columns, doorways, enclosing walls or partitions, built-in cabinets, and locations where cutouts are required in carpet.
2. Carpet type, color, and dye lot.
3. Seam locations, types, and methods.
4. Type of subfloor.
5. Type of installation.
6. Pattern type, repeat size, location, direction, and starting point.
7. Pile direction.
8. Type, color, and location of edge, transition, and other accessory strips.
9. Transition details to other flooring materials.
10. Base details.

C. Samples for Verification and Initial Color Selection: For each of the following products and for each color and texture required. Label each Sample with manufacturer's name, material description, color, pattern, and designation indicated on Drawings and in schedules.

1. Carpet Tile: Full-size Sample.
2. Exposed Edge, Transition, and Other Accessory Stripping: 12-inch- long Samples.

D. Sample Warranty: For special warranty.

1.5 INFORMATIONAL SUBMITTALS

A. Qualification Data: For Installer.
B. Product Test Reports: For carpet tile, for tests performed by a qualified testing agency.

1.6 CLOSEOUT SUBMITTALS

A. Maintenance Data: For carpet tiles to include in maintenance manuals. Include the following:

1. Methods for maintaining carpet tile, including cleaning and stain-removal products and procedures and manufacturer's recommended maintenance schedule.
2. Precautions for cleaning materials and methods that could be detrimental to carpet tile.

B. Warranty: Executed special warranty.

1.7 MAINTENANCE MATERIAL SUBMITTALS

A. Furnish extra materials, from the same product run, that match products installed and that are packaged with protective covering for storage and identified with labels describing contents.

1. Carpet Tile: Full-size units equal to 5 percent of amount installed for each type indicated, but not less than 10 sq. yd.

1.8 QUALITY ASSURANCE

A. Installer Qualifications: An experienced installer who is certified by the International Certified Floorcovering Installers Association at the Commercial II certification level.

B. Fire-Test-Response Ratings: Where indicated, provide carpet tile identical to those of assemblies tested for fire response according to NFPA 253 by a qualified testing agency.

C. Floor Radiant Panel Test: Flooring material meets the ASTM E -648 Radiant Panel Test, Class 1 requirements.

D. Mockups: Build mockups to verify selections made under Sample submittals and to demonstrate aesthetic effects and set quality standards for fabrication and installation.

1. Subject to compliance with requirements, approved mockups may become part of the completed Work if undisturbed at time of Substantial Completion.

1.9 DELIVERY, STORAGE, AND HANDLING

A. Comply with CRI 104.

1.10 FIELD CONDITIONS

A. Comply with CRI 104 for temperature, humidity, and ventilation limitations.

B. Environmental Limitations: Do not deliver or install carpet tiles until spaces are enclosed and weathertight, wet work in spaces is complete and dry, and ambient temperature and humidity conditions are maintained at occupancy levels during the remainder of the construction period.

C. Do not install carpet tiles over concrete slabs until slabs have cured and are sufficiently dry to bond with adhesive and concrete slabs have pH range recommended by carpet tile manufacturer.

D. Where demountable partitions or other items are indicated for installation on top of carpet tiles, install carpet tiles before installing these items.

1.11 WARRANTY

A. Special Warranty for Carpet Tiles: Manufacturer agrees to repair or replace components of carpet tile installation that fail in materials or workmanship within specified warranty period.

1. Warranty does not include deterioration or failure of carpet tile due to unusual traffic, failure of substrate, vandalism, or abuse.
2. Failures include, but are not limited to, more than 10 percent edge raveling, snags, runs, dimensional stability, loss of tuft bind strength, loss of face fiber, and delamination.
3. Warranty Period: 10 years from date of Substantial Completion.

PART 2 - PRODUCTS

2.1 CARPET TILE C1

A. Basis of design product: Subject to compliance with requirements, provide, “Design Local Collection by Mannington Commercial” or by the following:

1. Or approved equal.

B. Pattern: Design Local Collection – “Nashville.”

C. Color: As selected by Architect from manufacturer's full range.

D. Fiber Content: 100 percent nylon 6, 6.

E. Fiber Type: Invista Antron Lumena.

F. Pile Characteristic: Textured Pattern Loop Pile/ Tip Shear Patterned Loop.

G. Pile Thickness: 0.126 inches.

H. Stitches: 11.33 per inch.

I. Gage: 5/ 64.

J. Face Weight: 24 oz. /sq. yd.

K. Primary Backing/Backcoating: 100% Synthetic.

L. Secondary Backing:

1. Mannington: Infinity Modular.

M. Size: 18 by 36 inches.

N. Applied Soil-Resistance Treatment: Manufacturer's standard material.

O. Antimicrobial Treatment: Manufacturer's standard material.

P. Performance Characteristics: As follows:

1. Appearance Retention Rating: Moderate traffic, 2.5 minimum according to ASTM D 7330.

2. Critical Radiant Flux Classification: Not less than Class A-0.45 W/sq. cm.

3. Electrostatic Propensity: Less than 3.0 kV according to AATCC 134.

4. Emissions: Provide carpet tile that complies with testing and product requirements of CRI's "Green Label Plus" program.

5. Emissions: Provide carpet tile that complies with the product requirements of the California Department of Health Services' "Standard Practice for the Testing of Volatile Organic Emissions from Various Sources Using Small-Scale Environmental Chambers."

2.2 INSTALLATION ACCESSORIES

A. Trowelable Leveling and Patching Compounds: Latex-modified, hydraulic-cement-based formulation provided or recommended by carpet tile manufacturer.

1. Basis-of-Design Products: Subject to compliance with requirements, provide the following Ardex product or a comparable product:

a. Portland Cement-Based Flash Patching and Skim Coating: Feather Finish.
b. Portland Cement-Based Patching: SD-P.
c. Portland Cement-Based Self-Leveling Underlayment: K-10/K-60 Self-Leveling Underlayment Concrete.

B. Adhesives: Water-resistant, mildew-resistant, non-staining, pressure-sensitive type to suit products and subfloor conditions indicated, that complies with flammability requirements for installed carpet tile and is recommended by carpet tile manufacturer for releasable installation.

1. Adhesives shall have a VOC content of 50 g/L or less when calculated according to 40 CFR 59, Subpart D (EPA Method 24).

2. Adhesives shall comply with the testing and product requirements of the California Department of Health Services' "Standard Practice for the Testing of Volatile Organic Emissions from Various Sources Using Small-Scale Environmental Chambers."

C. Metal Edge/Transition Strips: Extruded aluminum with finish selected by Architect, of profile and width shown, of height required to protect exposed edge of carpet, and of maximum lengths to minimize running joints.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine substrates, areas, and conditions, with Installer present, for compliance with requirements for maximum moisture content, alkalinity range, installation tolerances, and other conditions affecting carpet tile performance. Examine carpet tile for type, color, pattern, and potential defects.

B. Concrete Subfloors: Verify that concrete slabs comply with ASTM F 710 and the following:

1. Slab substrates are dry and free of curing compounds, sealers, hardeners, and other materials that may interfere with adhesive bond. Determine adhesion and dryness characteristics by performing bond and moisture tests recommended by carpet tile manufacturer.

2. Subfloor finishes comply with requirements specified in Section 03 30 00 "Cast-in-Place Concrete" for slabs receiving carpet tile.

3. Subfloors are free of cracks, ridges, depressions, scale, and foreign deposits.

4. Alkalinity and Adhesion Testing: Perform tests recommended by manufacturer. Proceed with installation only after substrates pass testing.

5. Moisture Testing: Perform tests recommended by manufacturer and as follows. Proceed with installation only after substrates pass testing.

a. Perform anhydrous calcium chloride test, ASTM F 1869. Proceed with installation only after substrates have maximum moisture-vapor-emission rate of 3 lb of water/1000 sq. ft. in 24 hours.

1) At a minimum, test concrete substrates in at least 3 locations in separate parts of the floor for applications of 2000 square feet or less; provide one additional test location for each additional 1000 square feet, or fraction thereof.

b. Perform relative humidity test using in situ probes, ASTM F 2170. Proceed with installation only after substrates have maximum 75 percent relative humidity level measurement.

C. For wood subfloors, verify the following:

1. Underlayment over subfloor complies with requirements specified in Section 06 10 00 "Rough Carpentry."
2. Underlayment surface is free of irregularities and substances that may interfere with adhesive bond or show through surface.

D. Existing Floors: Condition of existing subfloor is unknown prior to removal of existing flooring. If, after removal of existing flooring, subfloor requires leveling, patching, or filling, notify Architect in writing.

1. Asbestos Abatement Areas: In areas where removal of existing flooring is included in asbestos abatement procedures, coordinate with entity responsible for abatement to ensure patching and repair is compatible with requirements for installation of carpet.

E. Proceed with installation only after unsatisfactory conditions have been corrected.

F. Beginning installation constitutes Contractor’s acceptance of substrates and conditions.

3.2 PREPARATION

A. General: Comply with CRI 104, Section 6.2, "Site Conditions; Floor Preparation," and with carpet tile manufacturer's written installation instructions for preparing substrates indicated to receive carpet tile installation.

B. Use trowelable leveling and patching compounds, according to manufacturer's written instructions, to fill cracks, holes, depressions, and protrusions in substrates. Fill or level cracks, holes and depressions 1/8 inch wide or wider and protrusions more than 1/32 inch unless more stringent requirements are required by manufacturer's written instructions.

1. Ensure patching and repair materials are compatible with carpet tile.

2. Levelness Tolerances: Apply patching and repair materials to provide levelness of floor substrate within 1/4 inch in 10 feet, unless more stringent levelness is recommended or required by carpet tile manufacturer.

3. Flash Patching and Skim Coating: Apply flash patching material to areas with 1/8 inch or less depression.

4. Patching: Apply patching material to areas with 1/8 inch or greater depression.

5. Self-Leveling Underlayment: Apply self-leveling material to areas where flash patching and patching described above cannot provide smooth, level surface acceptable to receive carpet tile.

C. Remove coatings, including curing compounds, and other substances that are incompatible with adhesives and that contain soap, wax, oil, or silicone, without using solvents. Use mechanical methods recommended in writing by carpet tile manufacturer.

D. Broom and vacuum clean substrates to be covered immediately before installing carpet tile.

3.3 INSTALLATION

A. Comply with CRI 104, Section 14, "Carpet Modules," and with carpet tile manufacturer's written installation instructions.

B. Installation Method: As recommended in writing by carpet tile manufacturer.

C. Maintain dye lot integrity. Do not mix dye lots in same area.

D. Cut and fit carpet tile to butt tightly to vertical surfaces, permanent fixtures, and built-in furniture including cabinets, pipes, outlets, edgings, thresholds, and nosings. Bind or seal cut edges as recommended by carpet tile manufacturer.

E. Extend carpet tile into toe spaces, door reveals, closets, open-bottomed obstructions, removable flanges, alcoves, and similar openings.

F. Maintain reference markers, holes, and openings that are in place or marked for future cutting by repeating on finish flooring as marked on subfloor. Use nonpermanent, nonstaining marking device.

G. Install pattern parallel to walls and borders.

H. Stagger joints of carpet tiles so carpet tile grid is offset from access flooring panel grid. Do not fill seams of access flooring panels with carpet adhesive; keep seams free of adhesive.

3.4 CLEANING AND PROTECTION

A. Perform the following operations immediately after installing carpet tile:

1. Remove excess adhesive, seam sealer, and other surface blemishes using cleaner recommended by carpet tile manufacturer.
2. Remove yarns that protrude from carpet tile surface.
3. Vacuum carpet tile using commercial machine with face-beater element.

B. Protect installed carpet tile to comply with CRI 104, Section 16, "Protecting Indoor Installations."

C. Protect carpet tile against damage from construction operations and placement of equipment and fixtures during the remainder of construction period. Use protection methods indicated or recommended in writing by carpet tile manufacturer.

END OF SECTION 09 68 13

SECTION 09 91 00 – PAINTING

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 surface preparation and application of paint systems, for the following:

1. Exterior applications.

2. Interior applications.

a. Painting systems indicated on Drawings and in Schedules applied to new and existing exterior and interior surfaces and related components including but not limited to items such as hollow metal doors frames, doors, access doors, trim pieces, window sash, trim and previously painted cabinet heater/fin tube enclosures, exposed ductwork etc., unless otherwise indicated, including appropriate surface preparation for all new or existing surfaces to be painted including previously painted surfaces and surfaces with existing wall coverings

B. Section includes surface preparation and application of wood finishes.

1. Wood Refinishing as indicated on Drawings and in Schedules applied to new and existing interior surfaces and related components including but not limited to items such as door frames, doors, access doors, trim and molding pieces, window sash and trim, wood panel walls and doors etc., unless otherwise indicated, including appropriate surface preparation for all new or existing surfaces to be refinished including previously painted surfaces and surfaces with existing wall coverings.

1.3 SUBMITTALS, GENERAL

A. General: Submit all action submittals (except Samples for Verification) and informational submittals required by this Section concurrently.

1.4 ACTION SUBMITTALS

A. Product Data: For each type of product for substrates indicated. Include preparation requirements and application instructions. Include all paint products under one cover sheet.

1. Exterior CMU (painted).
2. Exterior CMU (stained).
3. Exterior steel.

4. Exterior galvanized-metal.
5. Exterior aluminum (where indicated).
6. Exterior wood (bleeding woods and knots).
7. Exterior wood (non-bleeding woods).
8. Exterior portland cement (stucco).
9. Exterior exposed metal trim at portland cement (stucco).
10. Exterior exposed PVC.
11. Exterior Brick.
12. Interior concrete, vertical surfaces.
13. Interior concrete, vertical surfaces (deep tone accent colors).
14. Interior CMU.
15. Interior CMU (deep tone accent colors).
16. Interior steel.
17. Interior steel (deep tone accent colors).
18. Interior previously painted cabinet heater/fin tube enclosures.
19. Interior steel piping, piping supports and hangers.
20. Interior galvanized-metal.
21. Interior galvanized-metal (metal deck).
22. Interior galvanized metal (metal deck, deep tone accent colors).
23. Interior aluminum (where indicated).
24. Interior wood.
25. Interior wood (deep tone accent colors).
26. Interior hardboard (stage floor).
27. Interior fiberglass reinforced polyester (FRP).
28. Interior plaster.
29. Interior plaster (deep tone accent colors).
30. Interior gypsum board.
31. Interior gypsum board (deep tone accent colors).
32. Interior plaster.
33. Interior plaster (deep tone accent colors).
34. Interior gypsum board.
35. Interior gypsum board (deep tone accent colors).
36. Interior plaster.
37. Interior plaster (deep tone accent colors).
38. Interior gypsum board.
39. Interior gypsum board (deep tone accent colors).
40. Interior insulation-covering.
41. Interior insulation-covering (deep tone accent colors).
42. TV studio wall paint.
43. Textured plaster.
44. Interior stained wood (closed or open grain).
45. Interior stained wood (closed or open grain).
46. Interior clear finish wood (closed grain).
47. Interior clear finish wood (closed grain).

B. Samples for Verification and Initial Color Selection: For each type of finish system and in each color and gloss of finish indicated.

1. Submit Samples on rigid backing, 8 inches square.

    a. For wood finishes, submit Samples on representative samples of actual wood substrates, 8 inches square.

2. Step coats on Samples to show each coat required for system.

3. Label each coat of each Sample.

4. Label each Sample for location and application area.

C. Product List: For each product indicated, include the following:

1. Cross-reference to finish system and locations of application areas. Use same designations indicated on Drawings and in schedules.
2. VOC content. Tints and/or colorant shall add no additional VOC to final product. Provide 3rd party certification of VOC content.

D. Coatings Maintenance Manual:

1. Upon conclusion of the project, the contractor or paint manufacture/supplier shall furnish a coatings maintenance manual such as Sherwin Williams "Custodian Project Color and Product Information" report. Manual shall include an Area Summary with finish schedule, Area Detail designating where each product/color/finish was used, product data pages, Material Safety Data Sheets, care and cleaning instructions. Touch up procedures and color samples of each color and finish used. All information contained in a self-bound 3 ring hole punched catalog.

1.5 INFORMATIONAL SUBMITTALS

A. Qualification Data: For applicator.

1.6 MAINTENANCE MATERIAL SUBMITTALS

A. Furnish extra materials, from the same product run, that match products installed and that are packaged with protective covering for storage and identified with labels describing contents.

1. Paint: 10 percent, but not less than 1 gal. of each material and color applied.
2. Stains and Transparent Finishes: 10 percent, but not less than 1 gal. of each material and color applied.

1.7 QUALITY ASSURANCE

A. Applicator Qualifications: A firm or individual, experienced in applying finishes specified in this Section, who has successfully completed a minimum of five previous projects similar in nature, size, and extent to this Project; familiar with special requirements indicated; and with sufficient trained staff to apply manufacturer's products according to specified requirements.

B. Mockups: Apply mockups of each finish system indicated to verify preliminary selections made under sample submittals and to demonstrate aesthetic effects and set quality standards for materials and execution.

1. Architect will select one surface to represent surfaces and conditions for application of each finish system specified in Part 3.

a. Wall and Ceiling Surfaces: Provide samples of at least 100 sq. ft.
b. Other Items: Architect will designate items or areas required.

2. Final approval of color selections will be based on mockups.

a. If preliminary color selections are not approved, apply additional mockups of additional colors selected by Architect at no added cost to Owner.

3. Approval of mockups does not constitute approval of deviations from the Contract Documents contained in mockups unless Architect specifically approves such deviations in writing.

4. Subject to compliance with requirements, approved mockups may become part of the completed Work if undisturbed at time of Substantial Completion.

1.8 DELIVERY, STORAGE, AND HANDLING

A. Store materials not in use in tightly covered containers in well-ventilated areas with ambient temperatures continuously maintained at not less than 45 deg F.

1. Maintain containers in clean condition, free of foreign materials and residue.
2. Remove rags and waste from storage areas daily.

1.9 FIELD CONDITIONS

A. Apply finishes only when temperature of surfaces to be coated and surrounding air temperatures are between 50 and 95 deg F.
B. Do not apply finishes when relative humidity exceeds 85 percent; at temperatures less than 5 deg F above the dew point; or to damp or wet surfaces.
C. Do not apply exterior finishes in snow, rain, fog, or mist.
D. Lighting: Do not install finishes until a lighting level of not less than 80 fc is provided on the surfaces to receive finishing.

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 the following:

1. Benjamin Moore & Co.

2. PPG Architectural Finishes, Inc.
3. Sherwin-Williams Company (The).

B. Submittals containing manufactures other than stated above, will require a product by product comparison for each type of paint. All Comparable equals are to be matched with corresponding Sherwin Williams specified products.

C. Products: Subject to compliance with requirements, available products that may be incorporated into the Work include, but are not limited to products listed in Part 3 articles for the application indicated.

2.2 MATERIALS, GENERAL

A. Material Compatibility:

1. Provide materials for use within each finish system that are compatible with one another and substrates indicated, under conditions of service and application as demonstrated by manufacturer, based on testing and field experience.

2. For each coat in a finish system, provide products recommended in writing by manufacturers of topcoat for use in finish system and on substrate indicated.

3. Provide products of same manufacturer for each coat in a finish system.

4. “All-in-one” paint and primer products are not acceptable.

B. VOC Compliance: All paint products shall meet New York requirements for Volatile Organic Compound (VOC) and Ozone Transport Commission (OTC) regulations, January 2005.

C. Colors: As selected by Architect from manufacturer's full range.

1. 25 percent of surface area will be painted with deep tones.

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.

1. Maximum Moisture Content of Substrates: When measured with an electronic moisture meter as follows:

a. Concrete: 12 percent.
b. Masonry (Clay and CMU): 12 percent.
c. Wood: 15 percent.
d. Gypsum Board: 12 percent.
e. Plaster: 8 percent.

B. Gypsum Board Substrates: Verify that finishing compound is sanded smooth.

C. Plaster Substrates: Verify that plaster is fully cured.

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. Beginning coating application constitutes Contractor's acceptance of substrates and conditions.

3.2 PREPARATION

A. Remove hardware, covers, plates, and similar items already in place that are removable and are not to be finished. If removal is impractical or impossible because of size or weight of item, provide surface-applied protection before surface preparation and finishing.

1. After completing finishing operations, use workers skilled in the trades involved to reinstall items that were removed. Remove surface-applied protection.

B. Clean substrates of substances that could impair bond of finishes, 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 finish systems indicated.

C. Concrete Substrates: Remove release agents, curing compounds, efflorescence, and chalk. Do not paint surfaces if moisture content or alkalinity of surfaces to be coated exceeds that permitted in manufacturer's written instructions.

D. Masonry Substrates: Remove efflorescence and chalk. Do not paint surfaces if moisture content or alkalinity of surfaces or if alkalinity of mortar joints exceed that permitted in manufacturer's written instructions.

E. Steel Substrates: Remove rust, loose mill scale, and shop primer if any. Clean using methods recommended in writing by paint manufacturer but not less than the following**:**

1. SSPC-SP 3, "Power Tool Cleaning."
2. SSPC-SP 11, "Power Tool Cleaning to Bare Metal."

F. Shop-Primed Steel Substrates: Clean field welds, bolted connections, and abraded areas of shop paint, and paint exposed areas with the same material as used for shop priming to comply with SSPC-PA 1 for touching up shop-primed surfaces.

G. 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.

H. Galvanized Metal/Galvanized Deck, Factory Primed Surface-Coordinate with approved paint manufacture on compatibility of paint finish coats to factory prime surface.

I. Aluminum Substrates: Remove loose surface oxidation.

J. Wood Substrates:

1. Scrape and clean knots. Before applying primer apply coat of knot sealer recommended in writing by topcoat manufacturer for coating system indicated.
2. Apply wood filler paste to open-grain woods to produce smooth, glasslike finish.
3. Sand surfaces that will be exposed to view and dust off.
4. Prime edges, ends, faces, undersides, and back sides of wood.
5. After priming, fill holes and imperfections in the finish surfaces with putty or plastic wood filler. Sand smooth when dried.

K. Cotton or Canvas Insulation Covering Substrates: Remove dust, dirt, and other foreign material that might impair bond of paints to substrates.

L. Alteration Work: Comply with applicable surface preparation requirements specified and as recommended by finish materials manufacturer for existing surfaces to receive paint or other finishes, including cleaning, sanding, and roughening as required for proper adherence of new finish material.

1. Existing Woodwork: Strip existing wood finish to bare wood using commercially available solvents compatible with finish. Use in strict accordance with manufacturer's printed instructions. After stripping operation is complete and surface is dry, sand surface with sandpaper, using random orbital sanding machine.

3.3 APPLICATION

A. Apply finishes according to manufacturer's written instructions.

1. Use applicators and techniques suited for finish 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 back sides of access panels, removable or hinged covers, and similar hinged items to match exposed surfaces.

4. Do not apply paints over labels of independent testing agencies or equipment name, identification, performance rating, or nomenclature plates.

B. Tint each undercoat a lighter shade to facilitate identification of each coat if multiple coats of the same material are to be applied. Tint undercoats to match color of finish coat, but provide sufficient difference in shade of undercoats to distinguish each separate coat.

C. If undercoats or other conditions show through final coat, apply additional coats until cured film has a uniform coating finish, color, and appearance.

D. Apply paints to produce surface films without cloudiness, spotting, holidays, laps, brush marks, runs, sags, ropiness, or other surface imperfections. Produce sharp glass lines and color breaks.

E. Alterations: Finish new surfaces adjacent to unaltered existing surfaces with finish of same type and surface texture as corresponding adjacent surfaces, unless otherwise indicated. Finish patched, damaged, or extended surfaces to match existing surfaces.

F. Painting Fire Suppression, Plumbing, HVAC, Electrical, Communication, and Electronic Safety and Security Work:

1. Paint the following work where exposed in equipment rooms:

   a. Equipment, including panelboards and switch gear.
   b. Uninsulated metal piping.
   c. Uninsulated plastic piping.
   d. Pipe hangers and supports.
   e. Metal conduit.
   f. Plastic conduit.
   g. Tanks that do not have factory-applied final finishes.
   h. Duct, equipment, pipe and insulation having cotton or canvas insulation covering or another paintable jacket material.

2. Paint the following work where exposed in occupied spaces:

   a. Equipment, including panelboards.
   b. Uninsulated metal piping.
   c. Uninsulated plastic piping.
   d. Pipe hangers and supports.
   e. Metal conduit.
   f. Plastic conduit.
   g. Duct, equipment, and pipe insulation having cotton or canvas insulation covering or another paintable jacket material.
   h. Other items as directed by Architect.

3. Paint portions of internal surfaces of metal ducts, without liner, behind air inlets and outlets that are visible from occupied spaces.

3.4 FIELD QUALITY CONTROL

A. Dry Film Thickness Testing: Owner will 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 recommendations, Contractor shall pay for testing and apply additional coats as needed to provide dry film thickness that complies with paint manufacturer's written recommendations.

3.5 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 finish operation. Correct damage by cleaning, repairing, replacing, and recoating, 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 finished surfaces.

3.6 EXTERIOR PAINTING SCHEDULE

A. CMU Substrates (Painted):

1. First Coat:

   a. Benjamin Moore & Co.; Ultra-Spec Int/Ext Hi Build Block Filler 0609.
   b. PPG Paints; Speedhide Interior/Exterior Latex Block Filler 6-7.
   c. Sherwin-Williams Company (The); Prep Rite Latex Block Filler B25W25.

2. Second and Third Coats:

   a. Benjamin Moore & Co.; N447 Ultra Spec Exterior Flat Acrylic.
   b. PPG Paints; Speedhide Interior/Exterior Flat Acrylic Latex 6-610.
   c. Sherwin-Williams Company (The); A100 Latex Flat House Paint A6.

B. CMU Substrates (Stained):

1. First, Second and Third Coats:

   a. Benjamin Moore & Co.; Insl-X Tuffcrete WB Concrete Stain CST 2XXX.
   b. PPG Paints; Perma-Crete Color Seal Acrylic Concrete Stain 4-4210 Series.
   c. Sherwin-Williams Company (The); H & C ColorTop Concrete Stain Solid Color Water based 111.08 Concrete Stain.

C. Steel Substrates:

1. First Coat:

   a. Benjamin Moore & Co.; Super Spec HP Acrylic Metal Primer P04.
   b. PPG Paints; Inc.; Pitt-Tech Interior/Exterior Industrial DTM Primer/Finish Enamel 90-712.
   c. Sherwin-Williams Company (The); Pro Industrial Pro-Cryl® Universal Primer; B66 Series at 1.9-3.8 mils DFT.

2. Second and Third Coats:

    a. Benjamin Moore & Co.; Ultra Spec HP DTM Acrylic Gloss, HP28 or S/G Enamel HP29.
    b. PPG Paints; Inc.; Pitt-Tech Industrial DTM Acrylic Gloss 90-374.
    c. Sherwin-Williams Company (The); Pro Industrial™ Waterbased Alkyd Urethane Enamel Semi-Gloss; B53 Series at 1.4-1.7 DFT.

D. Galvanized-Metal Substrates:

1. First Coat:

    a. Benjamin Moore & Co.; Super Spec HP Acrylic Metal Primer P04.
    b. PPG Paints; Inc.; Pitt-Tech Interior/Exterior Industrial DTM Primer/Finish Enamel 90-712.
    c. Sherwin-Williams Company (The); Pro Industrial Pro-Cryl® Universal Primer; B66 Series at 1.9-3.8 mils DFT.

2. Second and Third Coats:

    a. Benjamin Moore & Co.; Ultra Spec HP DTM Acrylic Low Luster HP29 or Semi-Gloss HP29.
    b. PPG Paints; Speedhide Exterior Acrylic Latex Satin 6-2045XI or Semi-Gloss 6-900XI.
    c. Sherwin-Williams Company (The); Pro Industrial™ Waterbased Alkyd Urethane Enamel Low-Gloss or Semi-Gloss; B53 Series at 1.4-1.7 DFT.

E. Aluminum Substrates (Where Indicated):

1. First Coat:

    a. Benjamin Moore & Co.; Super Spec HP Acrylic Metal Primer P04.
    b. PPG Paints; Pitt-Tech Interior/Exterior Industrial DTM Primer/Finish Enamel 90-712.
    c. Sherwin-Williams Company (The); Pro Industrial Pro-Cryl® Universal Primer; B66 Series at 1.9-3.8 mils DFT.

2. Second and Third Coats:

    a. Benjamin Moore & Co.; Ultra Spec HP DTM Acrylic Gloss Enamel HP28 or Semi-Gloss HP29.
    b. PPG Paints; Pitt-Tech Industrial DTM Acrylic Gloss 90-374.
    c. Sherwin-Williams Company (The); Pro Industrial™ Waterbased Alkyd Urethane Enamel Low-Gloss or Semi-Gloss; B53 Series at 1.4-1.7 DFT.

F. Wood Substrates (Bleeding Woods and Knots):

1. First Coat:

   a. Benjamin Moore & Co.; Super Spec Alkyd Exterior Primer 176.
   b. PPG Paints; Seal Grip Alkyd Universal Primer 17-941NF.
   c. Sherwin-Williams Company (The); Exterior Oil-Based Wood Primer (Y24W8020).

2. Second and Third Coats:

   a. Benjamin Moore & Co.; N448 Ultra Spec Exterior Satin Acrylic or Gloss N449.
   b. PPG Paints: Speedhide Exterior Acrylic Satin 6-2045XI or Semi-Gloss 6-900XI.
   c. Sherwin-Williams Company (The); Resilience Exterior Acrylic with Early Moisture Resistance.

G. Wood and Plywood Substrates (Non-Bleeding Woods):

1. First Coat:

   a. Benjamin Moore & Co.; Fresh Start Multi-Purpose Latex Primer 023.
   b. PPG Paints: Speedhide Exterior Latex Wood Primer 6-609.
   c. Sherwin-Williams Company (The); Exterior Latex Wood Primer (B42W8041).

2. Second and Third Coats:

   a. Benjamin Moore & Co.; Ultra Spec Exterior Satin, N448 or Gloss N449.
   b. PPG Paints: Speedhide Exterior Acrylic Latex Satin 6-2045XI or Semi-Gloss 6-900XI.
   c. Sherwin-Williams Company (The) A100 Exterior Latex Satin (A82) or Gloss (A8).

H. Portland Cement (Stucco) Substrates:

1. First Coat:

   a. Benjamin Moore & Co.; Ultra Spec Masonry High Build Masonry Primer 609.
   b. PPG Paints: Perma-Crete High Build Acrylic Primer 4-2.
   c. Sherwin-Williams Company (The); Loxon Concrete & Masonry Primer LX02W0050.

2. Second and Third Coats:

   a. Benjamin Moore & Co.; N447 Ultra Spec Exterior Flat Acrylic.
   b. PPG Paints: Speedhide Exterior 100% Acrylic Flat 6-650XI.
   c. Sherwin-Williams Company (The); Loxon® XP Waterproofing Masonry Coating Flat; LX11-50 Series at 6.5-8.4 mils DFT.

I. Exposed Metal Trim at Portland Cement (Stucco) Substrates:

1. First Coat:

   a. Benjamin Moore & Co.; Super Spec HP Acrylic Metal Primer P04.
   b. PPG Paints: Pitt-Tech Interior/Exterior Industrial DTM Primer/Finish Enamel 90-712.
   c. Sherwin-Williams Company (The); Pro Industrial DTM Acrylic Primer Finish B66W1.

2. Second and Third Coats:

   a. Benjamin Moore & Co.; Ultra Spec DTM Acrylic Gloss Enamel HP28.
   b. PPG Paints: Pitt-Tech Industrial DTM Acrylic Gloss 90-374.
   c. Sherwin-Williams Company (The); Pro Industrial DTM Acrylic.

J. Exposed PVC Substrates:

1. First Coat:

   a. Benjamin Moore & Co.; Insl-X Stix Waterborne Bonding Primer SXA-110.
   b. PPG Paints: Pitt-tech Int./Ext. Primer DTM Industrial Enamel 90-712.
   c. Sherwin-Williams Company (The); Extreme Bond Primer B51W00150.

2. Second and Third Coats:

   a. Benjamin Moore & Co.; Ultra Spec Ext, Gloss N449.
   b. PPG Paints: Pitt-Tech Plus Int./Ext. Semi-Gloss DTM Industrial Enamel 90-1210.
   c. Sherwin-Williams Company (The): Pro Industrial™ Waterbased Alkyd Urethane Enamel Low-Gloss or Semi-Gloss; B53 Series at 1.4-1.7 DFT.

K. Exposed Brick:

1. First Coat:

   a. Benjamin Moore & Co.; Ultra Spec Masonry Int/Ext 100% Acrylic Sealer 608.
   b. PPG Paints.; Perma-Crete Interior/Exterior Acrylic Alkali Resistant Primer 4-603XI.
   c. Sherwin-Williams Company (The); Loxon Concrete & Masonry Primer/Sealer Exterior Latex LX02W0050.

2. Second and Third Coats: (Satin):

   a. Benjamin Moore & Co.; Regal Select Exterior High Build Low Lustre Finish N401.
   b. PPG Paints.; Perma Crete Interior/exterior 100% Acrylic Hi Build 4-422XI.
   c. Sherwin-Williams Company (The); Loxon® Self-Cleaning Acrylic Coating-Flat; LX13-50 Series at 2.0-2.9 DFT.

3.7 INTERIOR PAINTING SCHEDULE

A. Concrete Substrates, Vertical Surfaces:

1. First Coat:

   a. Benjamin Moore & Co.; Moore's Acrylic Masonry Primer 066.
   b. PPG Paints: Perma-Crete Alkali-Resistant Primer 4-603.
   c. Sherwin-Williams Company (The); Loxon Concrete & Masonry Primer (LX02W0050).

2. Second and Third Coats (Semi-Gloss):

   a. Benjamin Moore & Co.; N539 Ultra Spec 500 Interior Semi-Gloss.
   b. PPG Paints: Speedhide Interior Semi-Gloss Latex 6-500.
   c. Sherwin-Williams Company (The); Pro Mar 200 Zero VOC Interior Latex S/G B31 Series.

B. Concrete Substrates, Vertical Surfaces (Deep Tone Accent Colors):

1. First Coat: Use tinted primer.

   a. Benjamin Moore & Co.; Moore's Acrylic Masonry Primer 066.
   b. PPG Paints: Perma-Crete Alkali-Resistant Primer 4-603.
   c. Sherwin-Williams Company (The); Loxon Concrete & Masonry Primer (LX02W0050).

2. Second and Third Coats (Semi-Gloss): Additional coats may be required.

   a. Benjamin Moore & Co.; Ultra Spec 500 Interior Semi-Gloss N539.
   b. PPG Paints: Speedhide Interior Semi-Gloss Latex 6-500.
   c. Sherwin-Williams Company (The); ProMar 200 Zero VOC S/G B31-2600.

C. CMU Substrates:

1. First Coat:

   a. Benjamin Moore & Co.; Super Spec Masonry Int-Ext Hi-Build Block Filler 571.
   b. PPG Paints: Speedhide Interior/Exterior Latex Block Filler 6-7.
   c. Sherwin-Williams Company (The); PrepRite Block Filler B25W25.

2. Second and Third Coats (Semi-Gloss):

   a. Benjamin Moore & Co.; N539 Ultra Spec 500 Interior Semi-Gloss.
   b. PPG Paints: Speedhide Interior Semi-Gloss Latex 6-500.
   c. Sherwin-Williams Company (The); Pro Mar 200 Zero VOC Interior Latex S/G B31 Series.

D. CMU Substrates (Deep Tone Accent Colors):

1. First Coat: Use tinted primer.

   a. Benjamin Moore & Co.; Super Spec Masonry Int-Ext Hi-Build Block Filler 571.
   b. PPG Paints: Speedhide Interior/Exterior Latex Block Filler 6-7.
   c. Sherwin-Williams Company (The); PrepRite Block Filler B25W25.

2. Second and Third Coats (Semi-Gloss): Additional coats may be required.

   a. Benjamin Moore & Co.; Ultra Spec 500 Interior Semi-Gloss N539.
   b. PPG Paints: Speedhide Interior Semi-Gloss Latex 6-500.
   c. Sherwin-Williams Company (The); Pro Industrial DTM Acrylic Coating S/G (B66-20 DTM Acrylic Coating S/G (B66-W01151 Series) or Gloss (B66-W01051 Series).

E. Steel Substrates:

1. First Coat:

   a. Benjamin Moore & Co.; Super Spec HP Acrylic Metal Primer P04.
   b. PPG Paints: Pitt-Tech Interior/Exterior Industrial DTM Primer/Finish Enamel 90-712.
   c. Sherwin-Williams Company (The); Pro Industrial DTM Acrylic Primer Finish B66W1.

2. Second and Third Coats (Semi-Gloss):

   a. Benjamin Moore & Co.; Ultra Spec HP DTM Acrylic Semi-Gloss HP29, or Gloss HP28.
   b. PPG Paints: Pitt-Tech Industrial DTM Acrylic Satin 90-474.
   c. Sherwin-Williams Company (The); Pro Industrial™ Waterbased Alkyd Urethane Enamel Low-Gloss or Semi-Gloss; B53 Series at 1.4-1.7 DFT.

F. Steel Substrates (Deep Tone Accent Colors):

1. First Coat: Use tinted primer.

   a. Benjamin Moore & Co.; Super Spec HP Acrylic Metal Primer P04.
   b. PPG Paints: Pitt-Tech Interior/Exterior Industrial DTM Primer/Finish Enamel 90-712.
   c. Sherwin-Williams Company (The); Pro Industrial DTM Acrylic Primer Finish B66W1.

2. Second and Third Coats (Semi-Gloss): Additional coats may be required.

   a. Benjamin Moore & Co.; Ultra Spec HP DTM Acrylic Semi-Gloss HP29 or Gloss HP28.
   b. PPG Paints: Pitt-Tech Industrial DTM Acrylic Satin 90-474.

c. Sherwin-Williams Company (The); Sherwin-Williams Company (The); Pro Industrial™ Waterbased Alkyd Urethane Enamel Low-Gloss or Semi-Gloss; B53 Series at 1.4-1.7 DFT.

G. Previously Painted Steel Cabinet Heaters/ Fin tube Enclosures- up to 250 degrees:

1. First Coat:

a. Benjamin Moore & Co.; Super Spec HP Acrylic Metal Primer P06.
b. PPG Paints; PPG Paints: Pitt Tech DTM Acrylic Metal Primer 90-712
c. Sherwin-Williams Company (The); Pro Industrial DTM Acrylic Primer Finish B66A50.

2. Second and Third Coats (Semi-Gloss):

a. Benjamin Moore & Co.; Super Spec HP Urethane Alkyd Gloss.
b. PPG Paints; PPG Paints Pitt Tech Plus DTM Acrylic Semi-Gloss 4216
c. Sherwin-Williams Company (The); Pro Industrial DTM Acrylic Coating S/G (B66-W01151/B66-W01051).

H. Steel Piping, Piping Supports and Hangers:

1. First Coat:

a. Benjamin Moore & Co.; Super Spec HP Acrylic Metal Primer P04.
b. PPG Paints: Pitt-Tech Interior/Exterior Industrial DTM Primer/Finish Enamel 90-712.
c. Sherwin-Williams Company (The); Pro Industrial DTM Acrylic Primer Finish B66W1.

2. Second and Third Coats (Semi-Gloss):

a. Benjamin Moore & Co.; N539 Ultra Spec Interior Semi-Gloss.
b. PPG Paints: Speedhide Interior Latex Semi-Gloss 6-500.
c. Sherwin-Williams Company (The); Pro Industrial DTM Acrylic Coating S/G (B66-W01151/B66-W01051).

I. Galvanized-Metal Substrates:

1. First Coat:

a. Benjamin Moore & Co.; Super Spec HP Acrylic Metal Primer P04.
b. PPG Paints: Pitt-Tech Interior/Exterior Industrial DTM Primer/Finish Enamel 90-712.
c. Sherwin-Williams Company (The); Sherwin Williams Pro Industrial Pro Cryl Universal Primer B66-1310.

2. Second and Third Coats:

a. Benjamin Moore & Co.; Ultra Spec HP DTM Acrylic Semi-Gloss HP29.
b. PPG Paints: Pitt-Tech Industrial DTM Acrylic Satin 90-474.
c. Sherwin-Williams Company (The); Pro Industrial DTM Acrylic Coating S/G (B66-W01151/B66-W01051).

J. Galvanized-Metal Substrates (Metal Deck):

1. First Coat:

a. Benjamin Moore & Co.; Coronado Super Kote 5000 Dry Fall Latex Flat 105 or Semi-Gloss 112.
b. PPG Paints: Speed Super Tech Latex Dry Fog Spray Paint 6-724XI.
c. Sherwin-Williams Company (The); Pro Industrial Waterborne Acrylic Dry Fall Eggshell B42W200082.

2. Second and Third Coats:

a. Benjamin Moore & Co.; Coronado Super Kote 5000 Dry Latex Semi-Gloss 112.
b. PPG Paints: Speed Super Tech Latex Dry Fog Spray Paint 6-724XI.
c. Sherwin-Williams Company (The); Pro Industrial Waterborne Acrylic Dry Fall Eggshell B42W0082.

K. Galvanized-Metal Substrates (Metal Deck, Deep Tone Accent Colors):

1. First Coat: Use tinted primer.

a. Benjamin Moore & Co.; Super Spec HP Acrylic Metal Primer P04.
b. PPG Paints: Pitt-Tech Interior/Exterior Industrial DTM Primer/Finish Enamel 90-712.
c. Sherwin-Williams Company (The); Pro Industrial DTM Acrylic Primer Finish B66 Series.

2. Second and Third Coats (Semi-Gloss):

a. Benjamin Moore & Co.; Ultra Spec HP DTM Acrylic Semi-Gloss HP29 or Gloss HP28.
b. PPG Paints: Pitt-Tech Interior /Exterior Satin DTM Industrial Enamel 90-474.
c. Sherwin-Williams Company (The); Pro Industrial DTM Acrylic Coating S/G or Gloss B66 Series.

L. Aluminum Substrates (Where indicated):

1. First Coat:

a. Benjamin Moore & Co.; Super Spec HP Acrylic Metal Primer P04.
b. PPG Paints: Pitt-Tech Interior/Exterior Industrial DTM Primer/Finish Enamel 90-712.
c. Sherwin-Williams Company (The); DTM Acrylic Primer Finish B66W1.

2. Second and Third Coats (Eggshell):

a. Benjamin Moore & Co.; Ultra Spec 500 Interior Eggshell N538.
b. PPG Paints: Speedhide Interior Latex Eggshell 6-411.
c. Sherwin-Williams Company (The); Pro Industrial DTM B66 Series.

M. Wood Substrates:

1. First Coat:

a. Benjamin Moore & Co.; Fresh Start Multi-Purpose Latex Primer N023.
b. PPG Paints: Seal Grip Latex Primer/Finish 17-951.
c. Sherwin-Williams Company (The); Premium Interior Wall and Wood Primer B28W8111.

2. Second and Third Coats (Semi-Gloss):

a. Benjamin Moore & Co.; N539 Ultra Spec 500 Interior Semi-Gloss.
b. PPG Paints: Speedhide Interior Semi-Gloss Latex 6-500.
c. Sherwin-Williams Company (The); Pro Mar 200 Zero VOC Interior Latex S/G B31 Series.

N. Wood Substrates (Deep Tone Accent Colors):

1. First Coat: Use tinted primer.

a. Benjamin Moore & Co.; Fresh Start Multi-Purpose Latex Primer N023.
b. PPG Paints: Seal Grip Latex Primer/Finish 17-951.
c. Sherwin-Williams Company (The); Premium Interior Wall and Wood Primer B28W8111.

2. Second and Third Coats (Semi-Gloss): Additional coats may be required.

a. Benjamin Moore & Co.; Ultra Spec 500 Interior Semi-Gloss N539.
b. PPG Paints: Speedhide Interior Semi-Gloss Latex 6-500.
c. Sherwin-Williams Company (The); Pro Industrial DTM Acrylic Coating S/G or Gloss B66 Series.

O. Fiberglass Reinforced Polyester (FRP) Substrates:

1. First Coat: Lightly sand before primer coat.

a. Benjamin Moore & Co.; 023 Fresh Start 100% Acrylic Primer.
b. PPG Paints: Seal Grip Acrylic Universal Primer 17-921.
c. Sherwin-Williams Company (The); Extreme Bond Primer B51W00150.

2. Second and Third Coats (Semi-Gloss):

a. Benjamin Moore & Co.; V510 Coratech Semi-Gloss Acrylic Aliphatic Urethane Coating.
b. PPG Paints: Pitt Tech Plus Acrylic Semi-Gloss Enamel 90-1210.

c. Sherwin-Williams Company (The); Pro Industrial™ Waterbased Alkyd Urethane Enamel Low-Gloss or Semi-Gloss; B53 Series at 1.4-1.7 DFT.

P. Plaster Substrates:

1. First Coat:

a. Benjamin Moore & Co.; Super Spec Int/Ext 100% Acrylic Masonry Sealer N066.
b. PPG Paints: Perma-Crete Alkali-Resistant Primer 4-603.
c. Sherwin-Williams Company (The); Loxon Concrete & Masonry Primer LX02W0050.

2. Second and Third Coats (Eggshell):

a. Benjamin Moore & Co.; N538 Ultra Spec 500 Interior Eggshell.
b. PPG Paints: Speedhide Zero Interior Latex Eggshell 6-4310.
c. Sherwin-Williams Company (The); Pro Mar 200 0 VOC Interior Latex Egg Shell (B20-2600 Series).

Q. Plaster Substrates (Deep Tone Accent Colors):

1. First Coat: Use tinted primer.

a. Benjamin Moore & Co.; Fresh Start Primer 023.
b. PPG Paints: Perma-Crete Alkali-Resistant Primer 4-603.
c. Sherwin-Williams Company (The); Loxon Concrete & Masonry Primer LX02W0050.

2. Second and Third Coats (Eggshell): Additional coats may be required.

a. Benjamin Moore & Co.; N538 Ultra Spec 500 Interior Eggshell.
b. PPG Paints: Speedhide Zero Interior Latex Eggshell 6-4310.
c. Sherwin-Williams Company (The); Pro Mar 200 0 VOC Interior Latex Egg Shell (B20-2600 Series).

R. Gypsum Board Substrates:

1. First Coat:

a. Benjamin Moore & Co.; Fresh Start Multi-Purpose Latex N023.
b. PPG Paints: Speedhide Interior Latex Primer/Sealer 6-2.
c. Sherwin-Williams Company (The); Pro Mar 200 Zero VOC Interior Latex Primer (B28W02600).

2. Second and Third Coats (Eggshell):

a. Benjamin Moore & Co.; N538 Ultra Spec 500 Interior Eggshell.
b. PPG Paints: Speedhide Interior Latex Eggshell 6-411.
c. Sherwin-Williams Company (The); Pro Mar 200 Zero VOC Interior Latex Low Sheen (B20-Series).

S. Gypsum Board Substrates (Deep Tone Accent Colors):

1. First Coat: Use tinted primer.

   a. Benjamin Moore & Co.; Fresh Start Multi-Purpose Latex N023.
   b. PPG Paints: Speedhide Interior Latex Primer/Sealer 6-2.
   c. Sherwin-Williams Company (The); Pro Mar 200 Zero VOC Interior Latex Primer (B28W02600).

2. Second and Third Coats (Eggshell): Additional coats may be required.

   a. Benjamin Moore & Co.; N538 Ultra Spec 500 Interior Eggshell.
   b. PPG Paints: Speedhide Interior Latex Eggshell 6-411.
   c. Sherwin-Williams Company (The); Pro Mar 200 0 VOC Interior Latex Low Sheen (B24-2600 Series).

T. Insulation-Covering Substrates:

1. First Coat:

   a. Benjamin Moore & Co.; Fresh Start Multi-Purpose Latex N023.
   b. PPG Paints: Speedhide Interior Latex Primer/Sealer 6-2.
   c. Sherwin-Williams Company (The); PrepRite® ProBlock® Interior-Exterior Latex Primer-Sealer at 1.4 DFT.

2. Second and Third Coats (Semi-Gloss):

   a. Benjamin Moore & Co.; N539 Ultra Spec 500 Interior Semi-Gloss.
   b. PPG Paints: Speedhide Zero Interior Semi-Gloss Latex 6-4510.
   c. Sherwin-Williams Company (The); Pro Mar 200 Zero VOC Interior Latex Primer (B28W02600).

U. Insulation-Covering Substrates (Deep Tone Accent Colors):

1. First Coat: Use tinted primer.

   a. Benjamin Moore & Co.; Fresh Start Multi-Purpose Latex N023.
   b. PPG Paints: Speedhide Interior Latex Primer/Sealer 6-2.
   c. Sherwin-Williams Company (The); Pro Mar 200 Zero VOC Interior Latex Primer (B28-2600).

2. Second and Third Coats (Semi-Gloss): Additional coats may be required.

   a. Benjamin Moore & Co.; N539 Ultra Spec 500 Interior Semi-Gloss.
   b. PPG Paints: Speedhide Zero Interior Semi-Gloss Latex 6-4510.
   c. Sherwin-Williams Company (The); Pro Mar 200 Zero VOC Interior Latex S/G (B31-2600 Series).

V. Textured Plaster/Gypsum Substrates Ceilings:

1. First Coat: Use tinted primer.

   a. Benjamin Moore & Co.; Ultra Spec Masonry Interior/Exterior Acrylic Masonry Sealer 608.
   b. PPG Paints: Perma-Crete Alkali Resistant Primer 4-603.
   c. Sherwin-Williams Company (The); Multi-Purpose, interior/exterior latex primer/sealer B51-450 series.

2. Second and Third Coats (Flat): Additional coats may be required.

   a. Benjamin Moore & Co.; Coronado TexCrete WB Acrylic Masonry Waterproofer Medium Finish, 3196.
   b. PPG Paints: Perma-Crete 100% Acrylic Texture Coating 4-50 Series.
   c. Sherwin-Williams Company (The); Ultra-Crete Textured Masonry Topcoat A44W800 Series.

3.8 INTERIOR WOOD-FINISH-SYSTEM SCHEDULE

A. Stained Wood (Closed or Open Grain):

1. First Coat:

   a. Benjamin Moore & Co.; Lenmar Interior Waterborne Stain.
   b. PPG Paints: Olympic Interior Low VOC Oil Stain 44500.
   c. Sherwin-Williams Company (The); Minwax Wood Finish 250 VOC Compliant Stain (7107 Series).

2. Second and Third Coats (Eggshell/Low Lustre):

   a. Benjamin Moore & Co.; Benwood Stays Clear Stain Acrylic Polyurethane N423.
   b. PPG Paints: Olympic Interior Satin Polyurethane 43886.
   c. Sherwin-Williams Company (The); Minwax High Build Polyurethane Satin (009919945)

B. Stained Wood (Closed or Open Grain): Apply wood grain filler to open grain wood.

1. First Coat:

   a. Benjamin Moore & Co.; Lenmar Interior Waterborne Stain.
   b. PPG Paints: Olympic Interior Low VOC Oil Stain 44500.
   c. Sherwin-Williams Company (The); Minwax Wood Finish 250 VOC Compliant Stain (7107 Series)

2. Second and Third Coats (Semi-Gloss/High Gloss):

   a. Benjamin Moore & Co.; Benwood Stays Clear Semi-Gloss Acrylic Polyurethane N422.
   b. PPG Paints: Olympic Interior Semi-Gloss Satin Polyurethane 43886.

c. Sherwin-Williams Company (The); Minwax High Build Polyurethane Semi-Gloss (009919937) or Gloss (009919929)

C. Clear Finish Wood (Closed Grain):

1. First Coat:

a. Benjamin Moore & Co.; Benwood Stays Clear Acrylic Polyurethane N423.
b. PPG Paints: Olympic Interior Gloss Polyurethane 43886 (Quart size only-OTC).
c. Sherwin-Williams Company (The); Minwax High Build Polyurethane Satin (009919945).

2. Second and Third Coats (Satin/Low Lustre):

a. Benjamin Moore & Co.; Benwood Stays Clear Satin Acrylic Polyurethane N423.
b. PPG Paints: Olympic Interior Satin Polyurethane 43884 thinned (Quart size only – OTC).
c. Sherwin-Williams Company (The); Minwax High Build Polyurethane Satin (009919945).

D. Clear Finish Wood (Closed Grain):

1. First Coat:

a. Benjamin Moore & Co.; Benwood Stays Clear Acrylic Polyurethane N422.
b. PPG Paints: Olympic Interior Gloss Polyurethane 43884 thinned (Quart size only – OTC).
c. Sherwin-Williams Company (The); Minwax High Build Polyurethane Satin (009919945)

2. Second and Third Coats (Semi-Gloss/High Gloss):

a. Benjamin Moore & Co.; Benwood Stays Clear Semi-Gloss Acrylic Polyurethane N422.
b. PPG Paints: Olympic Interior Semi-Gloss Polyurethane 43884 (Quart size only – OTC).
c. Sherwin-Williams Company (The); Minwax High Build Polyurethane Semi-gloss (009919945).

END OF SECTION 09 91 00

SECTION 09 96 00 – HIGH-PERFORMANCE COATINGS

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 surface preparation and application of high-performance coating systems, for the following:

1. Exterior applications.
2. General use interior applications.

1.3 SUBMITTALS, GENERAL

A. General: Submit all action submittals (except Samples for Verification) and informational submittals required by this Section concurrently.

1.4 ACTION SUBMITTALS

A. Product Data: For each type of product for substrates indicated. Include preparation requirements and application instructions. Include all paint products under one cover sheet.

1. Exterior steel.
2. Exterior Steel – Gas Piping
3. Exterior galvanized metal.
4. Exterior wood.
5. Exterior aluminum.
6. Exterior urethane.
7. Exterior CMU.
8. Exterior Cement Board.
9. Interior concrete, vertical surfaces.
10. Interior concrete floors in janitor closets.
11. Interior concrete floors in classrooms corridors and kitchen storage rooms.
12. Interior concrete floors in mechanical rooms.
13. Interior concrete floors in stage and auditorium.
14. Interior concrete floors in locker rooms (slip-resistant).
15. Interior CMU, smooth finish.
16. Interior CMU, rough industrial finish.
17. Interior steel, galvanized-metal, and non-ferrous metal.
18. Interior wood with previously applied coatings.
19. Interior gypsum board and plaster (non-wet environments).

B. Samples for Verification and Initial Selection: For each type of coating system and in each color and gloss of topcoat indicated.

1. Submit Samples on rigid backing, 8 inches square.
2. Step coats on Samples to show each coat required for system.
3. Label each coat of each Sample.
4. Label each Sample for location and application area.

C. Product List: For each product indicated, include the following:

1. Cross-reference to paint system and locations of application areas. Use same designations indicated on Drawings and in schedules.
2. VOC content.

D. Coatings Maintenance Manual:

1. Upon conclusion of the project, the contractor or paint manufacture/supplier shall furnish a coatings maintenance manual such as Sherwin Williams "Custodian Project Color and Product Information" report. Manual shall include an Area Summary with finish schedule, Area Detail designating where each product/color/finish was used, product data pages, Material Safety Data Sheets, care and cleaning instructions. Touch up procedures and color samples of each color and finish used. All information contained in a self-bound 3 ring hole punched catalog.

1.5 QUALITY ASSURANCE

A. Qualification Data: For applicator.

1.6 MAINTENANCE MATERIAL SUBMITTALS

A. Furnish extra materials, from the same product run, that match products installed and that are packaged with protective covering for storage and identified with labels describing contents.

1. Coatings: 10 percent, but not less than 1 gal. of each material and color applied.

1.7 QUALITY ASSURANCE

A. Applicator Qualifications: A firm or individual, experienced in applying high performance coatings specified in this Section, who has successfully completed a minimum of five previous projects similar in nature, size, and extent to this Project; familiar with special requirements indicated; and with sufficient trained staff to apply manufacturer's products according to specified requirements.

B. Mockups: Apply mockups of each coating system indicated to verify preliminary selections made under sample submittals and to demonstrate aesthetic effects and set quality standards for materials and execution.

1. Architect will select one surface to represent surfaces and conditions for application of each coating system specified in Part 3.

    a. Wall and Ceiling Surfaces: Provide samples of at least 100 sq. ft.
    b. Other Items: Architect will designate items or areas required.

2. Final approval of color selections will be based on mockups.

    a. If preliminary color selections are not approved, apply additional mockups of additional colors selected by Architect at no added cost to Owner.

3. Approval of mockups does not constitute approval of deviations from the Contract Documents contained in mockups unless Architect specifically approves such deviations in writing.

4. Subject to compliance with requirements, approved mockups may become part of the completed Work if undisturbed at time of Substantial Completion.

1.8 DELIVERY, STORAGE, AND HANDLING

A. Store materials in tightly covered containers in well-ventilated areas with ambient temperatures continuously maintained at not less than 45 deg F.

    1. Maintain containers in clean condition, free of foreign materials and residue.
    2. Remove rags and waste from storage areas daily.

1.9 FIELD CONDITIONS

A. Apply coatings only when temperature of surfaces to be coated and surrounding air temperatures are between 50 and 95 deg F.
B. Do not apply coatings when relative humidity exceeds 85 percent; at temperatures less than 5 deg F above the dew point; or to damp or wet surfaces.
C. Do not apply exterior coatings in snow, rain, fog, or mist.
D. Lighting: Do not install high-performance coatings until a lighting level of not less than 80 fc is provided on the surfaces to receive coating.

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 the following:

    1. Benjamin Moore & Co.
    2. Sherwin-Williams Company (The).
    3. Tnemec Inc.

B. Submittals containing manufactures other than stated above, will require a product by product comparison for each type of paint. All Comparable equals are to be matched with corresponding Sherwin Williams's specified products.

C. Products: Subject to compliance with requirements, available products that may be incorporated into the Work include but are not limited to products listed in Part 3 articles for the application indicated.

2.2 HIGH PERFORMANCE COATINGS, GENERAL

A. Material Compatibility:

1. Provide materials for use within each coating system that are compatible with one another and substrates indicated, under conditions of service and application as demonstrated by manufacturer, based on testing and field experience.

2. For each coat in a coating system, provide products recommended in writing by manufacturers of topcoat for use in coating system and on substrate indicated.

3. Provide products of same manufacturer for each coat in a coating system.

4. "All-in-one" paint and primer products are not acceptable.

B. VOC Compliance: Provide coating products complying with New York requirements for Volatile Organic Compound (VOC) and Ozone Transport Commission (OTC) regulations, January 2005.

C. Colors: As selected by Architect from manufacturer's full range.

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.

1. Maximum Moisture Content of Substrates: When measured with an electronic moisture meter as follows:

a. Concrete: 12 percent.
b. Masonry (Clay and CMU): 12 percent.
c. Wood: 15 percent.
d. Gypsum Board: 12 percent.
e. Plaster: 8 percent.

B. Gypsum Board Substrates: Verify that finishing compound is sanded smooth.

C. Plaster Substrates: Verify that plaster is fully cured.

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. Beginning coating application constitutes Contractor's acceptance of substrates and conditions.

3.2 PREPARATION

A. 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.

B. Clean substrates of substances that could impair bond of coatings, including dust, dirt, oil, grease, and incompatible paints and encapsulants.

1. Remove incompatible primers and re-prime substrate with compatible primers or apply tie coat as required to produce coating systems indicated.

C. Concrete Substrates: Remove release agents, curing compounds, efflorescence, and chalk. Do not coat surfaces if moisture content or alkalinity of surfaces to be coated exceeds that permitted in manufacturer's written instructions.

D. Concrete Floors: Prepare by diamond grinding, whip blasting, or mechanical shot blasting, as recommended by coating manufacturer.

E. Masonry Substrates: Remove efflorescence and chalk. Do not coat surfaces if moisture content or alkalinity of surfaces or if alkalinity of mortar joints exceed that permitted in manufacturer's written instructions.

F. Steel Substrates: Remove rust, loose mill scale, and shop primer if any. Clean using methods recommended in writing by paint manufacturer but not less than the following:

1. SSPC-SP 6/NACE No. 3, "Commercial Blast Cleaning."
2. SSPC-SP 10/NACE No. 2, "Near-White Blast Cleaning."

G. Shop-Primed Steel Substrates: Clean field welds, bolted connections, and abraded areas of shop paint, and paint exposed areas with the same material as used for shop priming to comply with SSPC-PA 1 for touching up shop-primed surfaces.

H. Galvanized-Metal Substrates: Remove grease and oil residue from galvanized sheet metal using bio-degradable detergent. Then abrasive blast with fine abrasive to produce clean, lightly etched surfaces that promote adhesion of subsequently applied coatings.

I. Aluminum Substrates: Remove loose surface oxidation by scarification.

J. Wood Substrates:

1. Scrape and clean knots. Before applying primer apply coat of knot sealer recommended in writing by topcoat manufacturer for coating system indicated.
2. Sand surfaces that will be exposed to view and dust off.
3. Prime edges, ends, faces, undersides, and back sides of wood.
4. After priming, fill holes and imperfections in the finish surfaces with putty or plastic wood filler. Sand smooth when dried.

K. Galvanized Metal/Galvanized Deck- Factory Primed Surface: Coordinate with approved paint manufacturer on compatibility of paint finish coats to factory prime surface.

L. After removing all surface contamination, the surface should be scuff sanded or scrubbed with an abrasive cleaner to dull the surface for best adhesion.

3.3 APPLICATION

A. Apply high-performance coatings according to manufacturer's written instructions.

1. Use applicators and techniques suited for coating and substrate indicated.

2. Coat surfaces behind movable equipment and furniture same as similar exposed surfaces. Before final installation, coat surfaces behind permanently fixed equipment or furniture with prime coat only.

3. Coat back sides of access panels, removable or hinged covers, and similar hinged items to match exposed surfaces.

4. Do not apply coatings over labels of independent testing agencies or equipment name, identification, performance rating, or nomenclature plates.

B. Tint each undercoat a lighter shade to facilitate identification of each coat if multiple coats of the same material are to be applied. Tint undercoats to match color of finish coat but provide sufficient difference in shade of undercoats to distinguish each separate coat.

C. If undercoats or other conditions show through final coat, apply additional coats until cured film has a uniform coating finish, color, and appearance.

D. Apply coatings to produce surface films without cloudiness, spotting, holidays, laps, brush marks, runs, sags, ropiness, or other surface imperfections. Produce sharp glass lines and color breaks.

3.4 FIELD QUALITY CONTROL

A. Dry Film Thickness Testing: Owner will engage the services of a qualified testing and inspecting agency to inspect and test coatings for dry film thickness.

1. Contractor shall touch up and restore coated surfaces damaged by testing.

2. If test results show that dry film thickness of applied coating does not comply with coating manufacturer's written recommendations, Contractor shall pay for testing and apply additional coats as needed to provide dry film thickness that complies with coating manufacturer's written recommendations.

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 operation. Correct damage by cleaning, repairing, replacing, and recoating, 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 coated surfaces.

3.6 EXTERIOR HIGH-PERFORMANCE COATING SCHEDULE

A. Steel Substrates:

1. First Coat:

   a. Benjamin Moore & Co. (No Zinc primers) suggest Corotech V160 Epoxy Mastic Coating @4.6-7.2 DFT.
   b. Sherwin-Williams Company (The); Corothane 1 Gal-Va-Pac Zinc Primer B65G00010 at 3.0-4.0 mils DFT.
   c. Tnemec Inc.; Series 90-97 Tneme-Zinc at 2.5 to 3.5 mils DFT.

2. Second Coat:

   a. Benjamin Moore & Co. Corotech V160 Epoxy Mastic Coating @4.6-7.2 DFT.
   b. Sherwin-Williams Company (The); Macropoxy 646 B58 series 7.0-5.0 mils DFT.
   c. Tnemec Inc.; Series 66HS Hi-Build Epoxoline at 3.0 to 5.0 mils DFT.

3. Third Coat:

   a. Benjamin Moore & Co. Corotech V500 Acrylic Aliphatic Urethane Coating Gloss or V510 Acrylic Aliphatic Urethane Coating Semi-Gloss at 3.2-4.6 mils DFT.
   b. Sherwin-Williams Company (The); Hi Solids Polyurethane B65 series 4.5-3.0 mils DFT.
   c. Tnemec Inc.; Series 1074 or 1095 Endura-Shield II at 2.0 to 5.0 mils DFT.

B. Steel Substrates: Black Steel Gas Piping – above ground.

1. First Coat:

   a. Benjamin Moore & Co. Corotech V160 Surface Tolerant Epoxy Mastic (4.6–7.2).
   b. Sherwin-Williams Company (The); Macropoxy 646 Fast Cure, (5.0-10.0) DFT.
   c. Tnemec Inc.; Series V69F Hi-Build Epoxoline II (6.0-10.0) DFT.

2. Second Coat:

   a. Benjamin Moore & Co. Ben; Corotech V160 Surface Tolerant Epoxy Mastic (4.6–7.2).
   b. Sherwin-Williams Company (The); Macropoxy 646 Fast Cure, (5.0-10.0) DFT.
   c. Tnemec Inc.; Series V69F Hi-Build Epoxoline II (6.0-10.0) DFT.

3. Third Coat:

   a. Benjamin Moore & Co. Ben; Corotech V510 Semigloss (or V500 Gloss) Aliphatic Urethane (2.0-2.8).
   b. Sherwin-Williams Company (The); Hi-Solid Polyurethane 250, Aliphatic Polyurethane, (3.0-5.0) DFT.
   c. Tnemec Inc.; Series 1095 Endura-Shield (2.5-3.5) DFT.

C. Steel Substrates: Black Steel Gas Piping – Below ground.

1. First Coat:

   a. Benjamin Moore & Co. Corotech V157 Coal Tar Epoxy (8.3 -16.1).
   b. Sherwin-Williams Company (The); PipeClad, Exterior Pipeline Epoxy, (25.0-60.0) DFT.
   c. Tnemec Inc.; Series 46H-413 Hi-Build Tnemec -Tar (18.0-20.0) DFT.

2. Second Coat:

   a. Benjamin Moore & Co. Ben; Not Required.
   b. Sherwin-Williams Company (The); Not Required.
   c. Tnemec Inc.; Series 46H-413 Hi-Build Tnemec -Tar (18.0-20.0) DFT.

D. Galvanized-Metal Substrates:

1. First Coat:

   a. Benjamin Moore & Co. Corotech V160 Epoxy Mastic Coating @4.6-7.2 DFT.
   b. Sherwin-Williams Company (The); Macropoxy 646 B58 series 7.0-5.0 mils DFT.
   c. Tnemec Inc.; Series 66HS Hi-Build Epoxoline at 3.0 to 5.0 mils DFT.

2. Second Coat:

a. Benjamin Moore & Co. Corotech V500 Acrylic Aliphatic Urethane Coating Gloss or V510 Acrylic Aliphatic Urethane Coating Semi-Gloss at 3.2-4.6 DFT.
b. Sherwin-Williams Company (The); Hi Solids Polyurethane B65 series 4.5-3.0 mils DFT.
c. Tnemec Inc.; Series 1074 or 1095 Endura-Shield II at 2.0 to 5.0 mils DFT.

E. Wood Substrates:

1. First Coat:

a. Benjamin Moore & Co. Insul-X Aqua Lock Plus Primer.
b. Sherwin-Williams Company (The); Exterior Oil-Based Wood Primer Y24W8020 at 2.3 mils DFT.
c. Tnemec Inc.; Series V10-99W Primer.

2. Second and Third Coat:

a. Benjamin Moore & Co. Corotech V331 Acrylic DTM Enamel Semi-Gloss at 2-2.2 DFT (third coat of same).
b. Sherwin-Williams Company (The); Sher-Cryl HPA High Performance Acrylic Semi-Gloss B66W350 at 2.5-4.0 mils DFT.
c. Tnemec Inc.; Series 1029 Enduratone.

F. Aluminum Substrates:

1. First Coat:

a. Benjamin Moore & Co. Corotech V160 Epoxy Mastic Coating @4.6-7.2 DFT.
b. Sherwin-Williams Company (The); Macropoxy 646 Fast Cure Epoxy B58W610 at 5.0-10.0 mils DFT.
c. Tnemec Inc.; Series 66HS Hi-Build Epoxoline at 4.0-6.0 mils DFT.

2. Second Coat:

a. Benjamin Moore & Co. Corotech V500 Acrylic Aliphatic Urethane Coating Gloss or V510 Acrylic Aliphatic Urethane Coating Semi-Gloss at 3.2-4.6 DFT.
b. Sherwin-Williams Company (The); Hi Solids Polyurethane B65 series 4.5-3.0 mils DFT.
c. Tnemec Inc.; Series 1074 or 1095 Endura-Shield II at 2.0-5.0 mils DFT.

G. Urethane Substrates:

1. First Coat:

a. Benjamin Moore & Co. Insl-X Stix XSA 110 Bonding Primer.
b. Sherwin-Williams Company (The); Multi-Purpose Interior/Exterior Latex Primer/Sealer B51-450 Series at 1.4 mils DFT.
c. Tnemec Inc.; Series 151-1051 Elasto-Grip F.C. at 1.0 to 2.0 mils DFT.

2. Second and Third Coat:

a. Benjamin Moore & Co. Corotech V331 Acrylic DTM Enamel Semi-Gloss at 2-2.2 DFT (third coat of same).
b. Sherwin-Williams Company (The); Sher-Cryl HPA High Performance Acrylic Semi-Gloss B66W350 at 2.5-4.0 mils DFT.
c. Tnemec Inc.; Series 1029 Enduratone.

H. CMU:

1. First Coat:

a. Benjamin Moore & Co. Ultra-Spec Masonry 100% Acrylic Masonry 608 Flat @9. DFT.
b. Sherwin-Williams Company (The) Con-Flex XL High Build Coating A05W451 at 6.0-7.5 mils DFT.
c. Tnemec Inc.; Series 156 Color Enviro-Crete @4.0-8.0 mils DFT (use Tnemec-Tape for cracks larger than 1/64" wide).

2. Second Coat:

a. Benjamin Moore & Co. Super Spec Masonry 100% Acrylic Elastomeric 360.
b. Sherwin-Williams Company (The); Con-Flex XL High Build Coating A05W451 at 6.0-7.5 mils DFT.
c. Tnemec Inc.; Series 156 Color Enviro-Crete @4.0-8.0 mils DFT.

3.7 INTERIOR HIGH-PERFORMANCE COATING SCHEDULE: GENERAL USE

A. Concrete Substrates, Vertical Surfaces:

1. First Coat:

a. Benjamin Moore & Co. Ultra-Spec Masonry Interior/Exterior Acrylic High Build Primer, 609 1.0 DFT.
b. Sherwin-Williams Company (The); Loxon Concrete and Masonry Primer A24W8300 at 3.2-2.1 mils DFT.
c. Tnemec Inc.; Series 1029 Enduratone at 2.5 to 3.0 mils DFT.

2. Second and Third Coats:

a. Benjamin Moore & Co. Corotech V331 Acrylic DTM Enamel Semi-Gloss at 2-2.2 DFT (third coat of same).
b. Sherwin-Williams Company (The); Sher-Cryl HPA High Performance Acrylic Semi-Gloss B66W350 at 2.5-5.0 mils DFT.
c. Tnemec Inc.; Series 1029 Enduratone at 2.5 to 3.0 mils DFT each.

B. Concrete Floors in Janitor Closets:

1. First Coat:

   a. Benjamin Moore & Co. Corotech V155 100% Solid Epoxy Primer @1.0-1.5 DFT.
   b. Sherwin-Williams Company (The); Macropoxy 646-100 Fast Cure Epoxy B58-620 Series at 5.0-10.0 mils DFT.
   c. Tnemec Inc.; Series 66HS Hi-Build Epoxoline at 3.0 to 5.0 mils DFT.

2. Second Coat:

   a. Benjamin Moore & Co. Corotech V400 fast Dry Polyamide Epoxy @3.6-4.0 DFT.
   b. Sherwin-Williams Company (The); Macropoxy 646-100 Fast Cure Epoxy B58-620 Series at 5.0-10.0 mils DFT.
   c. Tnemec Inc.; Series 66HS Hi-Build Epoxoline at 3.0 to 5.0 mils DFT.

C. Concrete Floors in Mechanical Rooms:

1. First Coat:

   a. Benjamin Moore & Co. Corotech V155 100% Solid Epoxy Primer @ 1.0-1.5 DFT.
   b. Sherwin-Williams Company (The); Macropoxy 646-100 Fast Cure Epoxy B58-620 Series at 5.0-10.0 mils DFT.
   c. Tnemec Inc.; Series 66HS Hi-Build Epoxoline at 3.0 to 5.0 mils DFT.

2. Second Coat:

   a. Benjamin Moore & Co. Corotech V400 Fast Dry Polyamide Epoxy @ 3.0-4.0 DFT.
   b. Sherwin-Williams Company (The); Macropoxy 646-100 Fast Cure Epoxy B58-620 Series at 5.0-10.0 mils DFT.
   c. Tnemec Inc.; Series 66HS Hi-Build Epoxoline at 3.0 to 5.0 mils DFT.

3. Third Coat:

   a. Benjamin Moore & Co. Corotech V400 Fast Dry Polyamide Epoxy @ 3.0-4.0 DFT.
   b. Sherwin-Williams Company (The); Macropoxy 646-100 Fast Cure Epoxy B58-620 Series at 5.0-10.0 mils DFT.
   c. Tnemec Inc.; Series 66HS Hi-Build Epoxoline at 3.0 to 5.0 mils DFT.

D. CMU Substrates, Smooth Finish:

1. First Coat: Apply at 60 to 80 sq. ft. per gallon.

   a. Benjamin Moore & Co. Corotech V114 Block Filler at 8-16 DFT.
   b. Sherwin-Williams Company (The); Cement-Plex 875 Acrylic Block Filler B42W00200/B42V201 at 13-25 mils DFT.
   c. Tnemec Inc.; Series 130-6602 Envirofill.

2. Second Coat:

   a. Benjamin Moore & Co. Corotech V330 Acrylic DTM Enamel Gloss.
   b. Sherwin-Williams Company (The); Pro Industrial Multi-Surface Acrylic Gloss B66W501 at 1.5-2.0 mils DFT.
   c. Tnemec Inc.; Series 1028 Enduratone at 2.5 to 3.0 mils DFT.

3. Third Coat:

   a. Benjamin Moore & Co. Corotech V330 Acrylic DTM Enamel Gloss.
   b. Sherwin-Williams Company (The); Pro Industrial Multi-Surface Acrylic Gloss B66W501 at 1.5-2.0 mils DFT.
   c. Tnemec Inc.; Series 1028 Enduratone at 2.5 to 3.0 mils DFT.

E. CMU Substrates, Rough Industrial Finish:

1. First Coat: Apply at 60 to 80 sq. ft. per gallon.

   a. Benjamin Moore & Co. Corotech V114 Block Filler at 8-16 DFT.
   b. Sherwin-Williams Company (The); Heavy Duty Block Filler B42W46 at 10.0-18.0 mils DFT.
   c. Tnemec Inc.; Series 130-6602 Envirofill.

2. Second Coat:

   a. Benjamin Moore & Co. Corotech V331 Acrylic DTM Enamel at 1.9-2.1 DFT.
   b. Sherwin-Williams Company (The); Sher-Cryl HPA High Performance Acrylic Semi-Gloss B66-W350 at 2.5-5.0 mils DFT.
   c. Tnemec Inc.; Series 1029 Enduratone at 2.5 to 3.0 mils DFT.

3. Third Coat:

   a. Benjamin Moore & Co. Corotech V331 Acrylic DTM Enamel at 1.9-2.1 DFT.
   b. Sherwin-Williams Company (The); Sher-Cryl HPA High Performance Acrylic Semi-Gloss B66-W350 at 2.5-5.0 mils DFT.
   c. Tnemec Inc.; Series 1029 Enduratone at 2.5 to 3.0 mils DFT.

F. Galvanized-Metal, and Non-Ferrous Metal Substrates:

1. First Coat: 2.0 to 3.0 mils DFT.

   a. Benjamin Moore & Co. Corotech V160-1 Epoxy Mastic Coating @ 4.6-7.2 DFT.
   b. Sherwin-Williams Company (The); Macropoxy 646 B58 series 7.0-5.0 mils DFT.
   c. Tnemec Inc.; Series 66HS Hi-Build Epoxoline.

2. Second and Third Coats: 2.0 to 3.0 mils DFT each.

   a. Benjamin Moore & Co. Corotech V500 Acrylic Aliphatic Urethane Coating Gloss.
   b. Sherwin-Williams Company (The); Macropoxy 646 B58 series 7.0-5.0 mils DFT.
   c. Tnemec Inc.; Series 66HS Hi-Build Epoxoline.

3. Third Coats: 2.0 to 3.0 mils DFT each.

   a. Benjamin Moore & Co. Corotech V500 Acrylic Aliphatic Urethane Coating Gloss.
   b. Sherwin-Williams Company (The); Not Required.
   c. Tnemec Inc.; Series 1081 Endura-Shield.

G. Steel, Structural Steel:

1. First Coat: 2.0 to 3.0 mils DFT.

   a. Benjamin Moore & Co. Corotech V160-1 Epoxy Mastic Coating @ 4.6-7.2 DFT.
   b. Sherwin-Williams Company (The); High Solids Alkyd Metal Primer B50WZ0003 series 3.0-5.0 mils DFT.
   c. Tnemec Inc.; Series V10.

2. Second and Third Coats: 2.0 to 3.0 mils DFT each.

   a. Benjamin Moore & Co. Corotech V500 Acrylic Aliphatic Urethane Coating Gloss.
   b. Sherwin-Williams Company (The); Pro Industrial Acrolon 100 B65 Series, 4.0-1.8 mils DFT.
   c. Tnemec Inc.; Series V10.

3. Third Coats: 2.0 to 3.0 mils DFT each.

   a. Benjamin Moore & Co. Corotech V500 Acrylic Aliphatic Urethane Coating Gloss.
   b. Sherwin-Williams Company (The); Pro Industrial Acrolon 100 B65 Series, 4.0-1.8 mils DFT.
   c. Tnemec Inc.; Series 1081 Endura-Shield.

H. Wood Substrates with Previously Applied Coatings:

1. First Coat:

   a. Benjamin Moore & Co. Ultra Spec 500 Latex Primer Sealer, N534 @ 1.8 DFT.
   b. Sherwin-Williams Company (The); Sher-Cryl HPA High Performance Acrylic Semi-Gloss B66W350 at 2.5-5.0 mils DFT.
   c. Tnemec Inc.; Series 1029 Enduratone at 300 sq. ft. per gallon.

2. Second Coat:

   a. Benjamin Moore & Co. Corotech V331 Acrylic DTM Enamel at 1.9-2.1 DFT.
   b. Sherwin-Williams Company (The); Sher-Cryl HPA High Performance Acrylic Semi-Gloss B66W350 at 2.5-5.0 mils DFT.
   c. Tnemec Inc.; Series 1029 Enduratone at 300 sq. ft. per gallon.

I. Gypsum Board and Plaster Substrates (Non-Wet Environments):

1. First Coat: 1.0 to 2.0 mils DFT.

   a. Benjamin Moore & Co. Coronado Superkote 5000 Latex Primer Sealer.

b. Sherwin-Williams Company (The); ProMar 200 Zero VOC Interior Latex Primer B28W2600 at 1.0 mils DFT.
c. Tnemec Inc.; Series 51 PVA Sealer

2. Second and Third Coat:

a. Benjamin Moore & Co. Corotech V331 Acrylic DTM Enamel at 1.9-2.1 DFT.
b. Sherwin-Williams Company (The); Sher-Cryl HPA High Performance Acrylic Semi-Gloss B66W350 at 2.5-5.0 mils DFT.
c. Tnemec Inc.; Series 1029 Enduratone at 2.5 to 3.0 mils DFT.

J. Glazed Block - Smooth Finish

1. First Coat:

a. Sherwin Williams Company: Multi-Purpose Interior/Exterior Primer/Sealer B51-450 Series at mils DFT.
b. Benjamin Moore: Insul –X Aqua-Lock Sealer.
c. Tnemec: Series 66HS Color Hi-Build Epoxoline @ 2.0-3.0 mils DFT.

2. Second Coat:

a. Sherwin-Williams Company: Pro Industrial High-Performance Epoxy B67 Series at 4.0-8.0 mils DFT.
b. Benjamin Moore: Corotech 341 Pre-Catalyzed Epoxy @ 1.7-2.0 DFT.
c. Tnemec: Series 66HS Color Hi-Build Epoxoline @ 2.0-3.0 mils DFT.

3.8 INTERIOR AND EXTERIOR HIGH-PERFORMANCE COATING SCHEDULE:

A. Interiors/Exterior Gas Piping: color to be “Safety yellow.”

1. First Coat:

a. Benjamin Moore & Co.; Corotech Acrylic Enamel -Gloss.
b. Sherwin-Williams Company (The); Kem Bond Alkyd HS Primer.
c. Tnemec Inc.; Tnemic-Liner series 61 at 8-12 mils DFT.

2. Second Coat:

a. Benjamin Moore & Co.; Corotech Acrylic Enamel -Gloss.
b. Sherwin-Williams Company (The); Pro Urethane Alkyd Enamel at 6-8.0 mils total DFT.
c. Tnemec Inc.; Tnemic-Liner series 61 at 8-12 mils DFT.

END OF SECTION 09 96 00

SECTION 10 11 00 - VISUAL DISPLAY SURFACES

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. Markerboards.
2. Glass Markerboards.
3. Tackboards.

1.3 DEFINITIONS

A. Tackboard: Framed or unframed, tackable, visual display board assembly.

B. Visual Display Board Assembly: Visual display surface that is factory fabricated into composite panel form, either with or without a perimeter frame; includes chalkboards, markerboards, and tackboards.

1.4 SUBMITTALS, GENERAL

A. General: Submit all action submittals (except Samples for Verification) and informational submittals required by this Section concurrently.

1.5 ACTION SUBMITTALS

A. Product Data: For each type of product indicated. Include construction details, material descriptions, dimensions of individual components and profiles, and finishes for visual display surfaces. Include rated capacities, operating characteristics, electrical characteristics and individual panel weights for sliding visual display units.

1. Porcelain-enamel markerboards.
2. Glass markerboards.
3. Vinyl-fabric-faced tackboards.
4. Aluminum framing and trim.

B. Shop Drawings: For visual display surfaces. Include plans, elevations, sections, details, and attachments to other work.

1. Show locations of panel joints.

C. Samples for Verification and Initial Color Selection: For each type of visual display surface indicated, for units with factory-applied color finishes, and as follows:

1. Actual sections of porcelain-enamel face sheet tackboard assembly.
2. Actual samples of glass markerboard assembly.
3. Fabric swatches of vinyl and polyester fabric-faced tack assemblies.
4. Include accessory Samples to verify color selected.
5. Visual Display Surface: Not less than 8-1/2 by 11 inches, mounted on substrate indicated for final Work. Include one panel for each type, color, and texture required.
6. Trim: 6-inch-long sections of each trim profile.
7. Display Rail: 6-inch-long sections.
8. Accessories: Full-size Sample of each type of accessory.

D. Warranties: Sample of special warranties.

1.6 INFORMATIONAL SUBMITTALS

A. Qualification Data: For qualified Installer.
B. Product Test Reports: Based on evaluation of comprehensive tests performed by a qualified testing agency, for surface-burning characteristics of fabrics.

1.7 CLOSEOUT SUBMITTALS

A. Operation and Maintenance Data: For visual display surfaces and power-operated units to include in maintenance manuals.
B. Warranties: Executed special warranties.

1.8 QUALITY ASSURANCE

A. Installer Qualifications: Manufacturer's authorized representative who is trained and approved for installation of motor-operated, sliding visual display units required for this Project.

B. Source Limitations: Obtain visual display surfaces from single source from single manufacturer.

C. Surface-Burning Characteristics: As determined by testing identical products according to ASTM E 84 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.

1.9 DELIVERY, STORAGE, AND HANDLING

A. Deliver factory-built visual display surfaces, including factory-applied trim where indicated, completely assembled in one piece without joints, where possible. If dimensions exceed maximum manufactured panel size, provide two or more pieces of equal length as acceptable to Architect. When overall dimensions require delivery in separate units, prefit components at the factory, disassemble for delivery, and make final joints at the site.

B. Store visual display surfaces vertically with packing materials between each unit.

1.10 PROJECT CONDITIONS

A. Environmental Limitations: Do not deliver or install visual display surfaces until spaces are enclosed and weather tight, wet work in spaces is complete and dry, work above ceilings is complete, and temporary HVAC system is operating and maintaining ambient temperature and humidity conditions at occupancy levels during the remainder of the construction period.

B. Field Measurements: Verify actual dimensions of construction contiguous with visual display surfaces by field measurements before fabrication.

1. Allow for trimming and fitting where taking field measurements before fabrication might delay the Work.

1.11 WARRANTY

A. Special Warranty for Porcelain-Enamel Face Sheets: Manufacturer's standard form in which manufacturer agrees to repair or replace porcelain-enamel face sheets that fail in materials or workmanship within specified warranty period.

1. Failures include, but are not limited to, the following:

a. Surfaces lose original writing and erasing qualities.
b. Surfaces exhibit crazing, cracking, or flaking.

2. Warranty Period: 50 years from date of Substantial Completion.

PART 2 - PRODUCTS

2.1 MATERIALS, GENERAL

A. Porcelain-Enamel Face Sheet: Manufacturer's standard steel sheet with porcelain-enamel coating fused to steel; uncoated thickness indicated.

1. Manufacturers: For convenience specifications and details are based on Claridge Products and Equipments, Inc. Harrison Arkansas, available manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:

a. PolyVision Corporation; a Steelcase company.
b. Best-Rite Manufacturing.

2. Gloss Finish: Gloss as indicated; dry-erase markers wipe clean with dry cloth or standard eraser.

B. Vinyl Fabric: Mildew resistant, washable, complying with FS CCC-W-408D, Type II; weighing not less than 20 oz./sq. yd.; with surface-burning characteristics indicated.

C. Hardboard: ANSI A135.4, tempered.

D. Particleboard: ANSI A208.1, Grade M-1.

E. Fiberboard: ASTM C 208.

F. Extruded Aluminum: ASTM B 221, Alloy 6063.

G. Adhesives: Manufacturer's standard product that complies with the testing and product requirements of the California Department of Health Services' "Standard Practice for the Testing of Volatile Organic Emissions from Various Sources Using Small-Scale Environmental Chambers."

2.2 MARKERBOARD ASSEMBLIES

A. Porcelain-Enamel Markerboards: Balanced, high-pressure, factory-laminated markerboard assembly of three-ply construction consisting of backing sheet, core material, and 0.021-inch-thick, porcelain-enamel face sheet with **high** gloss finish.

1. Basis-of-Design Product: Subject to compliance with requirements, provide Claridge Products and Equipment, Inc, Similar to "Vitracite Porcelain Enamel Steel Chalkboards" or comparable product by one of the following:

a. Best-Rite Manufacturing.
b. PolyVision Corporation; a Steelcase company. 500 Stationary series.

2. Particleboard Core: 3/8 inch thick; with 0.015-inch-thick, aluminum sheet backing.

3. Face Sheet: Min. 24 gauge steel with porcelain enamel finish suitable for use with liquid chalk markers similar to "LCS Liquid Chalk Writing System" by Claridge Products and Equipment Inc

4. Laminating Adhesive: Manufacturer's standard, moisture-resistant thermoplastic type.

5. Board units are to be magnetic.

2.3 GLASS MARKERBOARD ASSEMBLIES

A. Glass Markerboards: Balanced, high-pressure, factory-laminated markerboard assembly of three-ply construction consisting of backing sheet, core material, and 0.021-inch- thick, porcelain-enamel face sheet with high gloss finish.

1. Basis-of-Design Product: Subject to compliance with requirements, provide Claridge Products and Equipment, Inc, Similar to "Claridge Glass Dry Erase Whiteboard" or comparable product by one of the following:

    a. Best-Rite Manufacturing.
    b. PolyVision Corporation; a Steelcase company.

2. Glass: 1/4 inch thick; low iron, ultra-clear glass.

3. Mounting: standoff through glass.

4. Board units are to be magnetic.

2.4 TACKBOARD ASSEMBLIES

A. Basis-of-Design Product: Subject to compliance with requirements, provide Claridge Products and Equipment, Inc, Similar to "Fabricork Vinyl Bulletin Boards" or comparable product by one of the following :

1. Best-Rite Manufacturing.
2. PolyVision Corporation; a Steelcase company.

B. Vinyl-Fabric-Faced Tackboard: 1/4-inch-thick, Type II vinyl-fabric-faced cork sheet factory laminated to 1/4-inch-thick hardboard backing.

C. Polyester-Fabric-Faced Tackboard: 1/4-inch-thick, polyester-fabric-faced cork sheet factory laminated to 1/4-inch-thick hardboard backing.

D. Flammability of Vinyl and Cork Materials (ASTM E-84) - Meet or exceed following requirements:

E. Flame spread less than 25.

F. Smoke developed less than 450.

G. Assembly Weight: 1 lb./sq. ft.

H. Assembly Thickness: Approximately 1/2-inch.

I. TackBoard vinyl weight: min. 15 oz.

J. Porcelain-Enamel Visual Display Assemblies: Laminate porcelain-enamel face sheet and backing sheet to core material under heat and pressure with manufacturer's standard flexible, waterproof adhesive.

K. Factory-Assembled Visual Display Units: Coordinate factory-assembled units with trim and accessories indicated. Join parts with a neat, precision fit.

1. Make joints only where total length exceeds maximum manufactured length. Fabricate with minimum number of joints, balanced around center of board, as acceptable to Architect, as indicated on approved Shop Drawings.

2. Provide manufacturer's standard vertical-joint spline, H-trim system between abutting sections of chalkboards and/or marker board.

3. Provide manufacturer's standard mullion trim at joints between chalkboards markerboards and tackboards of combination units.

4. Where size of visual display boards or other conditions require support in addition to normal trim, provide structural supports or modify trim as indicated or as selected by Architect from manufacturer's standard structural support accessories to suit conditions indicated.

L. Modular Visual Display Boards: Fabricated with integral panel clips attached to core material.

M. Aluminum Frames and Trim: Fabricate units straight and of single lengths, keeping joints to a minimum. Miter corners to a neat, hairline closure.

1. Where factory-applied trim is indicated, trim shall be assembled and attached to visual display units at manufacturer's factory before shipment.

2.5 GENERAL FINISH REQUIREMENTS

A. Comply with NAAMM's "Metal Finishes Manual for Architectural and Metal Products" for recommendations for applying and designating finishes.

B. Protect mechanical finishes on exposed surfaces from damage by applying a strippable, temporary protective covering before shipping.

C. Appearance of Finished Work: Noticeable variations in same piece are not acceptable. Variations in appearance of adjoining components are acceptable if they are within the range of approved Samples and are assembled or installed to minimize contrast.

2.6 ALUMINUM FINISHES

A. Clear Anodic Finish: AAMA 611, AA-M12C22A31, Class II, 0.010 mm or thicker.

B. Color Anodic Finish: AAMA 611, AA-M12C22A32/A34, Class II, 0.010 mm or thicker.

C. Baked-Enamel or Powder-Coat Finish: AAMA 2603 except with a minimum dry film thickness of 1.5 mils. Comply with coating manufacturer's written instructions for cleaning, conversion coating, and applying and baking finish.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine substrates and conditions, with Installer present, for compliance with requirements for installation tolerances, surface conditions of wall, and other conditions affecting performance of the Work.

B. Examine roughing-in for electrical power systems to verify actual locations of connections before installation of motor-operated, sliding visual display units.

C. Examine walls and partitions for proper preparation and backing for visual display surfaces.

D. Examine walls and partitions for suitable framing depth where sliding visual display units will be installed.

E. Proceed with installation only after unsatisfactory conditions have been corrected.

F. Beginning installation constitutes Contractor’s acceptance of substrates and conditions.

3.2 PREPARATION

A. Comply with manufacturer's written instructions for surface preparation.

B. Clean substrates of substances that could impair the performance of and affect the smooth, finished surfaces of visual display boards, including dirt, mold, and mildew.

C. Prepare surfaces to achieve a smooth, dry, clean surface free of flaking, unsound coatings, cracks, defects, projections, depressions, and substances that will impair bond between visual display surfaces and wall surfaces.

1. Prime wall surfaces indicated to receive direct-applied, visual display tack wall panels and as recommended in writing by primer/sealer manufacturer and wall covering manufacturer.

D. Prepare recesses for sliding visual display units as required by type and size of unit.

3.3 INSTALLATION, GENERAL

A. General: Install visual display surfaces in locations and at mounting heights indicated on Drawings. Keep perimeter lines straight, level, and plumb. Provide grounds, clips, backing materials, adhesives, brackets, anchors, trim, and accessories necessary for complete installation.

3.4 INSTALLATION OF FACTORY-FABRICATED VISUAL DISPLAY BOARDS AND ASSEMBLIES

A. Visual Display Boards: Attach concealed clips, hangers, and grounds to wall surfaces and to visual display boards with fasteners at not more than 16 inches o.c. Secure both top and bottom of boards to walls.

1. Field-Applied Aluminum Trim: Attach trim over edges of visual display boards and conceal grounds and clips. Attach trim to boards with fasteners at not more than 24 inches o.c.

a. Attach chalktrays to boards with fasteners at not more than 12 inches o.c.

3.5 CLEANING AND PROTECTION

A. Clean visual display surfaces according to manufacturer's written instructions. Attach one cleaning label to visual display surface in each room.
B. Touch up factory-applied finishes to restore damaged or soiled areas.
C. Cover and protect visual display surfaces after installation and cleaning.

3.6 DEMONSTRATION

A. Engage a factory-authorized service representative to train Owner's maintenance personnel to adjust, operate, and maintain motor-operated, sliding visual display units.

END OF SECTION 10 11 00

SECTION 10 12 00 - DISPLAY CASES

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. Illuminated display cases.

1.3 DEFINITIONS

A. Display Case: Glazed cabinet with visual display surface background and adjustable shelves.

1.4 SUBMITTALS, GENERAL

A. General: Submit all action submittals (except Samples for Verification) and informational submittals required by this Section concurrently.

1.5 ACTION SUBMITTALS

A. Product Data: For each type of product indicated. Include construction details, material descriptions, dimensions of individual components and profiles, and finishes for display cases.

1. Vinyl-fabric-faced tackboard.
2. Display cases.

B. Shop Drawings: For display cases. Include plans, elevations, sections, details, and attachments to other work.

1. Show location of seams and joints in visual display surfaces.
2. Include sections of typical trim members.
3. Wiring Diagrams: For power, signal, and control wiring.

C. Samples for Verification and Initial Color Selection: For units with factory-applied color finishes, and as follows:

1. Actual sections of visual display surfaces.
2. Section of header panel for color selection.

3. Visual Display Surface: Not less than 8-1/2 by 11 inches, mounted on substrate indicated for final Work. Include one panel for each type, color, and texture required.
4. Trim: 6-inch-long sections of each trim profile.

1.6 INFORMATIONAL SUBMITTALS

A. Product Test Reports: Based on evaluation of comprehensive tests performed by a qualified testing agency, for surface-burning characteristics of fabrics.

1.7 CLOSEOUT SUBMITTALS

A. Maintenance Data: For visual display surfaces, operating hardware**,** and illuminated units to include in maintenance manuals.

1.8 QUALITY ASSURANCE

A. Source Limitations: Obtain display cases from single source from single manufacturer.

B. Surface-Burning Characteristics: As determined by testing identical products according to ASTM E 84 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: 50 or less.

C. Electrical Components, Devices, and Accessories: Listed and labeled as defined in NFPA 70, by a qualified testing agency, and marked for intended location and application.

D. Preinstallation Conference: Conduct conference at Project site.

1.9 PROJECT CONDITIONS

A. Environmental Limitations: Do not deliver or install units until spaces are enclosed and weathertight, wet work in spaces is complete and dry, work above ceilings is complete, and temporary HVAC system is operating and maintaining ambient temperature and humidity conditions at occupancy levels during the remainder of the construction period.

B. Field Measurements: Verify actual dimensions of openings for display cases by field measurements before fabrication.

PART 2 - PRODUCTS

2.1 MATERIALS

A. Hardboard: ANSI A135.4, tempered.

B. Hardwood Plywood: HPVA HP-1.

C. Hardwood backed HPL – "Designer White."

D. Vinyl Fabric: FS CCC-W-408D, Type II; weighing not less than 15 oz./sq. yd.; with flame-spread index of 25 or less when tested according to ASTM E 84.

E. Extruded-Aluminum Bars and Shapes: ASTM B 221, Alloy 6063.

F. Aluminum Tubing: ASTM B 429, Alloy 6063.

G. Clear Tempered Glass: Glass must comply with CPSC 16 CFR- Safety standards for architectural glazing materials, ASTM C 1048, Kind FT, Condition A, Type I, Class 1, Quality Q3, with exposed edges seamed before tempering, and 5 mm thick unless otherwise indicated.

H. Opaque Acrylic Sheet: ASTM D 4802, Category A-1 (cell-cast sheet).

I. Fasteners: Provide screws, bolts, and other fastening devices made from same material as items being fastened. Provide types, sizes, and lengths to suit installation conditions. Use security fasteners where exposed to view.

2.2 DISPLAY CASE

A. Basis-of-Design Product: Subject to compliance with requirements, provide Claridge Products and Equipment, Inc.; 370 Series Recessed Trophy Cases or comparable product by one of the following:

1. Platinum Visual Systems; a division of ABC School Equipment, Inc.
2. Tablet & Ticket Co. (The).
3. Best-Rite Manufacturing.

B. Recessed Cabinet: Factory-fabricated cabinet; with tackboard assembly on back inside surface, operable glazed doors at front, and trim on face to cover edge of recessed opening.

1. Cabinet Box: Hardwood veneer plywood.

2. Cabinet Frame and Trim: Aluminum.

3. Veneer Species: Red oak with transparent finish.

4. Aluminum Finish: Clear anodic.

a. Color and Gloss: As selected by Architect from manufacturer's full range.

C. Glazed Sliding Doors: Tempered glass; compliant with CPSC 16 CFR- Safety standards for architectural glazing materials, unframed; with extruded-aluminum top and bottom track; supported on nylon or ball-bearing rollers; with plastic top guide and rubber bumpers. Equip each door with ground finger pull and adjustable cylinder lock with two keys.

1. Thickness: Not less than 5 mm thick.
2. Number of Doors: Three.

D. Shelves: 3/16”-thick tempered glass; supported on adjustable shelf standards and supports.

1. Shelf Width: 12 inches.
2. Number of Shelves: Three.

E. Adjustable Shelf Standards and Supports: BHMA A156.9, B04102; with shelf brackets, B04112; mounted at rear surface. Provide standards full height of display case.

F. Tack Surface: Vinyl-fabric-faced tackboard assembly.

1. Color: As selected by Architect from manufacturer's full range.

G. Illumination System: Concealed top-lighting system consisting of low temperature, no UV and infrared radiation LED strip lights. Include lamps and internal wiring with single concealed electrical connection to building system. Coordinate electrical characteristics with power supply provided.

H. Width: As indicated on Drawings.

I. Height: As indicated on Drawings.

J. Depth: 16 inches.

2.3 FABRICATION

A. Fabricate display cases to requirements indicated for dimensions, design, and thickness and finish of materials.
B. Use metals and shapes of thickness and reinforcing to produce flat surfaces, free of oil-canning, and to impart strength for size, design, and application indicated.
C. Fabricate cabinets and door frames with reinforced corners, mitered to a hairline fit, with no exposed fasteners.
D. Fabricate shelf standards plumb and at heights to align shelf brackets for level shelves.

2.4 GENERAL FINISH REQUIREMENTS

A. Comply with NAAMM's "Metal Finishes Manual for Architectural and Metal Products" for recommendations for applying and designating finishes.

B. Protect mechanical finishes on exposed surfaces from damage by applying a strippable, temporary protective covering before shipping.

C. Appearance of Finished Work: Noticeable variations in same piece are not acceptable. Variations in appearance of adjoining components are acceptable if they are within the range of approved Samples and are assembled or installed to minimize contrast.

2.5 ALUMINUM FINISHES

A. Clear Anodic Finish: AAMA 611, AA-M12C22A31, Class II, 0.010 mm or thicker.

B. Color Anodic Finish: AAMA 611, AA-M12C22A32/A34, Class II, 0.010 mm or thicker.

C. Baked-Enamel or Powder-Coat Finish: AAMA 2603 except with a minimum dry film thickness of 1.5 mils. Comply with coating manufacturer's written instructions for cleaning, conversion coating, and applying and baking finish.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine walls, with Installer present, for compliance with requirements for installation tolerances, surface conditions of wall, and other conditions affecting performance of the Work.
B. Examine roughing-in for electrical power system to verify actual locations of connections before installation of illuminated units.
C. Examine walls and partitions for proper backing for display cases.
D. Examine walls and partitions for suitable framing depth if recessed units will be installed.
E. Proceed with installation only after unsatisfactory conditions have been corrected.
F. Beginning installation constitutes Contractor’s acceptance of substrates and conditions.

3.2 PREPARATION

A. Prepare recesses for display cases as required by type and size of unit.

3.3 INSTALLATION

A. General: Install units in locations and at mounting heights indicated on Drawings. Keep perimeter lines straight, level, and plumb. Provide grounds, clips, backing materials, adhesives, brackets, anchors, trim, and accessories necessary for complete installation.

B. Bulletin Boards: Attach units with manufacturer's standard concealed hardware.

C. Recessed Display Cases: Attach units to wall framing with fasteners at not more than 16 inches o.c. Attach aluminum trim over edges of recessed display cases and conceal grounds and clips. Attach trim with fasteners at not more than 24 inches o.c.

D. Comply with requirements specified elsewhere for connecting illuminated display cases.

1. After installation is complete, install new fluorescent lamps.

E. Install display case shelving level and straight.

3.4 ADJUSTING AND CLEANING

A. Adjust doors to operate smoothly without warp or bind and so contact points meet accurately. Lubricate operating hardware as recommended by manufacturer.

B. Touch up factory-applied finishes to restore damaged or soiled areas.

END OF SECTION 10 12 00

SECTION 10 14 00 - SIGNAGE

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. Interior unframed signs.

B. Scope: Provide room identification signs at all permanent rooms. Room identification signs to contain room names, room numbers, and graphics as indicated on Drawings and in Signage Schedule attached to this Section. Provide other signs as indicated on Drawings and in Signage Schedule attached to this Section.

1. Provide barrier-free and tactile signage at all locations required by Code and as indicated on Drawings.

1.3 DEFINITIONS

A. Accessible: In accordance with the accessibility standard.

1.4 PREINSTALLATION MEETINGS

A. Preinstallation Conference: Conduct conference at Project site.

1. Meet with Owner and signage Installer.

2. Review requirements for signage including, but not limited to, the following:

a. Size, configuration, and location of each sign.
b. Text, room name, room number, and graphics selections.
c. Color selections.
d. Sign Samples.
e. Sign quantities.

3. Review requirements for accessible signage.

4. Review requirements for mounting locations, heights, and types.

1.5 SUBMITTALS, GENERAL

A. General: Submit all action submittals (except Samples for Verification) and informational submittals required by this Section concurrently.

1.6 ACTION SUBMITTALS

A. Product Data: For each type of product indicated. Include construction details, material descriptions, dimensions of individual components and profiles, and finishes for signs.

1. Interior unframed signs.
2. Identification of buildings utilizing truss type construction signs.
3. Wayfinding directional signs.
4. Map holder signs.
5. Courtyard signs.
6. Exterior directional signs.
7. Field-applied, vinyl-character signs.
8. Accessories.

B. Shop Drawings: For signs.

1. Include fabrication and installation details and attachments to other work.
2. Show sign mounting heights, locations of supplementary supports to be provided by other installers, and accessories.
3. Show message list, typestyles, graphic elements including raised characters and Braille and layout for each sign.
4. Do not base Shop Drawings on reproductions of the Contract Documents or standard printed data.

C. Samples for Initial Selection: For each type of sign assembly, exposed component, and exposed finish.

1. Include representative Samples of available typestyles and graphic symbols.

D. Samples for Verification: For each type of sign assembly showing all components and with the required finish(es), and as follows:

1. Signs: Full-size Sample of interior unframed sign

E. Product Schedule: For signs. Use same designations indicated on Drawings or specified.

F. Sample Warranty: For special warranty.

1.7 INFORMATIONAL SUBMITTALS

A. Qualification Data: For Installer.

1.8 CLOSEOUT SUBMITTALS

A. Maintenance Data: For signs to include in maintenance manuals.
B. Warranty: Executed special warranty.

1.9 QUALITY ASSURANCE

A. Installer Qualifications: An entity that employs installers and supervisors who are trained and approved by manufacturer.

1.10 WARRANTY

A. Special Warranty: Manufacturer agrees to correct or replace components of signs that fail in materials or workmanship within specified warranty period.

1. Failures include, but are not limited to, the following:

a. Deterioration of finishes beyond normal weathering.
b. Deterioration of embedded graphic image.
c. Separation or delamination of sheet materials and components.

2. Warranty Period: Five years from date of Substantial Completion.

PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

A. Accessibility Standard: Comply with applicable provisions in the USDOJ's "2010 ADA Standards for Accessible Design", ICC A117.1, and building Code in effect for Project.

B. Surface-Burning Characteristics: Comply with ASTM E84; testing by a qualified testing agency. Identify products with appropriate markings of applicable testing agency.

1. Flame-Spread Index: 200 or less.
2. Smoke-Developed Index: 450 or less.

2.2 MANUFACTURERS

A. Manufacturers: Subject to compliance with requirements, unless otherwise indicated, available manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:

1. ASI Sign Systems, Inc., dba ASI.
2. Best Sign Systems, Inc.
3. Mohawk Sign Systems.

B. Source Limitations: Obtain signs from single source from single manufacturer.

2.3 INTERIOR UNFRAMED SIGNS

A. Interior Unframed Sign: Sign with smooth, uniform surfaces; with message and characters having uniform faces, sharp corners, and precisely formed lines and profiles; for interior use, and as follows:

1. Basis-of-Design Product: Subject to compliance with requirements, provide ASI; EmBoss ADA-Ready Sign System, or comparable product.

2. Sign Materials:

   a. Mounting Panel: 0.125-inch-thick acrylic.
   b. Face: 0.0015-inch-thick PVC/vinyl acetate bonded to mounting panel.

3. Fabrication:

   a. Graphics and Text: Accessible tactile copy and Grade 2 Braille (except as otherwise indicated). Color as selected by Architect from manufacturer’s full range. Finish raised characters to contrast with background color, and finish Braille to match background color.

      1) Where “(#)” appears in Sign Type paragraph below, verify with Architect number to be used in place of “(#)”.
      2) Where “(room name)” appears in Sign Type paragraph below, verify with Architect room name to be used in place of “(room name)”.

   b. Typeface: As selected by Architect from manufacturer’s full range.

   c. Background: Finish and color as selected by Architect from manufacturer’s full range.

4. Mounting: Manufacturer's standard method for substrates indicated

B. Sign Types:

1. Type 1: Occupancy Load Sign:

   a. Size: 3’-8” wide by 1’-2” high.

   b. Text Size, Color, and Content:

      1) 3-inch-high, 3/4-inch stroke, red lettering: MAXIMUM OCCUPANCY.
      2) 2-inch-high, 1/2-inch stroke, red lettering: NOT TO EXCEED.
      3) 3-inch-high, 3/4-inch stroke, red lettering: (#) PERSONS.

   c. Field Color: White.

   d. Provide in locations indicated and in compliance with requirements of authorities having jurisdiction.

2. Type 2: Electrically Powered Partition Sign:

    a. Size: 12 inches wide by 6 inches high.
    b. Content: To convey appropriate and conspicuous notice regarding the safe and proper operation and supervision of the electrical device operation.
    c. Provide a minimum of 2 signs at each electrically powered partition, door, and room divider, adjacent to each control station.

3. Type 4: Stair Sign:

    a. Size: 6 inches by 6 inches.

    b. Text Size and Content:

        1) 2-inch-high lettering: FLOOR (#).
        2) 3/4-inch-high lettering: FLOOR (#) STAIR (#).

4. Type 5: Room Name/Number Sign:

    a. Size: 6 inches by 6 inches.

    b. Text Size, Font Style, and Content:

        1) 1-inch-high (minimum) sans serif lettering: (#).
        2) 5/8-inch-high (minimum) sans serif lettering: (room name).

    c. Arrangement: Two lines where needed.

5. Type 7: Room Sign:

    a. Size: 6 inches wide by 2 inches high.
    b. Text Size and Content: 5/8-inch-high (minimum) lettering: (room name).

6. Type 7a: Unisex/Gender Neutral Room Sign:

    a. Size: 6 inches wide by 2 inches high.
    b. Text Size: 5/8-inch-high (minimum) lettering.

7. Type 8: Girls/Women's Restroom Sign:

    a. Size: 6 inches by 6 inches.
    b. Graphics: Female symbol, and wheelchair accessibility symbol if applicable.
    c. Use with Type 7 Room Sign.

8. Type 9: Boys/Men's Restroom Sign:

    a. Size: 6 inches by 6 inches.
    b. Graphics: Male symbol, and wheelchair accessibility symbol if applicable.
    c. Use with Type 7 Room Sign.

9. Type 10: Restroom Sign:

   a. Size: 6 inches by 6 inches.
   b. Graphics: Male/female symbol, and wheelchair accessibility symbol if applicable.
   c. Use with Type 7 Room Sign.

10. Type 10a: Restroom Sign:

   a. Size: 8 inches by 8 inches.
   b. Graphics: Gender neutral/wheelchair accessibility symbol.

2.4 IDENTIFICATION OF BUILDINGS UTLIZING TRUSS TYPE CONSTRUCTION SIGNS

A. Identification of Buildings Utilizing Truss Type Construction Sign: Sign with smooth, uniform surfaces; with message and characters having uniform faces and precisely formed lines and profiles; for interior use, complying with New York 19NYCRR Part 1264 requirements, and as follows:

1. Basis-of-Design Product: Subject to compliance with requirements, provide Compliance Signs; Reflective New York Truss Construction Sign, or comparable product.

2. Material: Not less than [**0.040-inch-thick aluminum**] [**and**] [**6-mil-thick vinyl**] as indicated.

3. Fabrication:

   a. Graphics: 6-inch outside diameter, 1/2-inch-thick reflective red circle.

   b. Text Size, Stroke, and Color: 2-inch-high (minimum), 1/2-inch stroke, reflective red lettering.

   c. Background: Reflective white.

   d. Content and Arrangement: Roman alphanumeric designation of construction type of building located over the alphabetic designation of structural components designation that are of truss construction.

      1) Refer to code compliance drawings for construction type.

2.5 SIGN MATERIALS

A. Aluminum Sheet and Plate: ASTM B209, alloy and temper recommended by aluminum producer and finisher for type of use and finish indicated.

B. Aluminum Extrusions: ASTM B221, alloy and temper recommended by aluminum producer and finisher for type of use and finish indicated.

C. Acrylic Sheet: ASTM D4802, category as standard with manufacturer for each sign, Type UVF (UV filtering).

D. Paints and Coatings for Sheet Materials: Inks, dyes, and paints that are recommended by manufacturer for optimum adherence to surface and are UV and water resistant for colors and exposure indicated.

2.6 ACCESSORIES

A. Fasteners and Anchors: Manufacturer's standard as required for secure anchorage of signs, noncorrosive and compatible with each material joined, and complying with the following:

1. Furnish stainless-steel devices unless otherwise indicated.

2. Exposed Metal-Fastener Components, General:

a. Fastener Heads: Use flathead screws and bolts with tamper-resistant Allen-head slots unless otherwise indicated.

3. Sign Mounting Fasteners:

a. Through Fasteners: Exposed metal fasteners matching sign finish, with type of head indicated, and installed in predrilled holes.

B. Adhesive: As recommended by sign manufacturer.

1. Verify adhesives have a VOC content of 70 g/L or less.

2. Verify adhesive complies with the testing and product requirements of the California Department of Public Health's "Standard Method for the Testing and Evaluation of Volatile Organic Chemical Emissions from Indoor Sources Using Environmental Chambers."

C. Two-Face Tape: Manufacturer's standard high-bond, foam-core tape, 0.045 inch thick, with adhesive on both sides.

2.7 FABRICATION

A. General: Provide manufacturer's standard sign assemblies according to requirements indicated.

1. Drill and tap for required fasteners. Use exposed fasteners that match sign finish.

B. Tactile and Braille Characters: In compliance with listed accessibility standard in "Performance Requirements" Article, raised 1/32-inch minimum above background.

2.8 GENERAL FINISH REQUIREMENTS

A. Protect mechanical finishes on exposed surfaces from damage by applying a strippable, temporary protective covering before shipping.

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, for compliance with requirements for installation tolerances and other conditions affecting performance of the Work.
B. Verify that sign-support surfaces are within tolerances to accommodate signs without gaps or irregularities between backs of signs and support surfaces unless otherwise indicated.
C. Verify that anchorage devices embedded in permanent construction are correctly sized and located to accommodate signs.
D. Proceed with installation only after unsatisfactory conditions have been corrected.
E. Beginning installation constitutes Contractor’s acceptance of substrates and conditions.

3.2 INSTALLATION

A. General: Install signs using mounting methods indicated and according to manufacturer's written instructions.

1. Install signs level, plumb, true to line, and at locations and heights indicated, with sign surfaces free of distortion and other defects in appearance.
2. Install signs so they do not protrude or obstruct according to the accessibility standard.
3. Before installation, verify that sign surfaces are clean and free of materials or debris that would impair installation.

B. Accessibility: Install signs in locations as indicated on Drawings and according to the accessibility standard.

C. Mounting Locations: Locate on wall adjacent to latch side of door 60 inches from center of sign to finished floor, and 2 inches from edge of door frame. Where adequate wall space adjacent to latch side of door is not available, and at double-leaf doors, place sign on nearest adjacent wall.

1. Kindergarten Toilet Rooms: Mount sign 48 inches from center of sign to finished floor, and 2 inches from edge of door frame.

D. Mounting Methods:

1. Through Fasteners: Drill holes in substrate using predrilled holes in sign as template. Countersink holes in sign if required. Place sign in position and flush to surface. Install through fasteners and tighten.

2. Adhesive: Clean bond-breaking materials from substrate surface and remove loose debris. Apply linear beads or spots of adhesive symmetrically to back of sign and of suitable quantity to support weight of sign after cure without slippage. Keep adhesive away from edges to prevent adhesive extrusion as sign is applied and to prevent visibility of cured adhesive at sign edges. Place sign in position, and push to engage adhesive. Temporarily support sign in position until adhesive fully sets.

3. Two-Face Tape: Clean bond-breaking materials from substrate surface and remove loose debris. Apply tape strips symmetrically to back of sign and of suitable quantity to support weight of sign without slippage. Keep strips away from edges to prevent visibility at sign edges. Place sign in position, and push to engage tape adhesive.

E. Field-Applied, Vinyl-Character Signs: Clean and dry substrate. Align sign characters in final position before removing release liner. Remove release liner in stages and apply and firmly press characters into final position. Press from the middle outward to obtain good bond without blisters or fishmouths. Remove carrier film without disturbing applied vinyl film.

F. Signs Mounted on Glass: Provide opaque sheet matching sign material and finish onto opposite side of glass to conceal back of sign.

3.3 ADJUSTING AND CLEANING

A. Remove and replace damaged or deformed signs and signs that do not comply with specified requirements. Replace signs with damaged or deteriorated finishes or components that cannot be successfully corrected by finish touchup or similar minor corrective procedures.

B. Remove temporary protective coverings and strippable films as signs are installed.

C. On completion of installation, clean exposed surfaces of signs according to manufacturer's written instructions and touch up minor nicks and abrasions in finish. Maintain signs in a clean condition during construction and protect from damage until acceptance by Owner.

Attachment: Signage Schedule

END OF SECTION 10 14 00

COLOR	ROOM NO.	SIGNAGE TYPE	SIGNAGE TEXT	REMARKS
			FIRST FLOOR	
			AREA A	
	118	5	Name by District	
	121	5	Name by District	At 2 Doors
	122	5	Name by District	At 2 Doors
	122B	5	Name by District	
	123A	5	Name by District	At 2 Doors
	123B	5	Name by District	
	123C	5	Name by District	At 3 Doors
	123D	5	Name by District	At 2 Doors
	123.1	5	Name by District	At 2 Doors
	123.2	5	Name by District	At 2 Doors
	123.4	5	Name by District	
			AREA B	
	181	8,10	Name by District	
	181.1	9,10	Name by District	
	181.2	5	Name by District	
	182	5	Name by District	
	183	5	Name by District	
	183.1	5	Name by District	
	184	5	Name by District	
	184.1	5	Name by District	
	182.1	5	Name by District	
	184.3	7A,10A	Name by District	
	184.4	5	Name by District	
	185	5	Name by District	
	136.3	5	Name by District	
	136.4	5	Name by District	
	195	5	Name by District	At 4 Doors
	195.2	7A,10A	Name by District	
	195.3	7A,10A	Name by District	
	196	5	Name by District	At 2 Doors
			AREA C	
	103	5	Name by District	
	130	5	Name by District	
	132	5	Name by District	
	134.1	5	Name by District	
	136	5,1	Name by District	Type 5 at 6 Doors
	136.5	5	Name by District	
	136.6	5	Name by District	
	136.2	5	Name by District	
	135.6	5	Name by District	
	136.5	5	Name by District	
	142	5	Name by District	
	143	5	Name by District	
	141	5	Name by District	

			SECOND FLOOR	
			AREA A	
	205	5	Name by District	
	266	5	Name by District	

PLEASE REFER TO PARAGRAPH 1.4 – PREINSTALLATION MEETINGS IN REGARDS TO SIGNAGE REQUIREMENTS.

SECTION 10 21 13.19 - PLASTIC TOILET COMPARTMENTS

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. Solid-plastic toilet compartments.

1.3 COORDINATION

A. Coordinate requirements for blocking, reinforcing, and other supports concealed within wall to ensure that toilet compartments can be supported and installed as indicated.

1.4 SUBMITTALS, GENERAL

A. General: Submit all action submittals (except Samples for Verification) and informational submittals required by this Section concurrently.

1.5 ACTION SUBMITTALS

A. Product Data: Include construction details, material descriptions, dimensions of individual components and profiles, and finishes for toilet compartments.

1. Door hardware and accessories.
2. Overhead bracing.
3. Stiffener.
4. Anchorage and fasteners.

B. As-Specified Data: If the product to be incorporated into Project is as specified by manufacturer name and product designation in Part 2 of this Specification Section, submit the "**As-Specified Verification Form**" (attached to Division 01 Section "Submittal Procedures") for item listed below; otherwise submit full Product Data for the following:

1. Solid-plastic toilet compartments:

C. Shop Drawings:

1. Include plans, elevations, sections, details, and attachment details.
2. Show locations of centerlines of plumbing fixtures.
3. Show locations of floor drains.

D. Samples for Initial Selection: Manufacturer's standard color sheets, showing full range of available colors for each type of toilet compartment.

E. Samples for Verification: Actual sample of finished products for each type of toilet compartment.

1. Size: Manufacturer's standard size.

F. Delegated Design Submittals: For grab bars mounted on toilet compartment panels, including analysis data signed and sealed by the qualified professional engineer responsible for their preparation.

1. Include structural design calculations indicating compliance with specified structural-performance requirements.

G. Sample Warranty: For special warranty.

1.6 INFORMATIONAL SUBMITTALS

A. Product Certificates: For each type of toilet compartment by manufacturer indicating compliance with performance requirements.

1.7 CLOSEOUT SUBMITTALS

A. Operation and Maintenance Data: For toilet compartments.
B. Warranty: Executed special warranty

1.8 FIELD CONDITIONS

A. Field Measurements: Verify actual locations of plumbing fixtures, walls, columns, ceilings, and other construction contiguous with toilet compartments by field measurements, and coordinate before fabrication.

1.9 WARRANTY

A. Special Warranty: Manufacturer agrees to correct or replace components of plastic toilet compartments that fail in materials or workmanship within specified warranty period.

1. Warranty Period: Not less than 25 years from date of Substantial Completion.

PART 2 - PRODUCTS

2.1 SOURCE LIMITATIONS

A. Obtain plastic toilet compartments from single source from single manufacturer.

2.2 PERFORMANCE REQUIREMENTS

A. Fire Performance: Tested in accordance with, and pass the acceptance criteria of, NFPA 286.

B. Fire-Test-Response Characteristics:

1. Burning extent of 1 inch or less when tested according to ASTM D635 on plastic sheets in thicknesses indicated for the Work.
2. Self-ignition temperature of 650 deg F or higher when tested according to ASTM D1929 on plastic sheets in thicknesses indicated for the Work.
3. Smoke density of 75 or less when tested according to ASTM D2843 on plastic sheets in thicknesses indicated for the Work.

C. Structural Performance: Where grab bars are mounted on toilet compartments, design panels to comply with the following requirements:

1. Panels are able to withstand a concentrated load on grab bar of at least 250 lbf applied at any direction and at any point, without deformation of panel.

D. Regulatory Requirements: Comply with applicable provisions in the USDOJ's "2010 ADA Standards for Accessible Design," ICC A117.1, and building Code in effect for Project for toilet compartments designated as accessible.

2.3 SOLID-PLASTIC TOILET COMPARTMENTS

A. Products: Subject to compliance with requirements, available products that may be incorporated into the Work include, but are not limited to, the following:

1. ASI Global Partitions; Solid Plastic (HDPE), No Sight-55 Floor Mounted Overhead Braced.
2. General Partitions Mfg. Corp.; High Density Polymer (HDPE), Series 40-7 no sight strike Floor Supported - Headrail.
3. Scranton Products; Hiny Hiders Toilet Partitions 55 privacy type door and panel height, floor mounted overhead-braced.

B. Toilet-Enclosure Style: Overhead braced, floor anchored.

C. Urinal-Screen Style: Overhead braced, floor anchored.

D. Door, Panel, and Pilaster Construction: Solid, high-density polyethylene (HDPE) material, not less than 1 inch thick, seamless, with eased edges, and with homogenous color throughout thickness of material. Provide with no-sightline system consisting of door and pilaster lapped edges on strike side of door.

1. Door and Panel Height: Not less than 55 inches.
2. Door and Panel Mounting Height: As standard with manufacturer for privacy level specified.
3. Pilaster Height: Not less than 82 inches.
4. Integral Hinges: Configure doors and pilasters to receive integral hinges.

5. Heat-Sink Strip: Manufacturer's continuous, stainless steel strip fastened to exposed bottom edges of solid-plastic components to hinder malicious combustion.
6. Color: One color in each room as selected by Architect from manufacturer's full range.

E. Urinal-Screen Construction: Matching panel construction.

F. Pilaster Shoes: Manufacturer's standard design; stainless steel.

G. Urinal-Screen Post: Manufacturer's standard post design of material matching the thickness and construction of pilasters; with shoe matching that on the pilaster.

H. Brackets (Fittings):

1. Full-Height (Continuous) Type: Manufacturer's standard design; stainless steel.

2.4 HARDWARE AND ACCESSORIES

A. Door Hardware and Accessories, Heavy Duty: Manufacturer's heavy-duty institutional operating hardware and accessories.

1. Hinges: Manufacturer's minimum 0.062-inch-thick, stainless steel continuous, cam type that swings to a closed or partially open position, 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 toilet enclosures 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 inswinging door from hitting compartment-mounted accessories. Mount with through bolts.

4. Door Bumper: Manufacturer's heavy-duty, rubber-tipped, cast stainless steel bumper at outswinging doors. Mount with through bolts.

5. Door Pull: Manufacturer's heavy-duty, cast stainless steel pull at outswinging doors that complies with regulatory requirements for accessibility. Provide units on both sides of doors at toilet enclosures designated as accessible. Mount with through bolts.

B. Overhead Bracing: Manufacturer's standard continuous, extruded-aluminum head rail with antigrip profile and in manufacturer's standard finish.

C. Stiffener: Manufacturer’s standard continuous, aluminum stiffener in manufacturer’s standard finish, where recommended by manufacturer for bracing hinge-side pilasters.

D. Anchorages and Fasteners: Manufacturer's standard exposed fasteners of stainless steel, finished to match items they are securing, with theft-resistant-type heads. Provide sex-type bolts for through-bolt applications. For concealed anchors, use stainless steel.

2.5 MATERIALS

A. Stainless Steel Sheet: ASTM A240/A240M or ASTM A666, Type 304, stretcher-leveled standard of flatness.
B. Stainless Steel Castings: ASTM A743/A743M.

2.6 FABRICATION

A. Fabricate toilet compartment components to sizes indicated. Coordinate requirements for attachment of toilet accessories.

B. Overhead-Braced, Floor-Anchored Units: Manufacturer's standard corrosion-resistant supports, leveling mechanism, and anchors at pilasters and walls to suit floor and wall conditions. Provide shoes at pilasters to conceal supports and leveling mechanism. Provide with continuous head rail.

1. Overhead-Braced, Floor-Anchored Urinal-Screen Posts: Manufacturer's standard corrosion-resistant anchoring assemblies at posts and walls, with leveling adjustment nuts at bottoms of posts. Provide shoes at posts to conceal anchorage.

C. Door Size and Swings: Unless otherwise indicated, provide 24-inch-wide, inswinging doors for standard toilet enclosures (centered between compartment side walls) and 36-inch-wide, outswinging doors with a minimum 32-inch-wide, clear opening for toilet enclosures 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.

C. Beginning installation constitutes Contractor’s acceptance of substrates and conditions.

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 or Screens: 1/2 inch.
b. Panels or Screens and Walls: 1 inch.

2. Full-Height (Continuous) Brackets: Secure panels or screens to walls and to pilasters with full-height brackets.

   a. Locate bracket fasteners, so holes for wall anchors occur in masonry or tile joints.
   b. Align brackets at pilasters with brackets at walls.

B. Overhead-Braced, Floor-Anchored Units: Secure pilasters to floor and level, plumb, and tighten. Set pilasters with anchors penetrating not less than 1-3/4 inches into structural floor unless otherwise indicated in manufacturer's written instructions. Secure continuous head rail to each pilaster with no fewer than two fasteners. Hang doors to align tops of doors with tops of panels and adjust, so tops of doors are parallel with overhead brace when doors are in closed position.

   1. Overhead-Braced, Floor-Anchored Urinal Screens: Attach with anchoring devices to suit supporting structure. Set units level and plumb, rigid, and secured to resist lateral impact.

3.3 ADJUSTING

A. Hardware Adjustment: Adjust and lubricate hardware in accordance with hardware manufacturer's written instructions for proper operation. Set hinges on inswinging doors to hold doors open approximately 30 degrees from closed position when unlatched. Set hinges on outswinging doors and doors for compartments designated as accessible to return doors to fully closed position.

END OF SECTION 10 21 13.19

SECTION 10 21 16 - SHOWER AND DRESSING COMPARTMENTS

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. Shower compartments fabricated from solid polymer.

1.3 SUBMITTALS, GENERAL

A. General: Submit all action submittals (except Samples for Verification) and informational submittals required by this Section concurrently.

1.4 ACTION SUBMITTALS

A. Product Data: For each type of product indicated. Include construction details, material descriptions, dimensions of individual components and profiles, and finishes.

1. Door hardware and accessories.
2. Overhead bracing.
3. Headrail with hooks.
4. Curtain.
5. Anchorages and fasteners.

B. As-Specified Data: In lieu of full product data, if the product to be incorporated into Project is as specified by manufacturer name and product designation in Part 2 of this Specification Section, submit the "**As-Specified Verification Form**" (attached to SECTION 01 33 00 "Submittal Procedures") for each item listed below.

1. Solid-polymer compartments.

C. Shop Drawings: For shower and dressing compartments. Include plans, elevations, sections, details, and attachments to other work.

1. Show locations of reinforcements for compartment-mounted grab bars.
2. Show locations of centerlines of drains.

D. Samples for Initial Selection: For each type of compartment indicated.

E. 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 compartments, prepared on 6-inch-square Samples of same thickness and material indicated for the Work.
2. Each type of hardware and accessory.

1.5 CLOSEOUT SUBMITTALS

A. Maintenance Data: For shower and dressing compartments to include in maintenance manuals.

1.6 QUALITY ASSURANCE

A. Surface-Burning Characteristics: As determined by testing identical products according to ASTM E 84, or another standard acceptable to authorities having jurisdiction, by a qualified testing agency. Identify products with appropriate markings of applicable testing agency.

1. Flame-Spread Index: [**75**] [**200**] or less.
2. Smoke-Developed Index: 450 or less.

B. Regulatory Requirements: Comply with applicable provisions in the U.S. Architectural & Transportation Barriers Compliance Board's ADA-ABA Accessibility Guidelines, ICC/ANSI A117.1, and building code in effect for Project, for shower and dressing compartments designated as accessible.

1.7 PROJECT CONDITIONS

A. Field Measurements: Verify actual locations of walls, columns, ceilings, and other construction contiguous with shower and dressing compartments by field measurements before fabrication.

PART 2 - PRODUCTS

2.1 MATERIALS

A. Aluminum Castings: ASTM B 26/B 26M.
B. Aluminum Extrusions: ASTM B 221.
C. Steel Sheet: ASTM A 653/A 653M, either hot-dip galvanized or galvannealed; mill phosphatized and selected for smoothness.
D. Stainless-Steel Sheet: ASTM A 666, Type 304, stretcher-leveled standard of flatness.
E. Stainless-Steel Castings: ASTM A 743/A 743M.
F. Zamac: ASTM B 86, commercial zinc-alloy die castings.

2.2 SOLID-POLYMER COMPARTMENTS

A. Products: Subject to compliance with requirements, available products that may be incorporated into the Work include, but are not limited to, the following:

1. Metpar Corp.; Polly Shower and Dressing Enclosures.
2. Scranton Products (Santana/Comtec/Capitol); Shower Cubicles/Dressing Compartments.

B. Configuration: Shower compartments.

C. Enclosure Style: Overhead braced.

D. Panel and Pilaster Construction: Solid HDPE panel material, not less than 1 inch thick, seamless, with eased edges and with homogenous color and pattern throughout thickness of material.

1. Integral Hinges: Configure doors and pilasters to receive integral hinges.

2. Heat-Sink Strip: Manufacturer's standard, continuous, clear-anodized extruded-aluminum strip fastened to exposed bottom edges of solid-polymer components to prevent burning.

3. Color and Pattern: One color and pattern in each room; as selected by Architect from manufacturer's full range.

E. Door Construction: Match panels.

F. Pilaster Shoes: Manufacturer's standard design; stainless steel.

G. Brackets (Fittings):

1. Full-Height (Continuous) Type: Manufacturer's standard design; clear-anodized extruded aluminum.

2.3 ACCESSORIES

A. Door Hardware and Accessories: Manufacturer's standard design, heavy-duty, operating hardware and accessories.

1. Material: Clear-anodized aluminum, stainless steel, or chrome-plated zamac.

2. Hinges: Manufacturer's standard, paired, self-closing type that can be adjusted to hold doors open at any angle up to 90 degrees.

3. Latch and Keeper: Manufacturer's standard, latch unit designed for emergency access and with combination rubber-faced door strike and keeper. Provide units that comply with regulatory requirements for accessibility at compartments designated as accessible.

4. Clothing Hooks: Manufacturer's standard clothing hooks in each dressing compartment; include one combination hook and rubber-tipped bumper at in-swinging doors, sized to prevent door from hitting wall panel or compartment-mounted accessories.

5. Door Bumper: Manufacturer's standard, rubber-tipped bumper at out-swinging doors.

6. Door Pull: Manufacturer's standard unit at out-swinging doors that complies with regulatory requirements for accessibility. Provide units on both sides of doors at compartments designated as accessible.

B. Overhead Bracing: Manufacturer's standard, continuous, extruded-aluminum head rail or cap with antigrip profile; in manufacturer's standard finish.

C. Head Rail with Hooks: Manufacturer's standard, continuous, extruded-aluminum head rail or cap with curtain hooks running in concealed track; with antigrip profile; in manufacturer's standard finish.

D. Anchorages and Fasteners: Manufacturer's standard, exposed fasteners of stainless steel, chrome-plated steel, or solid brass, 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.

2.4 FABRICATION

A. Overhead-Braced Compartments: Provide manufacturer's standard, corrosion-resistant supports, leveling method, and anchors at pilasters and walls to suit floor and wall conditions. Provide shoes at pilasters to conceal supports and leveling method.

B. Door Sizes and Swings: Unless otherwise indicated, provide 24-inch-wide, in-swinging doors for standard shower and dressing compartments, and 34-inch-wide, out-swinging doors with a minimum 32-inch-wide, clear opening for compartments designated as accessible.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine substrates, areas, and conditions, to which shower and dressing compartments attach or abut, with Installer present, for compliance with requirements specified in this and other Sections that affect installation and anchorage and with requirements for installation tolerances and other conditions affecting performance of the Work.

1. Proceed with installation only after unsatisfactory conditions have been corrected.

B. Beginning installation constitutes Contractor’s acceptance of substrates and conditions.

3.2 INSTALLATION

A. General: Comply with manufacturer's written installation instructions. Install compartments rigid, straight, level, and plumb. Secure compartments in position with manufacturer's recommended anchoring devices.

1. Maximum Clearances for Dressing Compartment:

    a. Pilasters and Panels: 1/2 inch.
    b. Panels and Walls: 1 inch.

2. Stirrup Brackets: Secure panels to walls and to pilasters with no fewer than two brackets attached 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. Overhead-Braced Compartments: Secure pilasters to floor, and level, plumb, and tighten. Set pilasters with anchors penetrating not less than 1-3/4 inches into structural floor unless otherwise indicated in manufacturer's written instructions. Secure continuous head rail to each pilaster with no fewer than two fasteners. Hang doors to align tops of doors with tops of panels, and adjust so tops of doors are parallel with overhead brace 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 10 21 16

SECTION 10 28 00 - TOILET AND SHOWER ACCESSORIES

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. Toilet accessories.
2. Shower accessories.
3. Electric hand dryers.
4. Childcare accessories.
5. Custodial 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 SUBMITTALS, GENERAL

A. General: Submit all action submittals required by this Section concurrently.

1.5 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.
3. Include electrical characteristics.

B. As-Specified Data: If the product to be incorporated into Project is as specified by manufacturer name and product designation in Part 2 of this Specification Section, submit the "**As-Specified Verification Form**" (attached to Division 01 Section "Submittal Procedures") for each item listed below, otherwise submit full Product Data for the following:

1. Toilet tissue dispenser.
2. Toilet tissue dispenser, jumbo.
3. Paper towel dispenser (folded).
4. Paper towel dispenser (roll).
5. Soap dispenser, vertical type.
6. Grab bar.
7. Sanitary-napkin and tampon dispenser.
8. Sanitary-napkin disposer.
9. Mirror, glass.
10. Shower curtain rod.
11. Shower curtain (and hooks).
12. Shower seat, folding, L-shaped type.
13. Soap shelf.
14. Robe hook.
15. Electric hand dryer, high-speed.
16. Diaper-changing station.
17. Mop and broom holder.

C. Product Schedule: Indicating types, quantities, sizes, and installation locations by room of each accessory required.

1. Identify locations using room designations indicated.
2. Identify accessories using designations indicated.

D. Sample Warranty: For manufacturer's special warranty.

1.6 CLOSEOUT SUBMITTALS

A. Maintenance Data: For accessories to include in maintenance manuals.
B. Warranty: Executed special warranty.

1.7 WARRANTY

A. Manufacturer's Special Warranty for Mirrors: Manufacturer agrees to correct 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.

B. Manufacturer's Special Warranty for Electric Hand Dryers: Manufacturer agrees to correct or replace hand dryers that fail in materials or workmanship within specified warranty period.

1. Warranty Period: Not less than 5 years from date of Substantial Completion.

PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

A. Electrical Components, Devices, and Accessories: Listed and labeled as defined in NFPA 70, by a qualified testing agency, and marked for intended location and application.

B. Structural Performance: Design accessories and fasteners to comply with the following requirements:

1. Grab Bars: Installed units are able to resist 250 lbf concentrated load applied in any direction and at any point.
2. Shower Seats: Installed units are able to resist 250 lbf applied in any direction and at any point.

2.2 TOILET ACCESSORIES

A. Source Limitations: Obtain toilet accessories from single source from single manufacturer unless manufacturer does not offer product listed.

B. Toilet Tissue Dispenser TTD:

1. Products: Subject to compliance with requirements, available products that may be incorporated into the Work include, but are not limited to, the following:

   a. American Specialties, Inc.; 0030.
   b. Bobrick Washroom Equipment, Inc.; B-2888.
   c. Bradley Corporation; 5402.

2. Description: Roll-in-reserve dispenser with hinged front secured with tumbler lockset.

3. Mounting: Surface mounted.

4. Operation: Noncontrol delivery with theft-resistant spindle.

5. Capacity: Designed for 5-inch-diameter (or greater) tissue rolls.

6. Material and Finish: Stainless steel, ASTM A480/A480M No. 4 finish (satin).

C. Toilet Tissue Dispenser, Jumbo TTDJ:

1. Products: Subject to compliance with requirements, available products that may be incorporated into the Work include, but are not limited to, the following:

   a. American Specialties, Inc.; 0042.
   b. Bobrick Washroom Equipment, Inc.; B-2890.
   c. Bradley Corporation; 5424.

2. Description: One-roll unit.

3. Mounting: Surface mounted.

4. Capacity: 9- or 10-inch-diameter rolls.

5. Material and Finish: Stainless steel, ASTM A480/A480M No. 4 finish (satin).

6. Lockset: Tumbler type.

7. Refill Indicator: Pierced slots at front.

D. Paper Towel Dispenser (Folded) PTD:

1. Products: Subject to compliance with requirements, available products that may be incorporated into the Work include, but are not limited to, the following:

   a. American Specialties, Inc.; 0210.
   b. Bobrick Washroom Equipment, Inc.; B-262.
   c. Bradley Corporation; 250-15.

2. Mounting: Surface mounted.

3. Minimum Capacity: 400 C-fold or 525 multifold towels.

4. Material and Finish: Stainless steel, ASTM A480/A480M No. 4 finish (satin).

5. Lockset: Tumbler type.

6. Refill Indicator: Pierced slots at sides or front.

E. Paper Towel Dispenser (Roll) PTDR:

1. Products: Subject to compliance with requirements, available products that may be incorporated into the Work include, but are not limited to, the following:

   a. American Specialties, Inc.; 8522.
   b. Bobrick Washroom Equipment, Inc.; B-2860.
   c. Bradley Corporation; 2483.

2. Description: Mechanism permitting controlled delivery of paper rolls in preset lengths.

3. Mounting: Surface mounted.

4. Minimum Capacity: 8-inch-wide, 800-foot-long roll.

5. Material and Finish: Stainless steel, ASTM A480/A480M No. 4 finish (satin).

6. Lockset: Tumbler type.

F. Soap Dispenser SD:

1. Vertical Type:

a. Products: Subject to compliance with requirements, available products that may be incorporated into the Work include, but are not limited to, the following:

1) American Specialties, Inc.; 0347.
2) Bobrick Washroom Equipment, Inc.; B-2111.
3) Bradley Corporation; 6562.

b. Description: Designed for dispensing soap in liquid or lotion form.

c. Mounting: Vertically oriented, surface mounted.

d. Capacity: 40 oz.

e. Materials: Stainless steel, ASTM A480/A480M No. 4 finish (satin), with corrosion-resistant valve.

f. Lockset: Tumbler type.

g. Refill Indicator: Window type.

G. Grab Bar GB:

1. Products: Subject to compliance with requirements, available products that may be incorporated into the Work include, but are not limited to, the following:

a. American Specialties, Inc.; 3800-P Series.
b. Bobrick Washroom Equipment, Inc.; B-6806.99 Series.
c. Bradley Corporation; 812-2 Series.

2. Mounting: Flanges with concealed fasteners.

3. Material: Stainless steel, 0.05 inch thick.

a. Finish: Smooth, ASTM A480/A480M No. 4 finish (satin) on ends and slip-resistant texture in grip area.

4. Outside Diameter: 1-1/2 inches.

5. Configuration and Length: As indicated on Drawings.

H. Sanitary-Napkin and Tampon Dispenser SNTD:

1. Products: Subject to compliance with requirements, available products that may be incorporated into the Work include, but are not limited to, the following:

a. American Specialties, Inc.; 0468 0864-F 25.
b. Bobrick Washroom Equipment, Inc.; B-3706 2706 C -25.

c. Bradley Corporation; 4017 4017-11-40 45.

2. Mounting: Fully recessed Surface mounted.

3. Capacity: Minimum 20 napkins and 27 tampons.

4. Operation: No coin (free) Single coin (25 cents).

5. Exposed Material and Finish: Stainless steel, ASTM A480/A480M No. 4 finish (satin).

6. Lockset: Tumbler type with separate lock and key for coin box.

I. Sanitary-Napkin Disposer SND:

1. Products: Subject to compliance with requirements, available products that may be incorporated into the Work include, but are not limited to, the following:

a. American Specialties, Inc.; 0473-1A.
b. Bobrick Washroom Equipment, Inc.; B-254.
c. Bradley Corporation; 4722-15.

2. Mounting: Surface mounted.

3. Door or Cover: Self-closing, disposal-opening cover and hinged face panel with tumbler lockset.

4. Receptacle: Removable.

5. Material and Finish: Stainless steel, ASTM A480/A480M No. 4 finish (satin).

J. Mirror, Glass MG:

1. Products: Subject to compliance with requirements, available products that may be incorporated into the Work include, but are not limited to, the following:

a. American Specialties, Inc.; 0620-B.
b. Bobrick Washroom Equipment, Inc.; B-1658.
c. Bradley Corporation; 781-2.

2. Frame: Stainless-steel channel.

a. Corners: Manufacturer's standard.

3. Hangers: Produce rigid, tamper- and theft-resistant installation, using method indicated below.

a. Wall bracket of steel, equipped with concealed locking devices requiring a special tool to remove.

4. Mirror Glazing: Tempered clear glass.

5. Size: As indicated on Drawings.

2.3 SHOWER ACCESSORIES

A. Source Limitations: Obtain shower room from single source from single manufacturer unless manufacturer does not offer product listed.

B. Shower Curtain Rod SCR:

1. Products: Subject to compliance with requirements, available products that may be incorporated into the Work include, but are not limited to, the following:

   a. American Specialties, Inc.; 1204.
   b. Bobrick Washroom Equipment, Inc.; B-6047.
   c. Bradley Corporation; 9531.

2. Description: 1-1/4-inch OD; fabricated from nominal 0.05-inch-thick stainless steel.

3. Mounting Flanges: Stainless-steel flanges designed for exposed fasteners.

4. Finish: Stainless steel, ASTM A480/A480M No. 4 finish (satin).

C. Shower Curtain (and Hooks) SC:

1. Products: Subject to compliance with requirements, available products that may be incorporated into the Work include, but are not limited to, the following:

   a. American Specialties, Inc.; 1200-V42 curtain and 1200-SHU hooks.
   b. Bobrick Washroom Equipment, Inc.; B-204-2 curtain and B-204-1 hooks.
   c. Bradley Corporation; 9537-42 curtain and 9536 hooks.

2. Size: Minimum 6 inches wider than opening by 72 inches high.

3. Material: Nylon-reinforced vinyl, minimum 9 oz. or 0.008-inch-thick vinyl, with integral antibacterial agent.

4. Color: White.

5. Grommets: Corrosion resistant at minimum 6 inches o.c. through top hem.

6. Shower Curtain Hooks: Chrome-plated or stainless-steel, spring wire curtain hooks with snap fasteners, sized to accommodate specified curtain rod. Provide one hook per curtain grommet.

D. Shower Seat, Folding SSF:

1. L-Shaped Type:

   a. Products: Subject to compliance with requirements, available products that may be incorporated into the Work include, but are not limited to, the following:

      1) American Specialties, Inc.; 8206.
      2) Bobrick Washroom Equipment, Inc.; B-5181.
      3) Bradley Corporation; 9569.

b. Configuration: L-shaped seat, designed for wheelchair access.

c. Seat: Phenolic of one-piece construction.

d. Mounting Mechanism: Stainless steel, ASTM A480/A480M No. 4 finish (satin).

E. Soap Shelf SSH:

1. Products: Subject to compliance with requirements, available products that may be incorporated into the Work include, but are not limited to, the following:

a. American Specialties, Inc.; 147.
b. Bradley Corporation; 900.

2. Mounting: Surface mounted.

3. Material and Finish: Stainless steel, ASTM A480/A480M No. 4 finish (satin).

2.4 ELECTRIC HAND DRYERS

A. Source Limitations: Obtain warm-air dryers from single source from single manufacturer.

B. Electric Hand Dryer, High-Speed EHDH:

1. Products: Subject to compliance with requirements, available products that may be incorporated into the Work include, but are not limited to, the following:

a. Stainless Steel, with Satin Finish:

1) American Specialties, Inc.; 0199-1-93.
2) Bobrick Washroom Equipment, Inc.; InstaDry B-7125.
3) Bradley Corporation; 2923-287400.

2. Description: High-speed, electric hand dryer for rapid hand drying.

3. Mounting: Surface mounted, with low-profile design.

4. Operation: Electronic-sensor activated with drying operation time of less than 15 seconds.

5. Electrical Requirements: 115V, 8.3A, 950W.

2.5 CHILDCARE ACCESSORIES

A. Diaper-Changing Station DCS:

1. Products: Subject to compliance with requirements, available products that may be incorporated into the Work include, but are not limited to, the following:

a. American Specialties, Inc.; 9012.

b. Bradley Corporation; 9631.

2. Description: Horizontal unit that opens by folding down from stored position and with child-protection strap.

a. Engineered to support minimum of 250-lb static load when opened.

3. Mounting: Surface mounted, with unit projecting not more than 4 inches from wall when closed.

4. Operation: By pneumatic shock-absorbing mechanism.

5. Material and Finish: HDPE in manufacturer's standard color.

6. Liner Dispenser: Built in.

2.6 CUSTODIAL ACCESSORIES

A. Mop and Broom Holder MBH:

1. Products: Subject to compliance with requirements, available products that may be incorporated into the Work include, but are not limited to, the following:

a. American Specialties, Inc.; 1315-4.
b. Bobrick Washroom Equipment, Inc.; B-224 x 36.
c. Bradley Corporation; 9984.

2. Description: Unit with shelf, hooks, holders, and rod suspended beneath shelf.

3. Length: 36 inches.

4. Hooks: Three.

5. Mop/Broom Holders: Four, spring-loaded, rubber hat, cam type.

6. Material and Finish: Stainless steel, ASTM A480/A480M No. 4 finish (satin).

a. Shelf: Not less than nominal 0.05-inch-thick stainless steel.
b. Rod: Approximately 1/4-inch-diameter stainless steel.

2.7 MATERIALS

A. Fasteners: Screws, bolts, and other devices of same material as accessory unit, unless otherwise recommended by manufacturer or specified in this Section, and tamper-and-theft resistant where exposed, and of stainless or galvanized steel where concealed.

B. Tempered Clear Glass Mirrors: Mirror Glazing Quality, for blemish requirements; and comply with ASTM C 1048 for Kind FT, Condition A, tempered float glass before silver coating is applied; nominal 6.0 mm thick.

2.8 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.

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 accessories.

1. Proceed with installation only after unsatisfactory conditions have been corrected.

B. Beginning installation constitutes Contractor’s acceptance of substrates and conditions.

3.2 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 comply with specified structural-performance requirements.

C. Shower Seats: Install to comply with specified structural-performance requirements.

3.3 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 10 28 00

SECTION 10 44 13 - FIRE PROTECTION CABINETS

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. Fire-protection cabinets for the following:

a. Portable fire extinguisher.

1.3 SUBMITTALS, GENERAL

A. General: Submit all action submittals required by this Section and by Division 10 Section "Fire Extinguishers" concurrently.

1.4 ACTION SUBMITTALS

A. Product Data: For each type of product. Show door hardware, cabinet type, trim style, and panel style. Include roughing-in dimensions and details showing mounting method and relationships of box and trim to surrounding construction. Include accessories.

1. Heavy-duty non-rated fire protection cabinets.
2. Heavy-duty rated fire protection cabinets.

B. Product Schedule: For fire-protection cabinets. Indicate whether recessed or semi-recessed. Coordinate final fire-protection cabinet schedule with fire-extinguisher schedule to ensure proper fit and function.

1.5 CLOSEOUT SUBMITTALS

A. Maintenance Data: For fire-protection cabinets to include in maintenance manuals.

1.6 COORDINATION

A. Coordinate size of fire-protection cabinets to ensure that type and capacity of fire extinguishers indicated are accommodated.
B. Coordinate sizes and locations of fire-protection cabinets with wall depths.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Source Limitations: Obtain fire-protection cabinets and fire extinguishers from single source from single manufacturer.

2.2 PERFORMANCE REQUIREMENTS

A. Fire-Rated Fire-Protection Cabinets: Listed and labeled to comply with requirements in ASTM E814 for fire-resistance rating of walls where they are installed.

2.3 HEAVY-DUTY NON-RATED FIRE-PROTECTION CABINET

A. Cabinet Type: Suitable for fire extinguisher.

B. Cabinet Construction: Nonrated.

C. Cabinet Tub Material: Minimum 0.053-inch-thick steel sheet or 0.068-inch-thick stainless-steel sheet.

D. Recessed Cabinet:

1. Exposed Flat Trim: One-piece combination trim and perimeter door frame overlapping surrounding wall surface, with exposed trim face and wall return at outer edge (backbend).

2. Products: Subject to compliance with requirements, available products that may be incorporated in the Work include, but are not limited to:

a. Croker, a division of Fire-End & Croker Corporation; 1620-SS-FF.
b. JL Industries, Inc., a division of the Activar Construction Products Group, Inc.; School Cabinet CS2035.
c. Larsen's Manufacturing Company; Detention Architectural Series DEC SS 2712-R.

E. Door and Frame Material: 0.078-inch-thick stainless steel.

F. Door Style: Solid opaque panel with frame.

G. 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 door pull and friction latch.
2. Provide continuous hinge, of same material and finish as trim, permitting door to open 180 degrees.

H. Accessories:

1. Identification: Lettering complying with authorities having jurisdiction for letter style, size, spacing, and location. Locate as directed by Architect.

   a. Identify fire extinguisher in fire-protection cabinet with the words "FIRE EXTINGUISHER." Lettering color and orientation as directed by Architect.

2. Alarm: Alarm that actuates when fire extinguisher is removed from cabinet and that is powered by batteries.

   a. Basis-of-Design Product: Subject to compliance with requirements, provide Safety Technology International, Inc.; Mini Theft Stopper, Model STI-6255, or comparable product.

I. Materials:

1. Stainless Steel: ASTM A240/A240M or ASTM A666, Type 304.

   a. Finish: ASTM A480/A480M No. 4 directional satin finish.

J. Placement: Provide at all locations, except as otherwise indicated.

2.4 HEAVY-DUTY RATED FIRE-PROTECTION CABINET

A. Cabinet Type: Suitable for fire extinguisher.

B. Cabinet Construction: For one and two-hour rated walls.

C. Cabinet Tub Material: Minimum 0.053-inch-thick steel sheet or 0.068-inch-thick stainless-steel sheet.

D. Recessed Cabinet:

1. Exposed Flat Trim: One-piece combination trim and perimeter door frame overlapping surrounding wall surface, with exposed trim face and wall return at outer edge (backbend).

2. Products: Subject to compliance with requirements, available products that may be incorporated in the Work include, but are not limited to:

   a. Croker, a division of Fire-End & Croker Corporation; FR-1620-FF-SS.
   b. JL Industries, Inc., a division of the Activar Construction Products Group, Inc.; School Cabinet CS2035 Fire-FX.
   c. Larsen's Manufacturing Company; Detention Architectural Series Flame-Shield FS DEC SS2712-R.

E. Door and Frame Material: 0.078-inch-thick stainless steel.

F. Door Style: Solid opaque panel with frame.

G. 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 door pull and friction latch.
2. Provide continuous hinge, of same material and finish as trim, permitting door to open 180 degrees.

H. Accessories:

1. Identification: Lettering complying with authorities having jurisdiction for letter style, size, spacing, and location. Locate as directed by Architect.

a. Identify fire extinguisher in fire-protection cabinet with the words "FIRE EXTINGUISHER." Lettering color and orientation as directed by Architect.

2. Alarm: Alarm that actuates when fire extinguisher is removed from cabinet and that is powered by batteries.

a. Basis-of-Design Product: Subject to compliance with requirements, provide Safety Technology International, Inc.; Mini Theft Stopper, Model STI-6255, or comparable product.

I. Materials:

1. Stainless Steel: ASTM A240/A240M or ASTM A666, Type 304.

a. Finish: ASTM A480/A480M No. 4 directional satin finish.

J. Placement: Provide at rated wall locations.

2.5 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. Miter corners and grind smooth.
3. Provide factory-drilled mounting holes.

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 thick.
2. Miter and weld perimeter door frames and grind smooth.

C. Cabinet Trim: Fabricate cabinet trim in one piece with corners mitered, welded, and ground smooth.

2.6 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 unacceptable.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine walls and partitions for suitable framing depth and blocking where recessed cabinets will be installed.
B. Proceed with installation only after unsatisfactory conditions have been corrected.
C. Beginning installation constitutes Contractor’s acceptance of substrates and conditions.

3.2 PREPARATION

A. Prepare recesses for recessed fire-protection cabinets as required by type and size of cabinet and trim style.

3.3 INSTALLATION

A. General: Install fire-protection cabinets in locations and at mounting heights indicated or, if not indicated, at height indicated below:

   1. Fire-Protection Cabinets: 40 inches above finished floor to top of cabinet rough opening aligned with masonry coursing.

B. Fire-Protection Cabinets: Fasten cabinets to structure, square and plumb.

   1. Fasten alarm to inside back surface of fire protection cabinets, located to allow fire extinguisher to rest securely on bottom of cabinet.
   2. Unless otherwise indicated, provide recessed fire-protection cabinets. If wall thickness is inadequate for recessed cabinets, provide semi recessed fire-protection cabinets.

3.4 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.

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 correction by finish touchup or similar minor corrective procedures.

END OF SECTION 10 44 13

SECTION 10 44 16 - FIRE EXTINGUISHERS

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 portable, hand-carried fire extinguishers and mounting brackets for fire extinguishers.

1.3 SUBMITTALS, GENERAL

A. General: Submit all action submittals required by this Section and by Division 10 Section "Fire Protection Cabinets" concurrently.

1.4 ACTION SUBMITTALS

A. Product Data: For each type of product. Include rating and classification, material descriptions, dimensions of individual components and profiles, and finishes for fire extinguisher and mounting brackets.

1. Mounting brackets.

B. As-Specified Data: If the product to be incorporated into Project is as specified by manufacturer name and product designation in Part 2 of this Specification Section, submit the "**As-Specified Verification Form**" (attached to Division 01 Section "Submittal Procedures") for each item listed below, otherwise submit full Product Data for the following:

1. Multipurpose dry-chemical type in steel container (ABC).
2. Carbon dioxide type (CO_2).
3. Clean-agent type in steel container (FE-36).
4. Identification.

C. Product Schedule: For fire extinguishers. Coordinate final fire-extinguisher schedule with fire-protection cabinet schedule to ensure proper fit and function.

D. Warranty: Sample of special warranty.

1.5 CLOSEOUT SUBMITTALS

A. Operation and Maintenance Data: For fire extinguishers to include in maintenance manuals.
B. Warranty: Executed special warranty.

1.6 COORDINATION

A. Coordinate type and capacity of fire extinguishers with fire-protection cabinets to ensure fit and function.

1.7 WARRANTY

A. Special Warranty: Manufacturer's standard form in which manufacturer agrees to correct or replace fire extinguishers that fail in materials or workmanship within specified warranty period.

1. Failures include, but are not limited to, the following:

a. Failure of hydrostatic test according to NFPA 10 when testing interval required by NFPA 10 is within the warranty period.
b. Faulty operation of valves or release levers.

2. Warranty Period: Minimum of five years from date of Substantial Completion.

PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

A. NFPA Compliance: Fabricate and label fire extinguishers to comply with NFPA 10, "Portable Fire Extinguishers."
B. Fire Extinguishers: Listed and labeled for type, rating, and classification by an independent testing agency acceptable to authorities having jurisdiction.

2.2 PORTABLE, HAND-CARRIED FIRE EXTINGUISHERS

A. Fire Extinguishers: Type, size, and capacity for each fire-protection cabinet and mounting bracket indicated.

1. Source Limitations: Obtain fire extinguishers and fire-protection cabinets from single source from single manufacturer.
2. Valves: Manufacturer's standard.
3. Handles and Levers: Manufacturer's standard.
4. Instruction Labels: Include pictorial marking system complying with NFPA 10, Appendix B.

B. Multipurpose Dry-Chemical Type in Steel Container (ABC): UL-rated 4-A:80-B:C, 10-lb nominal capacity, with monoammonium phosphate-based dry chemical in enameled-steel container.

1. Products: Subject to compliance with requirements, available products that may be incorporated in the Work include, but are not limited to:

a. Croker, a division of Fire-End & Croker Corporation; 4010.

b. JL Industries, Inc., a division of the Activar Construction Products Group, Inc.; Cosmic 10E.
c. Larsen's Manufacturing Company; MP10.

2. Placement: In fire extinguisher cabinet or on mounting bracket.

a. Provide in locations indicated and in compliance with requirements of authorities having jurisdiction.

C. Carbon Dioxide Type (CO_2): UL-rated 10-B:C, 15-lb nominal capacity, with carbon dioxide in enameled-aluminum container.

1. Products: Subject to compliance with requirements, available products that may be incorporated in the Work include, but are not limited to:

a. Croker, a division of Fire-End & Croker Corporation; 4415.
b. JL Industries, Inc., a division of the Activar Construction Products Group, Inc.; Sentinel 15.
c. Larsen's Manufacturing Company; CD15.

2. Placement: On mounting bracket.

a. Provide in each Electrical Room, in locations indicated, and in compliance with requirements of authorities having jurisdiction.

D. Clean-Agent Type in Steel Container (HFC-236fa): UL-rated 2-A:10-B:C, 13-lb nominal capacity, with HFC blend agent and inert material in enameled-steel container; with pressure-indicating gage.

1. Basis-of-Design Product: Subject to compliance with requirements, provide Ansul by Johnson Controls Company; Cleanguard FE13, or comparable product.

2. Placement: On mounting bracket.

a. Provide in each Computer Room, in locations indicated, and in compliance with requirements of authorities having jurisdiction.

2.3 MOUNTING BRACKETS

A. Mounting Brackets: Manufacturer's standard steel, designed to secure fire extinguisher to wall or structure, of sizes required for types and capacities of fire extinguishers indicated, with plated or baked-enamel finish.

2.4 IDENTIFICATION

A. Identification: Projecting sign complying with authorities having jurisdiction for size and location. Locate as indicated by Architect.

1. Identify fire extinguishers and fire extinguisher cabinets with graphic fire extinguisher image applied to projecting mounting surface.

    a. Basis-of-Design Product: Subject to compliance with requirements, provide Compliance Signs, Inc.; Red 3D Triangle-Mount (Graphic Only) Fire Extinguisher Sign NHE-13844Tri, or comparable product.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine fire extinguishers for proper charging and tagging.

1. Remove and replace damaged, defective, or undercharged fire extinguishers.

B. Proceed with installation only after unsatisfactory conditions have been corrected.

C. Beginning installation constitutes Contractor's acceptance of substrates and conditions.

3.2 INSTALLATION

A. General: Install fire extinguishers and mounting brackets in locations indicated and in compliance with requirements of authorities having jurisdiction.

1. Mounting Brackets: Top of fire extinguisher to be at 40 inches above finished floor.

B. Mounting Brackets: Fasten mounting brackets to surfaces, square and plumb, at locations indicated.

C. Identification: Fasten projecting signs on wall centered above each fire extinguisher and fire extinguisher cabinet, aligning top of sign with top of adjacent door frame, unless otherwise indicated.

END OF SECTION 10 44 16

SECTION 10 51 13 – PLASTIC LOCKERS AND LOCKER BENCHES

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. Plastic Lockers.
2. Locker Benches.

1.3 SUBMITTALS, GENERAL

A. General: Submit all action submittals required by this Section concurrently.

1.4 ACTION SUBMITTALS

A. Product Data: For each type of product indicated. Include construction details, material descriptions, dimensions of individual components and profiles, and finishes.

1. Plastic Lockers
2. Locker Benches.

B. Shop Drawings: Benches.

1. Include plans, elevations, sections, and attachment details.

C. Samples: Manufacturer's color charts showing the full range of colors available.

D. Product Schedule: For lockers. Use same designations indicated on Drawings.

E. Sample Warranty: For special warranty.

1.5 CLOSEOUT SUBMITTALS

A. Maintenance Data: For adjusting, correcting, and replacing locker doors and latching mechanisms to include in maintenance manuals.
B. Executed Warranty: For special warranty.

1.6 DELIVERY, STORAGE, AND HANDLING

A. Do not deliver lockers and benches until spaces to receive them are clean, dry, and ready for their installation.
B. Deliver master and control keys and combination control charts to Owner by registered mail or overnight package service.

1.7 FIELD CONDITIONS

A. Field Measurements: Verify actual dimensions of recessed openings by field measurements before fabrication.

1.8 COORDINATION

A. Coordinate sizes and locations of framing, blocking, furring, reinforcements, and other related units of work specified in other Sections to ensure that lockers can be supported and installed as indicated.

1.9 WARRANTY

A. Special Warranty: Manufacturer agrees to correct or replace components of lockers that fail in materials or workmanship, excluding finish, within specified warranty period.

1. Failures include, but are not limited to, the following:

   a. Structural failures.
   b. Faulty operation of latches and other door hardware.

2. Damage from deliberate destruction and vandalism is excluded.

3. Warranty Period for Plastic Lockers: 15 years from date of Substantial Completion.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Source Limitations: Obtain plastic lockers and benches and accessories from single source from single manufacturer.

2.2 PERFORMANCE REQUIREMENTS

A. Accessibility Standard: For lockers and locker benches indicated to be accessible, comply with applicable provisions in the USDOJ's "2010 ADA Standards for Accessible Design," ICC A117.1, and building Code in effect for Project.

1. Handicap lockers shall be single tier. Locker bottom shall be a minimum of 15” off the floor, or an extra shelf placed 15” off the floor. Single tier lockers shall have a shelf 48” off the floor. Doors assigned for handicapped use shall have an appropriate symbol sign. Lockers shall be supplied with an ADA compliant single touch latch.

2.3 PLASTIC LOCKERS

A. Basis of design manufacturer: ASI Storage Solutions or comparable product. These specifications shall be regarded as minimum; lockers constructed of other materials, or material with a dissimilar core and not solid plastic, will not be acceptable.

B. Locker Configurations and Sizes:

1. Tiers: Double.

2. Wardrobe Lockers:

a. Height: 72 Double tier Z, each @ 36 inches.
b. Width: 18 inches.
c. Depth: 18 inches.

C. Materials:

1. All Doors, Door Frames, Shelves, Sides, Back, Top, and Bottom components shall be made of HDPE material that is water resistant and non-absorbing. All components shall be 1/2” nominal thickness and homogeneous in color.

2. Latches shall be securely attached to the door, continuous in design and be capable of accepting various locking mechanisms.

3. Hinges shall be continuous full length, black and shall be securely attached.

4. Hooks: Zinc plated forged steel, ball ends.

5. Number Plates at quantity of one per opening will be supplied in polished aluminum with black numerals 1/2” high.

6. Bases shall be fabricated from HDPE Polymer to form components with 1” nominal thickness.

7. Finish shall be a commercial grade texture on all flat surfaces.

8. Color: Color match is throughout. Actual color shall be chosen from manufacturers list of standard colors.

D. Fabrication:

1. Locker units shall be manufactured for assembly of single unit construction.
2. Locker components to be square, rigid, and free of scratches.
3. Locker box enclosure shall be assembled by means of machined joints, pins and tamper resistant mechanical fasteners to discourage non-factory disassembly.

4. Locker door frame shall be CNC machined from a single piece of solid HDPE material for maximum rigidity and stiffness.
5. Locker doors shall be machined from solid HDPE sheets. Doors will contain CNC machined ventilation slots.
6. Door Handle shall be solidly mounted to internal latch mechanism.

2.4 LOCKS

A. Combination Padlock: Provided by Owner.

2.5 LOCKER BENCHES

A. Provide bench units with overall assembly height of 17-1/2 inches.

B. Bench Tops: Manufacturer's standard one-piece units, with rounded corners and edges.

1. Size: Minimum 20- to 24-inch-wide tops where accessible benches are indicated 1-1/4 inches thick.
2. Laminated clear hardwood with one coat of clear sealer on all surfaces and one coat of clear lacquer.

C. Fixed-Bench Pedestals: Manufacturer's standard supports, with predrilled fastener holes for attaching bench top and anchoring to floor, complete with fasteners and anchors.

1. Basis-of-Design Product: Subject to compliance with requirements, provide List Industries Inc.; 4810 Extra Heavy-Duty Cast Iron Pedestals, or comparable product.

2.6 ACCESSORIES

A. Fasteners: Zinc- or nickel-plated steel, slotless-type, exposed bolt heads; with self-locking nuts or lock washers for nuts on moving parts.

B. Anchors: Material, type, and size required for secure anchorage to each substrate.

1. Provide nonferrous-metal or hot-dip galvanized anchors and inserts for corrosion resistance.
2. Provide toothed-steel or lead expansion sleeves for drilled-in-place anchors.

2.7 STEEL FINISHES

A. Factory finish steel surfaces.

B. Powder-Coat Finish: Immediately after cleaning and pretreating, electrostatically apply manufacturer's baked-polymer, thermosetting powder finish. Comply with resin manufacturer's written instructions for application and baking.

1. Minimum Dry-Film Thickness: As recommended by manufacturer but not less than 2 mils.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine walls and floors, 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.
C. Beginning installation constitutes Contractor's acceptance of substrates and conditions.

3.2 INSTALLATION

A. Install lockers at the location(s) shown in accordance with the manufacturer's instructions for plumb, level, rigid, and flush installations.

B. Attach number plates after lockers are installed.

C. Equipment:

1. Attach hooks with at least two fasteners.
2. Attach door locks on doors using security-type fasteners.
3. Accessible Locker Identification: Apply accessibility logo decals where indicated on Drawings.

D. Trim: Fit exposed connections of trim, fillers, and closures accurately together to form tight, hairline joints, with concealed fasteners and splice plates.

1. Attach filler panels with concealed fasteners. Locate filler panels where indicated on Drawings.

E. Fixed Benches: Provide no fewer than four pedestals for each accessible bench, uniformly spaced not more than 72 inches apart. Securely fasten tops of pedestals to undersides of bench tops, and anchor bases to floor.

3.3 ADJUSTING

A. Clean, lubricate, and adjust hardware. Adjust doors and latches to operate easily without binding.

3.4 PROTECTION

A. Protect lockers and benches from damage, abuse, dust, dirt, stain, or paint. Do not permit use during construction.

END OF SECTION 10 51 13

SECTION 11 66 23 - GYMNASIUM EQUIPMENT

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. Basketball equipment.
2. Volleyball equipment.
3. Badminton equipment.
4. Safety pads.

1.3 DEFINITIONS

A. BWF: Badminton World Federation.
B. FIVB: Federation Internationale de Volleyball (The International Volleyball Federation).
C. NCAA: The National Collegiate Athletic Association.
D. NFHS: National Federation of State High School Associations.

1.4 PREINSTALLATION MEETINGS

A. Preinstallation Conference: Conduct conference at Project site.

1.5 SUBMITTALS, GENERAL

A. General: Submit all action submittals and informational submittals required by this Section concurrently.

1.6 ACTION SUBMITTALS

A. Product Data: For each type of product indicated. Include assembly, disassembly, and storage instructions for removable equipment.

1. Basketball Equipment:

a. Overhead-supported folding backstops.

b. Backstop safety device.

c. Winch.

d. Backstop electric operator.

1) Motors: Show nameplate data, ratings, characteristics, and mounting arrangements.

e. Basketball backboards.

f. Goal-mounting assembly.

g. Basketball goals.

h. Basketball nets.

i. Backboard safety pads.

2. Volleyball Equipment:

a. Floor insert.

3. Badminton Equipment:

a. Floor insert.

4. Safety Pads:

a. Wall safety pads.
b. Corner wall safety pads.
c. Column safety pads.
d. Cutout trim.

B. Shop Drawings: For gymnasium equipment.

1. Include plans, elevations, sections, and attachment details.
2. Include details of field assembly for removable equipment, connections, installation, mountings, floor inserts, and operational clearances.
3. Include transport and storage accessories for removable equipment.
4. Include diagrams for power, signal, and control wiring.

C. Samples: For the following products:

1. Pad Fabric: Wall padding minimum 3 inches square, with specified treatments applied. Mark face of material.
2. Pad cutout trim.

D. Sample Warranty: For special warranties.

1.7 INFORMATIONAL SUBMITTALS

A. Coordination Drawings: Court layout plans, reflected ceiling plans, and other details, drawn to scale, and coordinated with ceiling-suspended gymnasium equipment, floor inserts, game lines, and markers applied to finished flooring, and coordinated with each other, using input from installers of the items involved:

1. Structural members to which overhead-supported gymnasium equipment will be attached.

2. Suspended ceiling components, if any.

3. Items supported from building structure above the courts, including the following:

a. Luminaires.
b. Air outlets and inlets.
c. Speakers.
d. Sprinklers.
e. Smoke detectors.
f. Acoustical treatments or panels.
g. Divider curtains.
h. Elevated track structure.

B. Setting Drawings: For embedded items and cutouts required in other work.

C. Product Certificates: For safety pads.

D. Field quality-control reports.

1.8 CLOSEOUT SUBMITTALS

A. Operation and Maintenance Data: For gymnasium equipment to include in operation and maintenance manuals.
B. Warranty: Executed special warranties.

1.9 QUALITY ASSURANCE

A. Installer Qualifications: An entity that employs installers and supervisors who are trained and approved by manufacturer.

1.10 FIELD CONDITIONS

A. Field Measurements: Verify position and elevation of floor inserts and layout for gymnasium equipment.

1.11 WARRANTY

A. Special Warranty: Manufacturer agrees to correct or replace components of gymnasium equipment that fail in materials or workmanship within specified warranty period.

1. Failures include, but are not limited to, the following:

    a. Basketball backboard failures, including glass breakage.
    b. Faulty operation of basketball backstops.

2. Warranty Periods:

    a. Backstops: Not less than 25 years from date of Substantial Completion.
    b. Backboards: Lifetime.
    c. Volleyball Uprights: Not less than 10 years from date of Substantial Completion.

PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

A. Seismic Performance: Basketball backstops and anchors shall withstand the effects of earthquake motions determined according to ASCE/SEI 7.

2.2 BASKETBALL EQUIPMENT

A. Source Limitations: Obtain from single source from single manufacturer unless manufacturer does not offer product listed.

B. Standard Rules: Provide equipment according to the requirements of NFHS's "Basketball Rules Book."

C. Protruding fasteners or exposed bolt heads on front face of backboards are not permitted.

D. Connections: Manufacturer's standard connections or connections recommended in writing by manufacturer and complying with Division 05 Section "Metal Fabrications" of size and type required to transfer loads to building structure.

E. Overhead-Supported Folding Backstops:

1. Folding Type: Manufacturer's standard assembly for forward-folding, front-braced backstop, with hardware and fittings to permit folding.

    a. Products: Subject to compliance with requirements, available products that may be incorporated in the Work, include, but are not limited to:

        1) Forward-Folding, Front-Braced Type:

            a) Draper Inc.; Model No. TF-20 Ceiling-Suspended, Forward-Folding, Front Braced Basketball Backstop.
            b) Jaypro Sports, LLC; Model No. J849-FFFB Single Drop Forward Fold – Front Brace.
            c) Porter Athletic, Inc.; Model No. 90949000 Forward Fold Front Braced Backstop 18 to 28 feet Attachment Height.

2. Framing: Steel pipe, tubing, and shapes designed to minimize vibration during play.

   a. Center-Mast Frame: Welded and bolted or clamped with side sway bracing.
   b. Finish: Manufacturer's standard polyester powder-coat finish.

3. Goal Height Adjuster: Adjustable from 8 to 10 feet to top of ring with gear-drive mechanism, locking in any position within adjustment range, with visible height scale attached to side of framing.

   a. Operation:

      1) Manual operation with detachable crank handle.

      2) Electrical: Electric operation with integral gear-drive motor, with limit switches preset to goal heights and the following:

         a) Key switch control.

F. Backstop Safety Device: Designed to limit free fall if support cable, chains, pulleys, fittings, winch, or related components fail; with mechanical automatic reset; 6000-lb load capacity; one per folding backstop.

G. Winch: Hoist consisting of heavy-duty, fully enclosed worm-gear; brake; cable drum; cable; and fittings, for mounting on wall with equipment-mounting board; designed to move and hold backboard in any raised or lowered position.

   1. Operation: Manual winch with detachable hand crank.
   2. Portable Winch Operator: One portable electric motor-drive device(s), including adaptor to fit crank mechanism.

H. Backstop Electric Operator: Provide operating machine of size and capacity recommended in writing by manufacturer for equipment specified, with electric motor and factory-prewired motor controls, starter, gear-reduction unit, and remote controls. Coordinate wiring requirements and electrical characteristics with building electrical system.

   1. Electrical Components, Devices, and Accessories: Listed and labeled according to NFPA 70, by a qualified testing agency, and marked for intended location and application.

   2. Operator Type: Cable drum with grooved drum and cable tension device to automatically take up cable slack and retain cable in grooves.

   3. Operator Mounting: On backstop structure.

   4. Motor Electrical Characteristics:

      a. Horsepower: 1 hp.
      b. Voltage: 115 V ac, single phase, 60 hertz.

   5. Remote-Control Station(s): NEMA ICS 6, Type 1 enclosure for recessed or flush mounting and momentary-contact, three-position, switch-operated control with up, down, and off functions.

a. Group Key Switch Control Stations: One switch per two backstops.
b. Keys: Provide two sets of dual keys per station.
c. Switches, Ganged: Single faceplate with multiple switch cutouts for three switches operating six backstops.

6. Limit Switches: Adjustable switches at each backstop, interlocked with motor controls and set to automatically stop backstop at fully retracted and fully lowered positions.

I. Basketball Backboards:

1. Shape and Size:

a. Rectangular, 72 by 42 inches width by height.

2. Backboard Material: Provide with predrilled holes or preset inserts for mounting goals, and as follows:

a. Glass: Minimum 1/2-inch-thick, transparent tempered glass according to ASTM C1048 Kind FT (fully tempered) and with impact-testing requirements in 16 CFR 1201 Category II or ANSI Z97.1 Class A for safety glazing.

1) Frame: Provide glass with impact-absorbing resilient rubber or PVC gasket around perimeter in a fully welded, brushed-natural-finish, extruded-aluminum frame, with steel subframe, reinforcement, bracing, and mounting slots for mounting backboard frame to backstop.

2) Rim-Restraining Device: According to NCAA and NFHS rules and designed to ensure that basket remains attached if glass backboard breaks.

3) Target Area and Border Markings: Permanently etched in white color, marked in manufacturer's standard pattern and stripe width.

J. Goal-Mounting Assembly: Compatible with goal, backboard, and backstop; with manufacturer's standard hole pattern for goal attachment.

1. Glass Backboard Goal-Mounting Assembly: Goal support framing and reinforcement designed to transmit load from goal to backstop and to minimize stresses on glass backboard.

2. Direct Mount: Designed for mounting goal directly and independently to center mast of backstop, so that no force is transmitted by ring directly to backboard, and rigidity and stability of goal are maximized.

K. Basketball Goals: Basket ring complete with flanges, braces, attachment plate, and evenly spaced loops welded around underside of ring.

1. Single-Rim Basket Ring Competition Goal: Materials, dimensions, and fabrication complying with referenced standard rules.

2. Type:

a. Movable: Pressure-release design with manufacturer's standard breakaway mechanism and rebound characteristics identical to those of fixed, nonmovable ring.

3. Pressure-Release Characteristics: Positive-lock movable breakaway design, with manufacturer's standard mechanism, including preset pressure release, set to release at more than 100-lb load, and automatic reset. Provide movable ring with rebound characteristics identical to those of fixed, nonmovable ring.

4. Field Adjustment: Provide ring that is field adjustable for rebound elasticity without being removed from the backboard.

5. Mount: Front.

6. Net Attachment: No-tie loops for attaching net to ring without tying.

7. Finish: Manufacturer's standard finish.

L. Basketball Nets: 12-loop-mesh net, between 15 and 18 inches long, sized to fit ring diameter, and as follows:

1. Competition Cord: Antiwhip, made from white nylon cord, minimum 120-gm thread and maximum 144-gm thread.

M. Backboard Safety Pads: 2-inch-thick molded foam with integral skin, designed for backboard thickness and extending continuously along bottom and up sides of backboard and over backstop as required by referenced standard rules.

1. Attachment: Bolt on.
2. Color: As selected by Architect from manufacturer's full range.

2.3 VOLLEYBALL EQUIPMENT

A. Source Limitations: Obtain from single source from single manufacturer.

B. Standard Rules: Provide equipment according to the requirements of NFHS's "Volleyball Rules Book."

C. Floor Insert: Brass-plated or solid brass floor plate and steel pipe sleeve, concealed by floor plate, with capped bottom end, sized with ID to fit post standards, minimum length required, to securely anchor pipe sleeve as indicated on Drawings; with anchors designed for securing floor insert to floor substrate indicated; quantity as indicated on Drawings.

1. Floor Plate: Lockable swivel access cover, designed for use with floating wood floors and to be flush with adjacent flooring. Provide two tool(s) for unlocking access covers.

2.4 BADMINTON EQUIPMENT

A. Source Limitations: Obtain from single source from single manufacturer.

B. Standard Rules: Provide equipment according to the requirements of BWF's "Laws of Badminton."

C. Floor Insert: Solid-brass or brass-plated floor plate with access cover and steel pipe sleeve with capped bottom end; sized with ID to fit post standards, minimum length required to securely anchor pipe as indicated on Drawings; quantity as indicated on Drawings.

1. Floor Plate: Lockable swivel or hinged access cover, designed for use with floating wood floors and to be flush with adjacent flooring. Provide two tools for unlocking access covers.

2.5 SAFETY PADS

A. Source Limitations: Obtain from single source from single manufacturer.

B. Performance Characteristics:

1. Impact Performance: Comply with ASTM F2440.
2. Fire Performance and Smoke Development: Comply with NFPA 286.

C. Surface-Burning Characteristics: Comply with ASTM E84; 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.

D. Pad Coverings: Provide safety pad fabric covering that is fabricated from puncture- and tear-resistant, PVC-coated polyester or nylon-reinforced PVC fabric, minimum 19-oz./sq. yd. and treated with fungicide for mildew resistance; with surface-burning characteristics indicated.

E. Wall Safety Pads: Padded wall wainscot panels designed to be attached in a continuous row; each panel section consisting of fill laminated to backer board, with visible surfaces fully covered by seamless fabric covering, free of sag and wrinkles and firmly attached to back of backer board.

1. Products: Subject to compliance with requirements, available products that may be incorporated in the Work, include, but are not limited to:

a. Draper Inc.; Model No. 5046XX EcoVision Fire Rated Wall Pads.
b. Porter Athletic, Inc.; Model No. 5750xx SuperSafe FR Wall Pads.

2. Backer Board: Minimum 7/16-inch-thick oriented strand board.

3. Fire-Resistive Fill: Multiple-impact-resistant foam minimum 2-inch-thick, fire-resistive foam

4. Size: Each panel section 24 inches wide by minimum 72 inches long.

5. Number of Modular Panel Sections: As indicated on Drawings.

6. Installation Method: Concealed mounting Z-clips.

7. Fabric Covering Color(s): As selected by Architect from manufacturer's full range for two colors.

8. Graphics: Provide wall pads with custom graphics as provided by Owner.

F. Corner Wall Safety Pads: Wall corner pad matching wall safety pads.

G. Column Safety Pads: Pads covering columns matching wall safety pads.

H. Cutout Trim: Manufacturer's standard flanged cutout trim kits for fitting pads around switches, receptacles, and other obstructions.

1. Color: As selected by Architect from manufacturer’s full range.

2.6 MATERIALS

A. Support Cable: 1/4-inch-diameter, 7x19 galvanized-stranded-steel wire rope with a breaking strength of 7000 lb. Provide fittings according to the wire rope manufacturer's written instructions for size, number, and installation method.

B. Support Chain and Fittings: For chains used for overhead lifting, provide Grade 80 heat-treated alloy-steel chains, according to ASTM A391/A391M, with commercial-quality, hot-dip galvanized steel connectors and hangars.

C. Castings and Hangers: Malleable iron, according to ASTM A47/A47M; grade as required for structural loading.

D. Anchors, Fasteners, Fittings, and Hardware: Gymnasium equipment manufacturer's standard corrosion-resistant or noncorrodible units; concealed; tamperproof, vandal- and theft-resistant design.

E. Grout: Nonshrink, nonmetallic, premixed, factory-packaged, nonstaining, noncorrosive, nongaseous grout, according to ASTM C1107/C1107M, with minimum strength recommended in writing by gymnasium-equipment manufacturer.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine substrates, areas, and conditions, with Installer present, for compliance with requirements for court layout, alignment of mounting substrates, installation tolerances, operational clearances, accurate locations of connections to building electrical system, and other conditions affecting performance of the Work.

1. Verify critical dimensions.

2. Examine supporting structure, subfloors, and footings below finished floor.

3. Examine wall assemblies, where reinforced to receive anchors and fasteners, to verify that locations of concealed reinforcements are clearly marked. Locate reinforcements and mark locations.

B. Proceed with installation only after unsatisfactory conditions have been corrected.

C. Beginning installation constitutes Contractor's acceptance of substrates and conditions.

3.2 INSTALLATION, GENERAL

A. Comply with manufacturer's written installation instructions and competition rules for each type of gymnasium equipment.

B. Install gymnasium equipment after other finishing operations, including painting, have been completed unless otherwise indicated.

C. Permanently Placed Gymnasium Equipment and Components: Install rigid, level, plumb, square, and true; anchored securely to supporting structure; positioned at locations and elevations indicated; in proper relationship to adjacent construction; and aligned with court layout.

1. Floor-Insert Locations: Coordinate locations with application of game lines and markers.

2. Floor-Insert Elevation: Coordinate installed heights of floor inserts with installation of finish flooring and floor-plate type.

3. Operating Gymnasium Equipment: Verify clearances for movable components of gymnasium equipment throughout entire range of operation and for access to operating components.

D. Floor-Insert Setting: Clean oversized, recessed voids in concrete substrate of debris. Position each sleeve, and fill void around sleeve with grout, mixed and placed according to grout manufacturer's written instructions. Protect portion of sleeve above subfloor and footing from splatter. Verify that sleeves are set plumb, aligned, and at correct height and spacing; hold in position during placement and finishing operations until grout is sufficiently cured. Set insert so top surface of completed unit is flush with finished flooring surface.

E. Anchoring to In-Place Construction: Use anchors and fasteners where necessary to secure built-in and permanently placed gymnasium equipment to structural support and to properly transfer load to in-place construction.

F. Connections: Connect electric operators to building electrical system.

G. Removable Gymnasium-Equipment Components: Assemble in place to verify that equipment and components are complete and in proper working order. Disassemble removable gymnasium equipment after assembled configuration is approved by Architect, and store units in location indicated on Drawings.

3.3 INSTALLATION OF SAFETY PADS

A. Mount with bottom edge at 4 inches above finished floor.
B. Cutout Trim: Limit cuts in face of padding so that cuts are securely and fully concealed behind trim-kit flange.

3.4 FIELD QUALITY CONTROL

A. Testing Agency: Engage a qualified testing agency to perform tests and inspections.

B. Perform the following tests and inspections:

1. Perform visual inspections and operational tests as recommended by referenced standard rules of each sport and the equipment manufacturer.
2. Test rebound elasticity of basketball goals.
3. Test basketball goal pressure-release characteristics and adjustability.

C. Gymnasium equipment will be considered defective if it does not pass tests and inspections.

D. Prepare test and inspection reports.

3.5 ADJUSTING

A. Adjust movable components of gymnasium equipment to operate safely, smoothly, easily, and quietly; free from binding, warp, distortion, nonalignment, misplacement, disruption, or malfunction, throughout entire operational range; and lubricate as recommended in writing by manufacturer.

3.6 DEMONSTRATION

A. Engage a factory-authorized service representative to train Owner's maintenance personnel to adjust, operate, and maintain gymnasium equipment.

END OF SECTION 11 66 23

SECTION 11 66 53 - GYMNASIUM DIVIDERS

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. Center-drive divider systems.
2. Electric operators.
3. Divider system accessories.

1.3 PREINSTALLATION MEETINGS

A. Preinstallation Conference: Conduct conference at Project site.

1.4 SUBMITTALS, GENERAL

A. General: Submit all action submittals and informational submittals required by this Section concurrently.

1.5 ACTION SUBMITTALS

A. Product Data: For each type of product.

1. Center-drive divider systems.

2. Electric operators.

a. Motors: Show nameplate data, ratings, characteristics, and mounting arrangements.

3. Divider system accessories.

B. Shop Drawings: For gymnasium dividers.

1. Include plans showing alignment of curtains in relation to sport-court layout and overhead structural supports.
2. Include elevations, sections, details, and attachments to other work.
3. Include system clearances, stacking requirements, and limits for fitting into adjacent construction.

4. Include point loads and locations for attachment of gymnasium dividers to structure.
5. Include diagrams for power, signal, and control wiring.

C. Samples for Initial Selection: For each type of gymnasium divider curtain fabric.

D. Samples for Verification: For divider curtain fabrics, not less than 12 inches square of mesh and of solid fabric.

E. Sample Warranty: For special warranty.

1.6 INFORMATIONAL SUBMITTALS

A. Product Certificates: For each type of gymnasium divider.

1.7 CLOSEOUT SUBMITTALS

A. Operation and Maintenance Data: For gymnasium dividers to include in operation and maintenance manuals.
B. Warranty: Executed special warranty.

1.8 WARRANTY

A. Special Warranty: Manufacturer agrees to correct or replace components of gymnasium dividers that fail in materials or workmanship within specified warranty period.

1. Failures include, but are not limited to, the following:

a. Faulty operation of gymnasium dividers.
b. Tearing or deterioration of fabric, seams, or other materials beyond normal use.

2. Warranty Period: 5 years from date of Substantial Completion.

PART 2 - PRODUCTS

2.1 CENTER-DRIVE DIVIDER SYSTEMS

A. Basis-of-Design Product: Subject to compliance with requirements, provide Porter Athletic; 2080 Series Center-Roll Divider Curtain, or comparable product.

B. Divider-Curtain System: Electrically operated, with center-drive tube rolling the upper and lower sections of the curtain simultaneously; and as follows:

1. Adjustable pipe hanger assembly.
2. Roll Tube: Anodized, extruded-aluminum tubing.

C. Divider Curtain:

1. Upper Curtain, Mesh: Woven mesh of polyester yarn coated with vinyl, weighing not less than 8 oz./sq. yd.

   a. Mesh Color: As selected by Architect from full range of industry colors and color densities.

2. Lower Curtain, Solid: Woven polyester fabric coated with vinyl, not less than 18 oz./sq. yd., 10-foot height above floor.

   a. Fabric Color: As selected by Architect from full range of industry colors and color densities.

3. Hems: Folded and electronically welded.

4. Seams: Electronically welded.

5. Overall Curtain Height: As indicated on Drawings.

6. Bottom of Curtain: Approximately 1 inch above finished floor, with padded bottom tube.

2.2 ELECTRIC OPERATORS

A. Provide factory-assembled electric operation system of size and capacity recommended in writing and provided by gymnasium divider manufacturer for gymnasium dividers specified, with electric motors and factory-prewired motor controls, control devices, and accessories required for proper operation.

   1. Include wiring from control stations to motors and between synchronizer and dual motors for long curtains. Coordinate operator wiring requirements and electrical characteristics with building electrical system.

B. Electrical Components, Devices, and Accessories: Listed and labeled according to NFPA 70, by a qualified testing agency, and marked for intended location and application.

C. Motor Electrical Characteristics:

   1. Horsepower: 3/4 hp.
   2. Voltage: 115 V ac, single phase, 60 hertz.

D. Limit Switches: Adjustable switches at each divider curtain, interlocked with motor controls and set to automatically stop divider curtain at fully extended and fully retracted positions.

E. Control System:

   1. Touch-screen programmable operating system.

2.3 DIVIDER SYSTEM ACCESSORIES

A. Safety Lock: Locks drive system when speed exceeds manufacturer's recommended speed.
B. Audible Motion Alarm: Provide alarm with intermittent warning tone when curtain is raised or lowered.

2.4 SUPPORT MATERIALS AND FASTENERS

A. General-Purpose Chain: For chains not used for overhead lifting, provide carbon steel chain, according to ASTM A413/A413M, Grade 30 proof coil chain or higher grade recommended by gymnasium divider manufacturer. Provide coating type, chain size, number, and installation method according to manufacturer's written instructions.

B. Anchors, Fasteners, Fittings, and Hardware: Manufacturer's standard corrosion-resistant or noncorrodible units; concealed; tamperproof, vandal-resistant design.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine substrates, areas, and conditions, with Installer present, for compliance with requirements for alignment of mounting substrates, installation tolerances, operational clearances, locations of connections to building electrical system, and other conditions affecting performance of the Work.

1. Verify critical dimensions.
2. Examine supporting structure.

B. Proceed with installation only after unsatisfactory conditions have been corrected.

C. Beginning installation constitutes Contractor’s acceptance of substrates and conditions.

3.2 INSTALLATION, GENERAL

A. Comply with manufacturer's written installation instructions.

B. Install gymnasium dividers after other finishing operations, including painting, have been completed unless otherwise indicated.

C. Install gymnasium dividers level, plumb, square, and true; anchored securely to supporting structure; positioned at locations and elevations indicated; in proper relation to adjacent construction; and aligned with sport-court layout.

1. Verify clearances for movable components of gymnasium dividers throughout entire range of operation and for access to operating components.

D. Electric Operators Installation: Connect electric operators to building electrical system.

3.3 ADJUSTING

A. Adjust movable components of gymnasium dividers to operate safely, smoothly, easily, and quietly, free from binding, warp, distortion, uneven tension, nonalignment, misplacement, disruption, or malfunction, throughout entire operational range; and lubricate as recommended in writing by manufacturer.

B. Limit Switch Adjustment: Set and adjust upper and lower limit controls.

3.4 DEMONSTRATION

A. Train Owner's maintenance personnel to adjust, operate, and maintain gymnasium dividers.

END OF SECTION 11 66 53

SECTION 11 68 33.43 – TRACK AND FIELD EQUIPMENT

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 REFERENCES

A. Comply with applicable requirements of the following standards. Where these standards conflict with the other specified requirements, the most restrictive requirements shall govern.

1. National Federation of State High School Associations (NFSHSA).
2. American Sports Builders Association (ASBA)
3. Manufacture's Data and Recommended Installation Requirements.
4. New York State Public High School Athletic Association Inc. (NYSPHSAA)

1.3 SUMMARY

A. Section Includes:

1. Pole Vault Box and Cover

B. Related Sections:

1. Section 03 30 00 "Cast-in-Place Concrete"

1.4 SUBMITTALS

A. General: Submit all action submittals and informational submittals required by this Section concurrently.

B. Action Submittals: Product Data for equipment, accessories and hardware:

1. Pole Vault Box and Cover

2. Shop Drawings: For athletic field equipment. Include plans, elevations, sections, details, and attachments to other work.

3. Samples for Initial Selection: For each type of athletic equipment indicated.

a. Manufacturer's color charts.

C. Informational Submittals:

1. Qualification Data: For qualified Installer.

D. Closeout Submittals:

1. Maintenance Data: For athletic field equipment and finishes to include in maintenance manuals.

1.5 QUALITY ASSURANCE

A. Installer Qualifications: An employer of workers approved by manufacturer.

B. All site amenities shall be produced in a plant of recognized reputation that is regularly engaged in the production of the type of site amenity conforming to the specified standards. Site amenities of the same type shall be the product of a single manufacture.

C. Manufacturers warranties shall pass to the Owner and certification made that the product materials meet all applicable grade trademarks or conform to the industry standards and inspection requirements.

1.6 PRODUCT DELIVERY AND STORAGE

A. Materials delivered to the site shall be examined for damage or defects in shipping. Any defects shall be noted and reported to the Owner's representative.

B. Sound materials shall be stored off the ground and under protective cover or indoors in a manner that will not allow distortion or other damage to occur.

C. Handle materials according to manufacturer's written instructions.

1. Materials shall be moved, loaded, and unloaded such that they will not be subject to excess stress. Permanent distortion or other damage attributable to Contractor's operation shall be cause for rejection.

PART 2 - PRODUCTS

2.1 POLE VAULT BOX WITH COVER AND COLLAR

A. Pole Vault Box and Cover: NFHS regulation size, 13 gauge, 304 stainless-steel pole vault box, with stainless wings for concrete encasement.

1. Cover: 0.125-inch aluminum sized to fill void of vault box, with recessed cover designed to accept 0.5-inch thick resilient track surfacing.

2. Basis-of Design Product:

a. Vault Box: Subject to compliance with requirements, provide Sportsfield Specialties Inc.; Model PVBSS (TFPV002SS) Stainless Steel Pole Vault Box, or comparable product.

b. Vault Box Cover: Subject to compliance with requirements, provide Sportsfield Specialties Inc.; Model PVBCPSS (TFPV003ALTR-SS) Aluminum Vault Box Plug for above noted Stainless Steel Pole Vault Box, or comparable product.

B. Pole Vault Box Protective Collar:

1. Vinyl-covered pad vault box collar meeting ASTM F2949-12 and NFHS requirements.

2. Basis-of Design Product: Subject to compliance with requirements, provide Sportsfield Specialties Inc.; Model PVPBSC (TFPVPBSC) Pole Vault Planting Box Safety Collar or comparable product.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine areas and conditions, with Installer present, for compliance with conditions affecting performance of the Work.
B. Proceed with installation only after unsatisfactory conditions have been corrected.
C. Beginning installation constitutes Contractor's acceptance of substrates and conditions.

3.2 PREPARATION

A. Verify that layout and equipment locations comply with requirements for each type and component of equipment.

3.3 INSTALLATION

A. General: Comply with manufacturer's written installation instructions unless more stringent requirements are indicated. Anchor track and field equipment securely, positioned at locations and elevations indicated.

3.4 FIELD QUALITY CONTROL

A. Perform tests and inspections.

1. Manufacturer's Field Service: Engage a factory-authorized service representative to inspect components, assemblies, and equipment installations, including connections. Inform Architect 48 hours in advance when inspections are to take place.

2. Prepare test and inspection reports.

3.5 ADJUSTING AND CLEANING

A. Touchup Painting: Immediately after erection, clean bolted connections, and abraded areas of shop paint, and paint exposed areas with the same material as used for shop painting to comply with the requirements for touching up shop-painted surfaces.

3.6 PROTECTION

A. Protect finishes of athletic field equipment from damage during construction period with temporary protective coverings approved by manufacturer. Remove protective coverings at time of Substantial Completion.

END OF SECTION 11 68 33.43

SECTION 12 24 13 - ROLLER WINDOW SHADES

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. Manually operated roller shades with single rollers.
2. Roller shade fabrics.

1.3 SUBMITTALS, GENERAL

A. General: Submit all action submittals (except Samples for Verification) and informational submittals required by this Section concurrently.

1.4 ACTION SUBMITTALS

A. Product Data: For each type of product.

1. Include styles, material descriptions, construction details, dimensions of individual components and profiles, features, finishes, and operating instructions for roller shades.

B. Shop Drawings: Show fabrication and installation details for roller shades, including shadeband materials, their orientation to rollers, and their seam and batten locations, all dimensions and clearances for each shade installation.

1. Include typical elevation layout showing separation between shade units and meeting edges at corners with sections and details at head and sill between blind units and corners.
2. Provide verified in field details showing all types of shade installation conditions.
3. Components and conditions not fully dimensioned or detailed in manufacturers product data indicating relationship to adjoining construction.
4. Manufactures specification instructions and details specific to components and conditions not fully dimensioned or detailed in manufactures product data.
5. Provide data for all components required for installation.

C. Samples for Verification and Initial Color Selection: For each type and color of shadeband material.

1. Include Samples of accessories involving color selection.
2. Actual color samples of manufactures full range – no color copies will be accepted.

3. Shadeband Material: Not less than 10 inches square. Mark inside face of material if applicable.
4. Roller Shade: Full-size operating unit, not less than 16 inches wide by 36 inches long for each type of roller shade indicated.
5. Installation Accessories: Full-size unit, not less than 10 inches long.

1.5 INFORMATIONAL SUBMITTALS

A. Product Certificates: For each type of shadeband material, signed by product manufacturer.

1.6 CLOSEOUT SUBMITTALS

A. Maintenance Data: For roller shades to include in maintenance manuals.

1.7 DELIVERY, STORAGE, AND HANDLING

A. Deliver roller shades in factory packages, marked with manufacturer, product name, and location of installation using same designations indicated on Drawings.

1.8 WARRANTY

A. Manufacturer's Warranty - Provide manufacturer's warranty including coverage of at least following components:

1. Corrosion of all metal parts.
2. Sagging, creasing, or breaking of slats.
3. Sagging, creasing or ripping of shadeband material.
4. Smoothly performing mechanism without slippage or jams.
5. Finish of all components matching in color, uniform, and against fading or discoloration.
6. Defects in materials and installation workmanship.

1.9 FIELD CONDITIONS

A. Environmental Limitations: Do not install roller shades until construction and finish work in spaces, including painting, is complete and dry and ambient temperature and humidity conditions are maintained at the levels indicated for Project when occupied for its intended use.

B. Field Measurements: Where roller shades are indicated to fit to other construction, verify dimensions of other construction by field measurements before fabrication and indicate measurements on Shop Drawings. Allow clearances for operating hardware of operable glazed units through entire operating range. Notify Architect of installation conditions that vary from Drawings. Coordinate fabrication schedule with construction progress.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Source Limitations: Obtain roller shades from single source from single manufacturer.

2.2 MANUALLY OPERATED SHADES WITH SINGLE ROLLERS

A. Basis-of-Design Product: Subject to compliance with requirements, provide Draper Inc.; Manual FlexShade Systems or comparable product by one of the following:

1. Hunter Douglas Contract.
2. MechoShade Systems, Inc.
3. OEM Shades Inc.
4. Shade Techniques, LLC.
5. Silent Gliss USA, Inc.

B. Chain-and-Clutch Operating Mechanisms: With continuous-loop bead chain and clutch that stops shade movement when bead chain is released; permanently adjusted and lubricated; with chain retainer.

1. Bead Chains: Manufacturer's standard.

a. Limit Stops: Provide upper and lower ball stops.

C. Cord Operation: #4 2 Large Size Cord: Spring roller, Hard braided large diameter cotton cord, attached to slat with screw-eye and cord clasp.

D. Rollers: Corrosion-resistant steel or extruded-aluminum tubes of diameters and wall thicknesses required to accommodate operating mechanisms and weights and widths of shadebands indicated without deflection. Provide with permanently lubricated drive-end assemblies and idle-end assemblies designed to facilitate removal of shadebands for service.

1. Roller Drive-End Location: Right or left side as require per shade layout.

2. Direction of Shadeband Roll: Regular, from back of roller and or back to front to clear window handles, extrusions etc.

3. Shadeband-to-Roller Attachment: Manufacturer's standard method- no double-side tape will be accepted. Provide adequate brackets on multiple sash windows to hold roller pin ends no more than 1/8 inch apart over centerline of mullion.

E. Roller-Coupling Assemblies: Coordinated with operating mechanism and designed to join up to three inline rollers into a multiband shade, not to exceed manufactures recommendation that is operated by one roller drive-end assembly.

F. Shadebands:

1. Shadeband Material: Light-filtering fabric similar to “Sheer-weave Series” fabric by Draper Inc.

G. Shadeband Bottom (Hem) Bar: Steel or extruded aluminum.

1. Type: Enclosed in sealed pocket of shadeband material.

H. Fabrication:

1. Cut shades perfectly square and true and mount on rollers using suitable fasteners. Provide all material used in shade manufacture new, commercially perfect and of first quality. Provide material in one piece.

2. Provide one finished length of each single hung shade after hemming 14 inches longer than portion of sash covered by shade. Provide finished shade width to cover adequately, but not more than 1/4 inch of barrel exposed at each end of roller.

   a. Where necessary, increase diameter of roller from 1-1/4 inches to correspond with size of shade.
   b. Provide hems of proper width for slat, double turn hems, and sew with straight stitch. Neatly backstitch all hems at the ends.
   c. Hem at top and bottom of shade.

3. Fabrication Tolerances:

   a. Size shades to fit openings head – including but not limited to wall, door, window head etc., to sill including but not limited to window sill, floor sill etc. (allowing for 6 to 10 inches in additional length) and between mullions, unless otherwise indicated on Drawings.

   b. Provide single sets of shades no greater in width than distance between 2 mullions at openings up to 15 ft. wide.

   c. Provide minimum clearances for appropriate operation of shades.

I. Installation Accessories:

1. Front Fascia: Aluminum extrusion that conceals front and underside of roller and operating mechanism and attaches to roller endcaps without exposed fasteners.

   a. Shape: L-shaped.
   b. Height: Manufacturer's standard height required to conceal roller and shadeband when shade is fully open.
   c. Provide full range of manufactures colors.

2. Exposed Headbox: Rectangular, extruded-aluminum enclosure including front fascia, top and back covers, endcaps, and removable bottom closure.

   a. Height: Manufacturer's standard height required to enclose roller and shadeband when shade is fully open.
   b. Provide full range of manufactures colors.

3. Endcap Covers: To cover exposed endcaps.

4. Installation Accessories Color and Finish: As selected from manufacturer's full range.

2.3 SHADEBAND MATERIALS

A. Shadeband Material Flame-Resistance Rating: Comply with NFPA 701. Testing by a qualified testing agency. Identify products with appropriate markings of applicable testing agency.

B. Light-Filtering Fabric (Same Color Both Sides): Woven fabric, stain and fade resistant.

1. Source: Roller-shade manufacturer.

2. Type: Woven polyester and PVC-coated polyester.

3. Weave: Basketweave.

4. Color: As selected by Architect from manufacturer's full range.

5. Basis-of-Design Product: Subject to compliance with requirements, provide the following Draper Inc. product or comparable product:

a. Light-Filtering Fabric (Same Color Both Sides) Openness Factor 10 percent: SheerWeave Series PW4100.

1) Thickness: 0.035 inches.
2) Weight: 17.5 oz./sq. yd.
3) Locations: North-facing windows with obstructed view.

C. Rescue Window Labels: Provide and install on window shade in every space of pupil occupancy opaque labels with words "RESCUE WINDOW" Install labels on shades associated with rescue window coordinate with Architect for location.

1. Color: Opaque, bright yellow background with black letters.
2. Size: 2 inches by 1 inches, 3/8” wide lines to form letters.
3. Text: “RESCUE WINDOW”, readable from room side of window.

2.4 ROLLER-SHADE FABRICATION

A. Product Safety Standard: Fabricate roller shades to comply with WCMA A 100.1, including requirements for flexible, chain-loop devices; lead content of components; and warning labels.

B. Unit Sizes: Fabricate units in sizes to fill window and other openings as follows, measured at 74 deg F:

1. Between (Inside) Jamb Installation: Width equal to jamb-to-jamb dimension of opening in which shade is installed less 1/4 inch per side or 1/2-inch total, plus or minus 1/8 inch. Length equal to head-to-sill dimension of opening in which shade is installed less 1/4 inch, plus or minus 1/8 inch.

2. Outside of Jamb Installation: Width and length as indicated, with terminations between shades of end-to-end installations at centerlines of mullion or other defined vertical separations between openings.

C. Shadeband Fabrication: Fabricate shadebands without battens or seams to extent possible.

D. Rescue Window Labels: Provide and install on window shade in every space of pupil occupancy opaque labels with words "RESCUE WINDOW" Install labels on shades associated with rescue window coordinate with Architect for location.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine substrates, areas, and conditions, with Installer present, for compliance with requirements for installation tolerances, operational clearances and other conditions affecting performance of the Work.

B. Proceed with installation only after unsatisfactory conditions have been corrected.

C. Beginning installation constitutes Contractor’s acceptance of substrates and conditions.

3.2 ROLLER-SHADE INSTALLATION

A. Install roller shades level, plumb, and aligned with adjacent units according to manufacturer's written instructions.

1. Opaque Shadebands: Located so shadeband is not closer than 2 inches to interior face of glass. Allow clearances for window operation hardware.

2. Hang shades at window to fit opening properly and operate smoothly and efficiently. Hang each shade perfectly level and with spring tension of roller properly adjusted. Locate tips of adjoining shades no further than 3/8 inch apart when two or more are mounted back to back.

3. Install each shade on brackets securely fastened to ceiling or wall as shown on Drawings. Furnish and install new brackets and other hardware required for proper installation of shades.

B. Prior to installation of roller-shade units, coordinate installation locations and method of installation with window manufacturer, do not secure roller-shade units to window frame.

3.3 ADJUSTING

A. Adjust and balance roller shades to operate smoothly, easily, safely, and free from binding or malfunction throughout entire operational range.

3.4 CLEANING AND PROTECTION

A. Clean roller-shade surfaces after installation, according to manufacturer's written instructions.

B. Provide final protection and maintain conditions, in a manner acceptable to manufacturer and Installer, that ensure that roller shades are without damage or deterioration at time of Substantial Completion.

C. Replace damaged roller shades that cannot be repaired, in a manner approved by Architect, before time of Substantial Completion.

3.5 DEMONSTRATION

A. Engage a factory-authorized service representative to train Owner's maintenance personnel to adjust, operate, and maintain motor-operated roller shades.

END OF SECTION 12 24 13

SECTION 12 32 13 - MANUFACTURED WOOD-VENEER-FACED CASEWORK

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 manufactured wood-veneer-faced cabinets of stock design.

B. Section Includes

1. Wood-veneer faced casework - overlay door design, including (but not limited to):

   a. Wall, base and tall cabinets.
   b. Tops for all base units.
   c. Countertop assemblies.

2. Accessory items, including:

   a. All filler panels, frame units, scribe strips, strips at walls, and similar items.
   b. Cutouts for sinks, faucets, fittings, and other plumbing and electrical fixtures, electrical and mechanical runs and connections and similar items.
   c. Epoxy resin countertops and sinks, drains and tail pieces.
   d. Materials and devices necessary to make solid connections to existing structure.

C. Products Furnished but not Installed Under this Section.

1. Mechanical components, electrical components, plumbing components and similar items included with specified casework items; refer to "Sequencing and Scheduling."

1.3 DEFINITIONS

A. Definitions in the AWI's, AWMAC's, and WI's "Architectural Woodwork Standards" apply to the work of this Section.

B. MDF: Medium-density fiberboard.

C. Hardwood Plywood: A panel product composed of layers or plies of veneer, or of veneers in combination with lumber core, hardboard core, MDF core, or particleboard core, joined with adhesive and faced both front and back with hardwood veneers.

1.4 COORDINATION

A. Coordinate sizes and locations of framing, blocking, furring, reinforcements, and other related units of Work specified in other Sections to ensure that casework can be supported and installed as indicated.

1.5 ACTION SUBMITTALS

A. Product Data: For each type of product.

1. Casework.
2. Hinges.
3. Pulls.
4. Door catches.
5. Drawer slides.
6. Drawer and hinged door locks.
7. Sliding-door hardware sets.
8. Adjustable shelf supports.

B. Shop Drawings: Include plans, elevations, sections, details, and attachments to other work. Show fabrication details, including types and locations of hardware. Show installation details, including field joints and filler panels. Indicate manufacturer's catalog numbers for casework.

1. Roughing Drawings: Submit roughing drawings, showing complete roughing dimensions for plumbing, ventilating and electric services and components to be installed in casework, including location of existing roughing and dimensions, where applicable.

2. Groups/Assemblies: Submit shop drawings of groups or assemblies, including descriptions identifying units, parts, and accessories of each item and showing materials, dimensions, cabinet-cut details, and sink locations (where applicable).

3. Field Measurements: Prior to fabrication or ordering of any specified casework items, verify measurement at Site of actual space reserved for casework items; DO NOT take measurements from Contract Drawings. Give due consideration to architectural, structural, or mechanical discrepancies occurring during building construction. Make such discrepancies immediately known to Architect and obtain clarification of discrepancy in writing before proceeding with installation of affected casework items.

4. Color/Finishes: Shop drawings are not to include colors, wood finishes, stains, etc. All colors are to be selected by the Architect and issued to the contractor by an ASI during the construction phase.

C. Samples:

1. Casework Units: Without cost to Owner, submit samples, as requested, to demonstrate Contractor's ability to furnish required casework.
2. Color Selection: Submit actual samples of finishes, colors, and materials as required for color selection. Submit full range of manufacture colors, texture and wood tones.

1.6 INFORMATIONAL SUBMITTALS

A. Qualification Data: For Installer.

B. Quality Standard Compliance Certificates: AWI Quality Certification Program certificates.

1. Joint Tolerances 400C-T-1.
2. Finishness Test 400C-T-2.

C. Sample Warranty: For special warranty.

D. Installer Experience Listing: Submit list of completed projects using products proposed for this Project, including owner's contact and telephone number for each project, demonstrating compliance with applicable "Qualifications" requirements specified below in "Quality Assurance" article.

1.7 MAINTENANCE MATERIAL SUBMITTALS

A. Furnish complete touchup kit for each type and finish of casework provided. Include scratch fillers, stains, finishes, and other materials necessary to perform permanent repairs to damaged casework finish.

1.8 QUALITY ASSURANCE

A. Manufacturer: Minimum 5-years' experience in manufacture of casework and other items similar to those specified and minimum 5 completed casework installations of similar size and requirements to that specified.

B. Installer: Minimum 5 completed casework installations of similar size and requirements to that specified.

C. Installer Qualifications: An authorized representative who is trained and approved by manufacturer for installation of units required for this Project and a certified participant in AWI's Quality Certification Program.

1.9 DELIVERY, STORAGE, AND HANDLING

A. Deliver casework only after painting, utility roughing-in, and similar operations that could damage, soil, or deteriorate casework have been completed in installation areas. If casework must be stored in other than installation areas, store only in areas where environmental conditions meet requirements specified in "Project Conditions" Article.

B. Keep finished surfaces covered with polyethylene film or other protective covering during handling and installation.

1.10 FIELD CONDITIONS

A. Environmental Limitations: Do not deliver or install casework until building is enclosed, wet work is complete, and HVAC system is operating and maintaining temperature and relative humidity at occupancy levels during the remainder of the construction period. Maintain temperature and relative humidity during the remainder of the construction period in range recommended for Project location by the AWI's, "Architectural Woodwork Standards."

B. Field Measurements: Prior to fabrication or ordering of any specified casework items, verify measurement at Site of actual space reserved for casework items; DO NOT take measurements from Contract Drawings. Give due consideration to architectural, structural, or mechanical discrepancies occurring during building construction. Make such discrepancies immediately known to Architect and obtain clarification of discrepancy in writing before proceeding with installation of affected casework items.

C. Locate concealed framing, blocking, and reinforcements that support casework by field measurements before being enclosed, and indicate measurements on Shop Drawings.

1.11 SEQUENCING AND SCHEDULING

A. Coordinate the layout and installation of casework with all Prime Contractors. See Section 01 12 00 for each Contractor's coordination responsibilities.

B. Refer to the casework model numbers for the plumbing and electrical fittings and fixtures that are shown to be part of the casework. Deliver these fittings and fixtures to the contractor assigned to their installation in Section 01 12 00. Obtain a signed receipt for their delivery.

C. Provide all holes / cut outs in the casework for all Prime Contractors on the Project. Coordinate with the work on the E, P, & HVAC drawings and division 22, 23, 26, 27, and 28.

1.12 MAINTENANCE

A. Extra Materials: Furnish complete touchup kit for each type and color of wood laboratory casework provided. Include scratch fillers, stains, finishes, and other materials necessary to perform permanent repairs to damaged laboratory casework finish.

1.13 WARRANTY

A. Special Warranty: Manufacturer agrees to repair or replace components of casework that fail in materials or workmanship within specified warranty period.

1. Failures include, but are not limited to, the following:

    a. Delamination of components or other failures of glue bond.
    b. Warping of components.
    c. Failure of operating hardware.
    d. Deterioration of finishes.

2. Contractor's Guarantee: Upon completion of installation of casework and after acceptance by Owner, furnish to Owner written statement accepting full responsibility for installation and guaranteeing adequacy and safety of attachment of all casework.

3. Warranty Period: Five years from date of Substantial Completion.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:

B. Basis-of-Design Product: Subject to compliance with requirements, provide “Signature Series Wood Casework – Contemporary Full Overlay” by Kewaunee Scientific Statesville, NC or comparable product by one of the following:

1. Wood-Metal Industries.
2. Sheldon Laboratory Systems.

C. Source Limitations: Obtain wood-veneer-faced casework with tops, sinks, special equipment, and service fixtures from same casework supplier to establish single responsibility for all casework components.

2.2 CASEWORK, GENERAL

A. Quality Standard: Unless otherwise indicated, comply with the AWI's, AWMAC's, and WI's "Architectural Woodwork Standards" for grades of casework indicated for construction, finishes, installation, and other requirements.

1. Grade: Premium.
2. Provide labels and certificates from AWI certification program indicating that casework, including installation, complies with requirements of grades specified.

B. Product Designations: Drawings indicate sizes, configurations, and finish materials of manufactured wood-veneer-faced casework by referencing designated manufacturer's catalog numbers. Other manufacturers' casework of similar sizes and door and drawer configurations, of same finish materials, and complying with the Specifications may be considered. See Section 01 60 00 "Product Requirements."

C. Product Designations: Drawings indicate configurations of manufactured wood-veneer-faced casework by referencing designations of Casework Design Series numbering system in Appendix A of the AWI's, AWMAC's, and WI's "Architectural Woodwork Standards."

2.3 WOOD-VENEER-FACED CABINETS

A. Design:

1. Contemporary full-overlay wood edges.

B. Wood Species: White Maple.

C. Face Veneer Cut: Grade AA Plain sliced.

D. Veneer Matching:

1. Provide veneers for each cabinet from a single flitch, book and running matched.

a. Provide continuous matching of adjacent drawer fronts within each cabinet.

E. Grain Direction:

1. Vertical on doors, horizontal on drawer fronts.
2. Lengthwise on face frame members.
3. Vertical on end panels.
4. Side to side on bottoms and tops of units.
5. Vertical on knee-space panels.
6. Horizontal on aprons.

F. Exposed Materials:

1. Plywood:

a. Maple Plywood: White Maple, Grade AA, rotary cut, book matched, cross-banded, with solid hardwood core.

1) 1/4 inch: Minimum 3-ply.
2) 3/4 inch: Minimum 7-ply.

b. Other Hardwood Plywood: Sound grade; cross-banded, with solid hardwood core.

1) 1/4 inch: Minimum 3-ply.
2) 3/4 inch: Minimum 7-ply.

2. Solid Wood: Clear hardwood lumber of species indicated and selected for grain and color compatible with exposed plywood.

G. Semi exposed Materials:

1. Solid Wood: Sound hardwood lumber, selected to eliminate appearance defects, of same species as exposed wood.
2. Plywood: Hardwood plywood of same species as exposed wood. Provide backs of same species as faces.
3. Provide solid wood or hardwood plywood for semi-exposed surfaces unless otherwise indicated.
4. Hardboard: Use only for cabinet backs where exterior side of back is not exposed.

H. Hardboard: Full tempered 2 sides, consisting of steam-exploded wood fibers, highly compressed into hard, dense 1/4-inch-thick homogeneous sheet using natural resins and other added binders; providing following physical properties:

1. Modulus of Rupture:.....5,000 PSI
2. Density:.....56 PCF
3. Internal Bond: .....100.0 PSI

I. Particleboard: Industrial grade meeting or exceeding CS 236-66 and ASTM D1037 with following physical properties:

1. Density:.....47 PCF (+10 percent)
2. Interior Bond:.....60 PSI
3. Modulus of Elasticity:.....400,000 PSI
4. Modulus of Rupture:.....2,400 PSI
5. Screw Holding Power - Face: ....225 lbs
6. Screw Holding Power - Edge:....200 lbs

2.4 MATERIALS

A. Maximum Moisture Content for Lumber: 7 percent for hardwood and 12 percent for softwood.

B. Hardwood Plywood: HPVA HP-1, particleboard core except where veneer core is indicated.

C. Marine Grade Hardwood Plywood: typical for all countertop applications.

D. Softwood Plywood: U.S. Department of Commerce (DOC) PS 1.

E. Particleboard: ANSI A208.1, Grade M-2Grades for MDF changed with the 2002 edition of ANSI A208.2. Grade 130 is approximately equivalent to previous Grade MD.

F. Hardboard: ANSI A135.4, Class 1 Tempered.

G. Edge banding: Minimum 1/8-inch- thick, solid wood of same species as face veneer

1. Select wood edge banding for grain and color compatible with face veneers.
2. Colors: As selected by Architect from manufacturer's full range.

H. Countertop Solid surface material: Provide countertops with the following front and backsplash style: 1/2-inch thick, solid surface material Splashes: 1/2-inch thick, solid surface material. Fabrication: Fabricate tops in one piece on marine grade plywood with shop-applied edges unless otherwise indicated. Comply with solid-surface-material manufacturer's written instructions for adhesives, sealers, fabrication, and finishing. Solid Surface Material: Homogeneous solid sheets of filled plastic resin complying with ANSI SS1, Class A.

1. Fabricate with loose splashes for field assembly.

2. Adhesives: Adhesives shall not contain urea formaldehyde.

3. 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. Hanex Solid Surfaces.
   b. Corian.
   c. Formica Corporation.
   d. Wilsonart International.

4. Colors and Patterns: As selected by Architect from manufacturer's full range.

2.5 FABRICATION

A. Base Cabinet Construction:

1. Tops: Horizontal frame with pinned mortise and tenon joints; joined to cabinet side with 8-mm hardwood dowels on 32-mm centers. Includes 1-1/8-inch thick x 1-3/4-inch deep front rail with 3/4-inch thick x 1-1/4-inch deep side rails and 3/4-inch thick x 1-3/4-inch deep back rail.

2. Divider Under Drawers: 3/4-inch thick x 2-1/4-inch deep front cross rail, secured to cabinet sides with 8-mm hardwood dowels on 32-mm centers. On all-drawer cabinets where locks are indicated, hardboard panel fitted in intermediate horizontal frame and placed between drawers to prevent access to other drawers.

3. Bottoms: 3/4-inch thick 7-ply hardwood plywood, let into 1-1/8-inch thick x 1-3/4-inch deep bottom rail and jointed to cabinet sides with 8-mm hardwood dowels on 32-mm centers.

4. Sub-Base: Separate and continuous (no cabinet body sides-to-floor), water resistant exterior grade plywood with concealed fastening to cabinet bottom. Ladder-type construction of front, back and intermediates to form a secure and level platform to which cabinets attach.

5. Tops, Dividers Under Drawers, and Bottoms: Securely glued and screwed under pressure to sides at assembly to ensure joint integrity and squareness.

6. Sides: 3/4-inch thick 7-ply hardwood plywood, faced with selected hardwood veneer for exposed surfaces and unselected but sound veneers for unexposed surfaces. Includes 3/8-inch thick hardwood nosing applied to exposed front edge of cabinet side. Where adjustable shelves required by specified manufacturer’s catalog numbers, sides bored with 5 mm holes.

7. Backs: 1/4-inch thick tempered hardboard secured to cabinet top and bottom and dadoed into cabinet sides. Backs recessed 5/16-inch to permit accurate scribing to wall.

8. Removable Backs: Where indicated by specified manufacturer’s catalog numbers, backs retained in vertical cleats secured to cabinet sides to provide tight joints and convenient access to plumbing.

9. Shelves: 1-inch thick 9-ply hardwood plywood with 3/8-inch solid lumber edge band front edges. Additional support provided at rear of cabinets 36 inches and wider.

10. Toe Space: 4-inches high x 3-1/4-inches deep with 3/4-inch thick x 4-inch high toe board, joined between cabinet sides with 8 mm hardwood dowels.

11. Drawers - Semi-Flush Radius Lipped- Oak:

    a. Drawer Face: 3/4-inch thick solid lumber core, faced with selected hardwood veneer.

    b. Sides and Back: 1/2-inch thick solid hardwood; dovetailed at front and rear.

    c. Bottoms: 1/4-inch thick tempered hardboard fitted and secured into grooves in drawer face, sides and back.

    d. Interior Finish: Sealed and varnished to resist absorption.

    e. Slides: Side mount, epoxy-coated drawer slides, providing at least 100 lbs load capacity and incorporating positive stops. Provide progressive type slide with minimum 100 lbs load capacity for file drawers.

B. Wall Cabinet Construction:

1. Tops and Bottoms: 3/4-inch thick 7-ply hardwood plywood, let into 1-1/8-inch thick x 1-3/4-inch deep top and bottom rail and joined to cabinet sides with 8 mm hardwood dowels on 32 mm centers. Securely glued and screwed under pressure at sides to assembly to ensure joint integrity and unit squareness.

2. Sides: 3/4-inch thick 7-ply hardwood plywood, faced with selected hardwood veneer on exposed surfaces and unselected but sound veneer on unexposed surfaces. 3/8-inch thick hardwood nosing applied to exposed front edge of cabinet side. Where adjustable shelves required, 5 mm holes bored in sides on 32 mm centers.

3. Backs: 1/4-inch thick tempered hardboard secured to cabinet top and bottom, dadoed into cabinet sides, and recessed 5/16-inch to permit accurate scribing to wall.

4. Shelves: 1-inch thick 9-ply hardwood with 3/8-inch thick hardwood nosing on front edge. Shelves in 36-inch and wider cabinets include additional support at rear.

C. Cases:

1. Tops and Bottoms: 3/4-inch thick 7-ply hardwood plywood let into 1-1/8-inch thick x 1-3/4-inch deep top and bottom rail and joined to cabinet sides with 8 mm hardwood dowels on 32 mm centers. Tops and bottoms securely glued and screwed under pressure to sides at assembly to ensure joint integrity and unit squareness.

2. Sides: 3/4-inch thick 7-ply hardwood plywood, faced with selected hardwood veneer on exposed surfaces and unselected but sound veneers on unexposed surfaces. 3/8-inch thick hardwood nosing applied to front edge of cabinet side. When adjustable shelves required, 5 mm holes bored in sides.

3. Backs: 1/4-inch tempered hardboard secured to cabinet top and bottom, dadoed into cabinet sides, and recessed 5/16-inch to permit accurate scribing to wall.

4. Shelves: 3/4-inch thick 7-ply hardwood with 3/8-inch thick hardwood nosing on front edge. Shelves in 36-inch and wider cabinets include additional support at rear.

5. Toe Space: 4-inches high x 3-1/4-inches deep with 3/4-inch thick x 4-inch high toe board, joined between cabinet sides with 8 mm hardwood dowels.

D. Doors:

1. Contemporary Full Overlay – Maple:

a. Base and Wall Cabinets: 3/4-inch thick solid core, banded on all edges and faced with selected hardwood veneer.
b. Tall Cases: 1-1/8-inch thick solid lumber core, banded on all edges and faced with selected hardwood veneer.

2. Hinged Glazed Doors: 1-1/8-inch thick x 2-3/4-inch wide heavy selected hardwood frame fitted with 1/4-inch tempered glass and equipped with same carriers specified for solid case doors above.

a. Wall and Base Cabinets: 3/4-inch thick x 2-3/4-inch wide selected hardwood frame fitted and equipped as specified for "Hinged Glazed Doors" above.

E. Filler Strips: Provide as needed to close spaces between cabinets and walls, ceilings, and indicated equipment. Fabricate from same material and with same finish as cabinets. Filler strips should be 3 inches maximum in width or as shown on the drawings.

2.6 FINISH

A. Wood Finishes: Varnish providing tough, hard properties to withstand most severe conditions and staining agents imparting clean, translucent appearance to wood substrate and enhance and improve natural graining in face without suggestion of masking or hiding. Finished film provides mellow, smooth texture.

1. Surface Preparation: All surfaces thoroughly sanded with fine abrasive not coarser than 3/0 Garnet finishing paper, achieving absolute cleanliness before finishing coat application. All wood flour and abrasive particles removed with dry compressed air and all areas wiped with tack rag.

2. Sealing: Synthetic resin-based sealer applied to all surfaces of drawer, cabinet doors, exposed surface and other small sections where complete sealing of edges necessary to prevent moisture absorption. Remainder of cabinet sprayed with sealer after application to specific surfaces. Sealer air-dried within 20 minutes to permit light scuff sanding with 5/0 Garnet finishing paper and subsequently thoroughly dusted.

3. Stain: Pigmented stain consisting of non-fading and non-bleeding colors, ground in suitable vehicle, permitting blending in proportions required to produce color selected by Architect from manufacturer's full range of standard and custom colors.

4. Top Coat: Varnish consisting of moisture of chlorinated polymers and co-polymers suitably compounded with oil modified alkyd resin and other resinous plasticizers in solution of aromatic and oxygenated solvents. Produces cured film gloss with range of 40-50 measured by 60-degree gloss meter. Rubbed effect accomplished by inorganic flatting agent and acid catalyst added prior to spraying to convert film to cured state. Thorough sanding of previous coating provided to promote inter-coat adhesion with careful dusting to remove all powdered finish and abrasive prior to final coating.

5. Chemical Resistance Properties –Oak Wood Veneer Casework

a. Spot Test to Evaporation

1) Boiling Water.....No effect
2) Ethyl Alcohol.....No effect
3) Isopropyl Alcohol .....No effect
4) Methyl Alcohol .....No Effect
5) Xylol .....No effect
6) Toluol.....No effect
7) Naptha.....No effect
8) Gasoline .....No effect
9) Methyl Ethyl Ketone.....No effect
10) Acetone .....No effect
11) Chloroform.....No effect
12) Formaldehyde .....No effect
13) Ink .....No effect

b. Spot Test for One Hour

1) 25 percent Sulfuric Acid .....No effect
2) 70 percent Sulfuric Acid .....Film destroyed
3) 20 percent Hydrochloric Acid (5 min.).....No effect
4) 37 percent Hydrochloric Acid.....Very slight ring & stain
5) 50 percent Nitric Acid.....Film destroyed
6) 10 percent Sodium Hydroxide .....No effect
7) 29 percent Ammonia.....No effect
8) Iodine .....Slight stain
9) Lipstick .....No effect
10) Crayon.....No effect
11) Catsup .....No effect
12) Butter.....No effect
13) Oleo.....No effect
14) Mustard .....No effect
15) Grape Juice.....No effect
16) Coke or Pepsi Cola.....No effect
17) Vinegar.....No effect
18) Milk.....No effect

c. Adhesion and Toughness: Attempts to separate various finish layers from each other and from wood with razor blade or sharp knife are extremely difficult or results in no separation of various layers.

2.7 CASEWORK HARDWARE AND ACCESSORIES

A. Hardware, General: Unless otherwise indicated, provide manufacturer's standard satin-finish commercial-quality, heavy-duty hardware.

1. Use threaded metal or plastic inserts with machine screws for fastening to particleboard, except where hardware is through bolted from back side.

B. Butt Hinges: Wrap-around type, 5-knuckle pin, heavy-duty institutional type with rounded ends, finished in either brushed chrome or black as directed by Architect and concealing hinge screws when door closed.

1. Lipped Construction: 2-1/2-inches high x 0.072-inch thick.
2. Offset kitchen cabinet type, plain butt hinges or hinges with removable pins not acceptable.
3. 2 hinges provided on doors less than 44 inches high; 3 hinges provided on doors 44 inches high and higher.

C. Pulls: Solid stainless-steel wire pulls, fastened from back with two screws. Provide two pulls for drawers more than 24 inches wide.

D. Door Catches: Nylon-roller spring catch or dual, self-aligning, permanent magnet catch. Provide two catches on doors more than 48 inches high.

E. Drawer Slides: BHMA A156.9, Type B05091.

1. Standard Duty (Grade 1, Grade 2, and Grade 3): Side mounted and extending under the bottom edge of drawer; full partial-extension type; zinc-plated epoxy-coated steel with polymer rollers.

2. Heavy Duty (Grade 1HD-100 and Grade 1HD-200): Side mounted and extending under the bottom edge of drawer; full-overtravel-extension type; zinc-plated, steel ball-bearing slides.

3. Box Drawer Slides: Grade 1, Grade 1HD-100, for drawers not more than 6 inches high and 24 inches wide.

F. Drawer and Hinged Door Locks: Cylindrical (cam) type, five-pin tumbler, brass with chrome-plated finish, and complying with BHMA A156.11, Grade 1. Each room is to be keyed and master keyed.

1. Provide a minimum of two keys per lock and six master keys.
2. Provide locks on all doors and drawers.

G. Adjustable Shelf Supports: Two-pin-locking plastic shelf rests complying with BHMA A156.9, Type B04013.

2.8 EXAMINATION

A. Examine areas, with Installer present, for compliance with requirements for installation tolerances, location of framing and reinforcements, and other conditions affecting performance of the Work.

B. Proceed with installation only after unsatisfactory conditions have been corrected.

C. Beginning installation constitutes Contractor's acceptance of substrates and conditions.

2.9 CASEWORK INSTALLATION

A. Grade: Install cabinets to comply with same grade as item to be installed.

B. Install casework level, plumb, and true; shim as required, using concealed shims. Where casework abuts other finished work, apply filler strips and scribe for accurate fit, with fasteners concealed where practical.

C. Utility-Space Framing: Secure to floor with two fasteners at each frame. Fasten to partition framing, wood blocking, or metal reinforcements in partitions and to base cabinets.

D. Base Cabinets: Adjust top rails and subtops within 1/16 inch of a single plane. Fasten cabinets to utility-space framing, partition framing, wood blocking, or reinforcements in partitions with fasteners spaced not more than 24 inches o.c. Fasten adjacent cabinets together with joints flush, tight, and uniform. Align similar adjoining doors and drawers to a tolerance of 1/16 inch.

   1. Where base cabinets are installed away from walls, fasten to floor at toe space at not more than 24 inches o.c. and at sides of cabinets with not less than 2 fasteners per side.

E. Wall Cabinets: Adjust fronts and bottoms within 1/16 inch of a single plane. Fasten to hanging strips, masonry, partition framing, blocking, or reinforcements in partitions. Fasten each cabinet through back, near top, at not less than 24 inches o.c. Align similar adjoining doors to a tolerance of 1/16 inch.

F. Fasten cabinets to adjacent cabinets and to masonry, framing, wood blocking, or reinforcements in walls and partitions to comply with the AWI's, AWMAC's, and WI's "Architectural Woodwork Standards."

G. Install hardware uniformly and precisely. Set hinges snug and flat in mortises unless otherwise indicated. Adjust and align hardware so moving parts operate freely and contact points meet accurately. Allow for final adjustment after installation.

H. Adjust casework and hardware so doors and drawers operate smoothly without warp or bind. Lubricate operating hardware as recommended by manufacturer.

2.10 CLEANING

A. Repair or remove and replace defective work as directed on completion of installation.
B. Clean finished surfaces, touch up as required, and remove or refinish damaged or soiled areas to match original factory finish, as approved by Architect.
C. Protect countertop surfaces during construction with 6-mil plastic or other suitable water-resistant covering. Tape to underside of countertop at minimum of 48 inches o.c.

END OF SECTION 12 32 13

SECTION 12 32 16 - MANUFACTURED PLASTIC-LAMINATE-FACED CASEWORK

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 plastic-laminate-faced cabinets of stock design.

B. Section Includes

1. Plastic laminate faced casework - overlay door design, including (but not limited to):

   a. Wall cabinets.
   b. Tops for all base units.
   c. Counter top assemblies.

2. Accessory items, including:

   a. All filler panels, frame units, scribe strips, strips at walls, and similar items.
   b. Cutouts for sinks, faucets, fittings, and other plumbing and electrical fixtures, electrical and mechanical runs and connections and similar items.
   c. Materials and devices necessary to make solid connections to existing structure.

C. Products Furnished but not Installed Under this Section

1. Mechanical components, electrical components, plumbing components and similar items included with specified casework items; refer to "Sequencing and Scheduling."

1.3 DEFINITIONS

A. Definitions in the AWI's, AWMAC's, and WI's "Architectural Woodwork Standards" apply to the work of this Section.

B. MDF: Medium-density fiberboard.

C. Hardwood Plywood: A panel product composed of layers or plies of veneer, or of veneers in combination with lumber core, hardboard core, MDF core, or particleboard core, joined with adhesive and faced both front and back with hardwood veneers.

1.4 COORDINATION

A. Coordinate sizes and locations of framing, blocking, furring, reinforcements, and other related units of Work specified in other Sections to ensure that casework can be supported and installed as indicated.

1.5 ACTION SUBMITTALS

A. Product Data: For each type of product.

1. Casework.
2. Hinges.
3. Adjustable shelf supports.
4. Grilles.

B. Shop Drawings: Include plans, elevations, sections, details, and attachments to other work. Show fabrication details, including types and locations of hardware. Show installation details, including field joints and filler panels. Indicate manufacturer's catalog numbers for casework.

1. Roughing Drawings: Submit roughing drawings, showing complete roughing dimensions for plumbing, ventilating and electric services and components to be installed in casework, including location of existing roughing and dimensions, where applicable.

2. Groups/Assemblies: Submit shop drawings of groups or assemblies, including descriptions identifying units, parts, and accessories of each item and showing materials, dimensions, cabinet-cut details, and sink locations (where applicable).

3. Field Measurements: Prior to fabrication or ordering of any specified casework items, verify measurement at Site of actual space reserved for casework items; DO NOT take measurements from Contract Drawings. Give due consideration to architectural, structural, or mechanical discrepancies occurring during building construction. Make such discrepancies immediately known to Architect and obtain clarification of discrepancy in writing before proceeding with installation of affected casework items.

4. Color/Finishes: Shop drawings are not to include colors, wood finishes, stains, etc. All colors are to be selected by the Architect and issued to the contractor by an ASI during the construction phase.

C. Samples:

1. Casework Units: Without cost to Owner, submit representative samples, as requested, to demonstrate Contractor's ability to furnish required casework.
2. Color Selection: Submit actual samples of finishes, colors, and materials as required for color selection. Submit full range of manufacture colors.

1.6 INFORMATIONAL SUBMITTALS

A. Qualification Data: For Installer.

B. Quality Standard Compliance Certificates: AWI Quality Certification Program certificates.

1. Joint Tolerances 400C-T-1.
2. Finishes Test 400C-T-2.

C. Sample Warranty: For special warranty.

1.7 QUALITY ASSURANCE

A. Manufacturer Qualifications: Minimum 5-years' experience in manufacture of casework and other items similar to those specified and minimum 5 completed casework installations of similar size and requirements to that specified.

B. Installer Qualifications: An authorized representative who is trained and approved by manufacturer for installation of units required for this Project and a certified participant in AWI's Quality Certification Program (QCP).

1.8 DELIVERY, STORAGE, AND HANDLING

A. Deliver casework only after painting, utility roughing-in, and similar operations that could damage, soil, or deteriorate casework have been completed in installation areas. If casework must be stored in other than installation areas, store only in areas where environmental conditions meet requirements specified in "Project Conditions" Article.

B. Keep finished surfaces covered with polyethylene film or other protective covering during handling and installation.

1.9 FIELD CONDITIONS

A. Environmental Limitations: Do not deliver or install casework until building is enclosed, wet work is complete, and HVAC system is operating and maintaining temperature and relative humidity at occupancy levels during the remainder of the construction period. Maintain temperature and relative humidity during the remainder of the construction period in range recommended for Project location by the AWI's, "Architectural Woodwork Standards."

B. Established Dimensions: Where casework is indicated to fit to other construction, establish dimensions for areas where woodwork is to fit. Provide allowance for trimming at site, and coordinate construction to ensure that actual dimensions correspond to established dimensions.

C. Locate concealed framing, blocking, and reinforcements that support casework by field measurements before being enclosed and indicate measurements on Shop Drawings.

1.10 SEQUENCING AND SCHEDULING

A. Coordinate the layout and installation of casework with all Prime Contractors. See Section 01 12 00 for each Contractor's coordination responsibilities.

B. Provide all holes / cut outs in the casework for all Prime Contractors on the Project. Coordinate with the work on the E, P, & HVAC drawings and Division 22, 23, 26, and 28.

1.11 WARRANTY

A. Special Warranty: Manufacturer agrees to repair or replace components of casework that fail in materials or workmanship within specified warranty period.

1. Failures include, but are not limited to, the following:

   a. Delamination of components or other failures of glue bond.
   b. Warping of components.
   c. Failure of operating hardware.

2. Contractor's Guarantee: Upon completion of installation of casework and after acceptance by Owner, furnish to Owner written statement accepting full responsibility for installation and guaranteeing adequacy and safety of attachment of all casework.

3. Warranty Period: Five years from date of Substantial Completion.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:

B. Basis-of-Design Product: Subject to compliance with requirements, drawings and specifications are based on products manufactured by TMI SYSTEMS CORPORATION, 50 South Third Avenue West, Dickinson, ND or comparable product by one of the following:

1. TMI Systems Corporation.
2. Case Systems Inc.
3. Other manufacturers shall comply with the minimum levels of material and quality as indicated on the drawings or as specified.

C. Source Limitations: Obtain laminate clad items including casework, countertops, and architectural woodwork from the same casework supplier to establish single responsibility for all laminated and related components.

2.2 CASEWORK, GENERAL

A. Quality Standard: Unless otherwise indicated, comply with the AWI's, AWMAC's, and WI's "Architectural Woodwork Standards" for grades of casework indicated for construction, finishes, installation, and other requirements.

1. Grade: Premium.
2. Provide labels and certificates from AWI certification program indicating that casework, including installation, complies with requirements of grades specified.

B. Product Designations: Drawings indicate sizes, configurations, and finish materials of manufactured laminate clad casework by referencing designated manufacturer's catalog numbers. Other manufacturers' casework of similar sizes and door and drawer configurations, of same finish materials, and complying with the Specifications may be considered. See Section 01 60 00 "Product Requirements."

C. Product Designations: Drawings indicate configurations of manufactured laminate clad casework by referencing designations of Casework Design Series (CDS) numbering system in the “Design Ideas” Section of the AWI's, AWMAC's, and WI's "Architectural Woodwork Standards."

D. Minimum Component Flammability Requirements: Provide casework with components meeting the following requirements to achieve minimum of “Class C” rating per ASTM E84:

		Flame Spread Index	Smoke Developed Index
1.	Exterior High Pressure Laminate:	76-200	0-450
2.	High Pressure Laminate Exterior Bonded to High Performance Particleboard Core Material:	76-200	0-450

2.3 PLASTIC LAMINATE-FACED CABINETS

A. Design:

1. Reveal overlay.

B. Exposed Casework Surfaces:

1. Plastic Laminate: Grade VGS (0.028” Thickness).

   a. Colors and Patterns: As selected by Architect from manufacturer's full range.
   b. For exterior cabinet surfaces, interior of open cabinets, and interior of glass door cabinets.
   c. Unless otherwise indicated, provide specified edgebanding on all exposed edges.

C. Semi-exposed Casework Surfaces:

1. Thermoset Decorative Panels: Provide WHITE thermoset decorative panels for semi-exposed surfaces unless otherwise indicated.

a. Melamine resin impregnated TFM, surface thermally-fused to core under heat and pressure, meeting NEMA LD3-2005 standards.
b. Unless otherwise indicated, provide specified edgebanding on all semi-exposed edges.

D. Balanced Construction of all laminated casework panels is mandatory.

1. Provide plastic laminate of same grade as exposed surfaces for interior faces of doors and drawer fronts and other locations where opposite side of component is exposed.
2. Unfinished core stock surfaces, even on concealed surfaces (excluding edges), will not be permitted.

2.4 MATERIALS

A. Particleboard: Industrial Grade average 45-pound density, meeting ANSI A208.1, Grade M-2 requirements.

B. MDF: Average 48-pound density, meeting ANSI A208.2, Grade 130 requirements.

C. Hardboard: ANSI A135.4, Class 1 Tempered.

D. Moisture Resistant (MR) Particleboard: For all countertop applications. Industrial Grade average 45-pound density, meeting ANSI A208.1, Grade M-2 requirements.

E. Laminate Manufacturers: Up to 5 different colors (1 color per unit face) as selected by Architect from manufacturer's full range of standard (non-premium) color and finish options including patterns, solid colors, and woodgrain laminates from each manufacturer listed below:

1. Wilsonart International.
2. Formica.
3. Panolam (Nevamar & Pionite).

F. Countertop High Pressure Plastic Laminate: Grade HGS/HGP (0.039” Thickness).

1. Colors and Patterns: As selected by Architect from manufacturer's full range to match existing countertops as needed.

G. Edge Banding for Plastic Laminate

1. 3mm PVC: Solid, high impact, purified, color-thru, acid resistant, pre-lamination primed edging, machine-applied with hot melt adhesives, automatically trimmed, inside/outside length-radiused for uniform appearance, buffed and corner-radiused for consistent design.

H. Edging Locations

1. Door and Drawer Face Edges, Cabinet Body Front Edges and Front Edges of Interior Components (including Shelves) of Open Cabinets, Cubbies and Mailbox units, and Support Panel Exposed Edges: 3mm PVC selected from minimum 200 colors including solid, pattern, and woodgrains.

2. Cabinet Body Edge and Front Edges of Interior Components of Casework with Doors/Drawers: 0.020mm PVC selected from minimum 200 colors including solid, pattern, and woodgrains.

   a. Color to match Exterior Surfaces on fixed components including vertical dividers, and drawer dividers.
   b. Color to match Interior Surfaces (WHITE) on adjustable components including shelves.

2.5 FABRICATION

A. Plastic Laminate Faced Cabinet Construction: As required by referenced quality standard, but not less than the following:

   1. Bottoms and Ends of Cabinets: Minimum 3/4-inch (19-mm) thick particleboard, doweled together utilizing minimum 10mm hardwood, fluted dowels.
   2. Fixed Cabinet Interior Components: Minimum 3/4-inch (19-mm) thick particleboard, doweled to Casework body utilizing minimum 10mm hardwood, fluted dowels.
   3. Shelves: Minimum 3/4-inch (19-mm) thick particleboard for shelves up to 30” wide. Minimum 1-inch (25-mm) thick particleboard for shelves over 30” wide.
   4. Backs of Cabinets: Minimum 1/4-inch (6-mm) thick particleboard or MDF, fully captured (dadoed) by cabinet sides, bottoms, and tops. Finish to match interiors.
   5. Exposed Backs of Cabinets: Minimum 3/4-inch (19-mm) thick particleboard, doweled to the sides of the cabinet, with exposed surface of Grade VGS (0.028” Thickness) laminate.

B. Filler Strips: Provide as needed to close spaces between cabinets and walls, ceilings, and indicated equipment. Fabricate from same material and with same finish as cabinets. Filler strips should be 3 inches maximum in width or as shown on the drawings.

2.6 CASEWORK HARDWARE AND ACCESSORIES

A. Hardware, General: Unless otherwise indicated, provide manufacturer's standard satin-finish, commercial-quality, heavy-duty hardware.

B. Grilles: Modify existing continuous, pencil-proof countertop grille to size around the new unit ventilator. Coordinate all modification with Drawings and countertop installer to ensure that the edge is finished.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine areas, with Installer present, for compliance with requirements for installation tolerances, location of framing and reinforcements, and other conditions affecting performance of the Work.

B. Proceed with installation only after unsatisfactory conditions have been corrected.

C. Beginning installation constitutes Contractor's acceptance of substrates and conditions.

3.2 COMPONENTS

A. Cabinet Construction:

1. Sub-Base: Fixed base and tall cabinets to have individual, factory assembled and attached sub-base of minimum 3/4-inch (19-mm) thick plywood. (No cabinet body sides-to-floor allowed.) Sub-base is 4-inches high unless otherwise indicated.

2. Cabinet Top and Bottom: Solid, full depth sub-top furnished for all base and tall cabinets (except sink base cabinets). Cabinets with front and back rails or partial depth sub-tops will not be accepted.

   a. Wall Cabinet Bottoms and Tops: 3/4 inch thick particleboard.

   b. Exterior Exposed Wall Cabinet Bottoms: Melamine resin impregnated TFM, surface thermally-fused to core on both sides. Assembly devices concealed on bottom side of wall cabinets.

3. Line Boring for Adjustable Shelves: Side panels and fixed vertical dividers shall receive line boring holes spaced 1-1/4 inches (32-mm) apart, running full height of each component. Line boring holes shall interact with adjustable shelf clips. Exposed exterior cabinet ends laminated with high pressure plastic laminate and balanced with high pressure cabinet liner (Grade CLS of 0.020" Thickness) on interior surface.

4. Cabinet Backs: Minimum 1/4-inch (6-mm) thick particleboard or MDF, fully captured (dadoed) by cabinet sides, bottoms, and tops. Finish to match interiors. With 3/4-inch x 4-inch particleboard rails placed behind the back panel at the top and bottom, and doweled to the cabinet sides. A third intermediate rail to be included on all cabinets over 56 inches tall. Utilize hot melt glue to further secure the back panel and increase overall structural strength. Use of staples to secure backs not acceptable.

   a. Exposed Backs of Cabinets: Minimum 3/4-inch (19-mm) thick particleboard, doweled to the sides of the cabinet, with exposed surface of Grade VGS (0.028" Thickness) laminate. Exposed particleboard backs not acceptable.

B. Adjustable Vertical and Horizontal Dividers:

1. Hardboard: Natural MDF hardboard 1/4 inches thick, smooth both faces, finished to match interior. Secured in cabinet with molded plastic clips.

2. Fused Laminate: Melamine resin impregnated TFM, surface thermally-fused to core on both sides, 3/4-inch thickness. Secured in cabinet with Adjustable Shelf Supports as specified above in "CASEWORK HARDWARE AND ACCESSORIES."

C. Countertop High Pressure Plastic Laminate: Modify existing high pressure laminate countertop to size around the new unit ventilator. Coordinate all modification with Drawings and ensure that the edge is finished. If new countertops are required to complete the work provide high pressure plastic laminate, 0.048 inch thick, meeting NEMA LD3-1991 GP50 standards, as detailed. Color and texture should color match the existing countertops. Color matches are provided below. Provide these products or an approved equal.

1. Plastic Laminate Top - Nevamar, Sienna Essence – E52003T
2. 3 mm Edge - Wilsonart – DW-2240 – Khaki Brown

D. Fabrication:

1. High-pressure laminate provided on all exposed exterior cabinet surfaces. Laminate surface / balancing liner applied to core under controlled conditions, by approved and regulated laminating methods for premium lamination. Methods requiring heat and spray-on "contact adhesive" methods of laminating not acceptable.

2. Cabinet parts accurately machined and bored for “premium grade” quality joinery construction utilizing automatic machinery to insure consistent sizing of modular components. End panels doweled to receive bottom and top.

3. Back panel fully secured to or recessed 7/8 inch from back of cabinet sides, top, and bottom ensuring rigidity and fully closed cabinet. Cabinet back shimmed from rear of body for tight interior fit. Staple attachment of back panel not acceptable.

4. All cases fabricated square, plumb, and true.

5. Removable back panels and closure panels provided for access where shown on Drawings or as required for HVAC units.

6. Grilles: Install continuous grilles in locations at unit ventilator countertops and bases and as noted on Drawings.

3.3 CASEWORK INSTALLATION

A. Grade: Install cabinets to comply with same grade as item to be installed.

B. Install casework level, plumb, and true; shim as required, using concealed shims. Where casework abuts other finished work, apply filler strips and scribe for accurate fit, with fasteners concealed where practical.

C. Base Cabinets: Set cabinets straight, level, and plumb. Adjust sub-tops within 1/16 inch (1.5 mm) of a single plane. Align similar adjoining doors and drawers to a tolerance of 1/16 inch (1.5 mm). Bolt adjacent cabinets together with joints flush, tight, and uniform.

D. Fasten cabinets to adjacent cabinets and to masonry, framing, wood blocking, or reinforcements in walls and partitions to comply with the AWI's, AWMAC's, and WI's "Architectural Woodwork Standards."

E. Install hardware uniformly and precisely. Set hinges snug and flat in mortises unless otherwise indicated. Adjust and align hardware so moving parts operate freely and contact points meet accurately. Allow for final adjustment after installation.

3.4 CLEANING

A. Repair or remove and replace defective work as directed on completion of installation.
B. Clean finished surfaces, touch up as required, and remove or refinish damaged or soiled areas to match original factory finish, as approved by Architect.

END OF SECTION 12 32 16

SECTION 12 66 00 - TELESCOPING STANDS

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Freestanding telescoping stands.
2. Mobile telescoping stands.

1.2 DEFINITIONS

A. Forward Folding: Wall- or floor-attached bleachers that open in the forward direction by moving the front row away from the stack to the fully extended position.
B. Freestanding: Being free or away from a permanent wall.

1.3 PREINSTALLATION MEETINGS

A. Preinstallation Conference: Conduct conference at Project site.

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 for telescoping stands.
2. Include load capacities, assembly characteristics, and furnished accessories.
3. Include electrical characteristics of electrical components, devices, and accessories.

B. Shop Drawings: For telescoping stands in both stacked and extended positions.

1. Include plans, elevations, sections, and attachment details.

2. Include load capacities.

3. Show seating layout, aisle widths, row-lettering and seat-numbering scheme, and wheelchair accessibility provisions.

4. Show locations and details for installing operator components, switches, and controls. Indicate motor size, electrical characteristics, drive arrangement, mounting, and grounding provisions.

5. Include diagrams for power, signal, and control wiring.

C. Samples: For the following products prepared on Samples of size indicated below:

1. Decking: 6-inch-square Samples of finished material.
2. Seating Material: 6-inch-square Sample of each seating material, color, and finish indicated.

D. Delegated-Design Submittal: For telescoping stands, including analysis data signed and sealed by the qualified professional engineer responsible for their preparation.

E. Sample Warranties: For special warranties.

1.5 INFORMATIONAL SUBMITTALS

A. Welding certificates.
B. Product Certificates: For each type of telescoping stand assembly.
C. Material Certificates: For each type of flame-retardant treatment of upholstery fabric.
D. Field quality-control reports.
E. Qualification Statements: For Installer.

1.6 CLOSEOUT SUBMITTALS

A. Operation and Maintenance Data: For telescoping stands.

1. In addition to items specified in Section 017823 "Operation and Maintenance Data," include the following:

a. Procedures for conducting periodic inspections.
b. Precautions for cleaning materials and methods that could be detrimental to telescoping-stand finishes and performance.

B. Warranties: Executed special warranties.

1.7 QUALITY ASSURANCE

A. Installer Qualifications: An entity that employs installers and supervisors who are trained and approved by manufacturer.

B. 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."

C. Fire-Test-Response Characteristics of Plastic:

1. 1. Burning extent of 1 inch or less when tested according to ASTM D635 on plastic sheets in thicknesses indicated for the Work.
2. 2. Self-ignition temperature of 650 deg F or higher when tested according to ASTM D1929 on plastic sheets in thicknesses indicated for the Work.

3. 3. Smoke density of 75 or less when tested according to ASTM D2843 on plastic sheets in thicknesses indicated for the Work.

1.8 FIELD CONDITIONS

A. Finished Spaces: Do not deliver or install telescoping stands until finishes in spaces to receive them are complete, including suspended ceilings, floors, and painting.
B. Field Measurements: Indicate measurements on Shop Drawings.

1.9 WARRANTY

A. Special Warranty: Manufacturer agrees to repair or replace components of telescoping stand assembly that fail in materials or workmanship within specified warranty period.

1. Failures include, but are not limited to, the following:

a. Structural failures, including bench seating and attached components.
b. Deterioration of metals, metal finishes, and other materials beyond normal weathering and use.

2. Warranty Period, Understructure: 10 years from date of Substantial Completion.

PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

A. Delegated Design: Engage a qualified professional engineer, as defined in Division 01 Section "Quality Requirements," to design telescoping stands.
B. Structural Performance: Telescoping stands to withstand the effects of gravity loads, operational loads, and other loads and stresses in accordance with ICC 300.
C. Accessibility Standard: Comply with applicable provisions in ICC A117.1.

2.2 FREESTANDING TELESCOPING STANDS

A. Freestanding, Forward-Folding, Telescoping Stands: Floor-attached system, in which the bleachers open in the forward direction, by moving the front row away from the stack to the fully extended position, and the rear of bleacher understructure permanently attaches to floor construction.

1. Products: Subject to compliance with requirements, available products that may be incorporated in the Work, include, but are not limited to:

a. Hussey Seating Company; MAXAM Telescopic Gym Seat System.
b. Interkal LLC; Telescopic Seating System.
c. Irwin Seating Company - Telescopic Division; VersaTract Telescoping Seating System.

2. Row Spacing: As required to match existing and to accommodate rows with seat backs.

3. Row Rise: As required to match existing bleachers and as required for self-storing folding seat backs.

4. Seat Type: Benches.

5. Operation: Electrically operated, with friction-type, integral power unit.

6. Electrical Characteristics for Each Seating Section:

   a. Horsepower: 1/2.
   b. Three-Phase Voltage: 208 V ac, 60 Hz.

7. Electrical Controls:

   a. Control Devices: Walk-along pendant control system.

   b. Limit Switches: Automatically stop power system when telescoping stands reach fully opened or closed positions.

   c. Motion Monitor: Flashing light with self-contained warning horn, rated at 85 dB at 10 ft., mounted under telescoping seating for audio and visual warning during integral power operation.

   d. Transformer: As required to coordinate current characteristics of motor and control station with building electrical system.

2.3 COMPONENTS

A. Benches: Seats and skirts.

1. Material: Molded plastic with contour surfaces.

   a. Color: As selected by Architect from manufacturer's standard.

2. Bench Height: Not less than 16 inches or more than 18 1/4 inches.

3. Bench Depth: 10 inches.

4. Backs: Folding backrests permanently attached to bench units where noted.

   a. Material: Molded plastic with contour support surface in color matching seat.
   b. Operation: Automatic.

B. Wheelchair-Accessible Seating: Locate seating cutouts to provide wheelchair-accessible seating at locations indicated on Drawings.

1. Equip tiers adjacent to wheelchair-accessible seating with front rails as required by ICC 300.

2. Equip cutouts with full-width front closure panels that match decking construction and finish and that extend from underside of tiers adjacent to cutouts to 1-1/2 inches from finished floor.

C. Deck: Plywood, 5/8 inch thick.

1. Finish: Polyethylene textured overlay bonded to substrate with exterior glue.

a. Color: As selected by Architect from manufacturer's standard colors.

D. Risers: Steel sheet with manufacturer's standard, rust-inhibiting coating or hot-dip galvanized finish.

E. Safety Rails: Steel, finished with manufacturer's standard powder coat system.

1. Self-storing mid-aisle handrails located at centerline of each aisle with seating on both sides.
2. End rails (guards) that are telescoping and self-storing and removable.
3. Back rails (guards) along rear of units where required by ICC 300.
4. Fixed front rails (guards) along front of units where required by ICC 300.
5. Fixed rails around accessible seating cutouts and truncations.
6. Removable, programming-support front rails to allow seating in upper rows while lower rows remain in the stored position.
7. Color: Black.

F. Understructure: Structural steel.

1. Finish: Manufacturer's standard rust-inhibiting finish.
2. Color: Manufacturer's standard.

G. Support Column Wheels: Nonmarring, soft, rubber-face wheel assembly under each support column.

1. Include wheels of size, number, and design required to support stands and operate smoothly without damaging the flooring surface, but no fewer than four per column or less than 4 inches in diameter and 1-1/2 inches wide.

H. Control Devices:

1. Walk-Along Pendant: Manufacturer's standard unit, which plugs into first row of each operating section. Provide two units.

I. Fasteners: Vibration proof, in manufacturer's standard size and material.

2.4 ACCESSORIES

A. Steps:

1. Slip-resistant, abrasive tread surfaces at aisles.

2. Intermediate aisle steps, fully enclosed, at each aisle.

3. Transitional top step, fully enclosed, at each aisle where last row of telescoping stands is adjacent to a cross aisle.

4. Removable front steps, fully enclosed, at each aisle, that engage with front row to prevent accidental separation or movement and are equipped with a minimum of four skid-resistant feet.

B. Closure Panels and Void Fillers:

1. Aisle closures at foot level that produce flush vertical face at aisles when system is stored.
2. End panels covering exposed ends of stands in the stored position.
3. Back panels covering rear of freestanding units. Panels extend full height and width of unit.
4. Panels at cutouts and truncations for accessible seating.
5. Rear fillers including supports for closing openings between top row and rear wall of adjoining construction.
6. Gap fillers for closing openings between stand units or between stand units and adjoining construction.

C. Signage:

1. Row letters at each row end.
2. Seat numbers at 18 inches o.c. on benches.
3. Accessibility signs at each accessible space.
4. Custom graphics as indicated on Drawings on end panels and on rear panels.

2.5 MATERIALS

A. Lumber: Kiln dried, surfaced four sides; southern pine complying with SPIB's "Standard Grading Rules for Southern Pine Lumber" for B & B finish (B and better) grade-of-finish requirements.

B. Plywood: PS 1 as standard with manufacturer.

C. Molded Plastic: High-density polyethylene; blow or injection molded, color-pigmented, textured, impact-resistant, with integral reinforcing ribs for attachment and anchoring points. Provide with UV inhibitors to retard fading.

2.6 FABRICATION

A. Fabricate telescoping stands to operate easily without special tools or separate fasteners unless otherwise indicated.

B. Round corners and edges of components and exposed fasteners to reduce snagging and pinching hazards.

C. Form exposed work with flat, flush surfaces, level and true in line.

D. Supports: Fabricate supports to withstand, without damage to components, the forces imposed by use of stands without failure or other conditions that might impair their usefulness.

1. Cantilever bench seat supports to produce toe space uninterrupted by vertical bracing.

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. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 INSTALLATION

A. Install telescoping stands in accordance with ICC 300 and manufacturer's written instructions.

3.3 FIELD QUALITY CONTROL

A. Testing Agency: Engage a qualified testing agency to perform tests and inspections.

B. Perform the following tests and inspections:

1. ICC 300 Inspection: Inspect installed telescoping stands to verify that construction, installation, and operation are in accordance with ICC 300 requirements.
2. Test and adjust controls and safeties. Replace damaged and malfunctioning controls and equipment.
3. Telescoping stands will be considered defective if they do not pass tests and inspections.

C. Prepare test and inspection reports.

3.4 ADJUSTING

A. Adjust backrests so that they are at proper angles and aligned with each other in uniform rows.
B. Adjust hardware and moving parts to function smoothly, and lubricate, test, and adjust each telescoping stand unit to operate in accordance with manufacturer's written instructions.
C. Clean installed telescoping stands on exposed and semiexposed surfaces. Touch up factory-applied finishes or replace components as required to restore damaged or soiled areas.

3.5 DEMONSTRATION

A. Engage a factory-authorized service representative to train Owner's maintenance personnel to inspect, adjust, operate, and maintain telescoping stands.

END OF SECTION 12 66 00