



**TETRA TECH**  
ARCHITECTS & ENGINEERS

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500 Bi-County Blvd, Suite 104  
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# VOLUME 1

Farmingdale, New York

Albany, New York

Ithaca, New York

## BEACON CITY SCHOOL DISTRICT

BEACON, NEW YORK

PROJECT NO. 279180-22004

RECONSTRUCTION TO  
JV FORRESTAL ELEMENTARY SCHOOL  
SARGENT ELEMENTARY SCHOOL  
SOUTH AVE ELEMENTARY SCHOOL  
ROMBOUT MIDDLE SCHOOL  
BEACON HIGH SCHOOL

ADDITIONS AND ALTERATIONS TO  
GLENHAM ELEMENTARY SCHOOL

OCTOBER 28, 2022

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. Anthony Nicholas Meluso is accredited to the EPA and New York State under AHERA Regulations as an Asbestos Project Designer (Asbestos Handling Certificate Number 067937).

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 Construction Code, and the building standards of the New York State Education Department.

SET NO. \_\_\_\_\_

**BID**

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**PLEASE NOTE**

All sections of the following **SPECIFICATIONS** are sequentially numbered, beginning with Page 1 and concluding with the last numbered page bearing the marking "END OF SECTION -- -- --".

Sections may include additional attachments as noted in following list of Specification sections.

**SPECIFICATIONS**

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**SECTION TITLE**

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AE103 First Floor Demolition Plan - Area A

AE104 First Floor Power Plan - Area A

**PLUMBING**

AP130 First Floor Plan - Area A, Details, and Schedule

## **Glenham Elementary School**

### CODE COMPLIANCE

BG350 Code Compliance Review and Key Plan

### HAZARDOUS MATERIALS

BH100 Asbestos Abatement

### ARCHITECTURAL

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### ELECTRICAL

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- DE102 Second Floor Demolition Plan
- DE130 Ground Floor Lighting Plan - Areas A and B
- DE131 First Floor Lighting Plan - Area A
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## PLUMBING

- DP130 First Floor Plan - Area A, Details and Schedule

## Volume 2 of 2 G002

## GENERAL

- G002 Title Sheet
- G100 Symbols and Abbreviations

## Rombout Middle School

## CODE COMPLIANCE

- EG350 Code Compliance Review and Vintage Key Plan
- EG351 Code Compliance First Floor Key Plan
- EG352 Code Compliance Second Floor Key Plan

## HAZARDOUS MATERIALS

- EH100 Asbestos Abatement

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- EC100 Site Demolition and Soil Erosion and Sediment Control Plan
- EC120 Site Layout and Landscape Plan
- EC130 Site Grading and Utility Plan
- EC500 Site Details
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- EA100 First Floor Demolition Plan - Area A
- EA101 First Floor Demolition Plan - Area B and E
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EM130 First Floor Plan - Partial Area A, Area B and Partial Areas C and E  
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EE132 First Floor Lighting, Power & Communications Plan - Areas C and D  
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EE160 Roof Power Plan - Areas C, D, E and F  
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EE401 Enlarged Power & Communications Plans - Areas A and B  
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EE501 Details  
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#### PLUMBING

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EP402 Enlarged Kitchen Plans, Schedule and Details

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- FA102 Second Floor Demolition Plan - Area C
- FA130 First Floor Plan - Area A
- FA131 First Floor Plan - Area G
- FA133 Second Floor Plan - Area C
- FA160 First Floor Reflected Ceiling Plan Area A
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- FA400 Enlarged Plans - Area A
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- FA920 Enlarged Plans and Elevations

### STRUCTURAL

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### MECHANICAL

- FM051 First Floor Key Plan
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- FM100 Partial Plans and Sections - Area G
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- FM500 Details and Schedule

### ELECTRICAL

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### PLUMBING

- FP050 First Floor Key Plan
- FP400 Enlarged Science Room Plans and Details
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- FP402 Enlarged Mechanical Room F302 Plan

## **Common**

### CIVIL

|       |              |
|-------|--------------|
| ZC500 | Site Details |
| ZC501 | Site Details |
| ZC502 | Site Details |
| ZC503 | Site Details |

All drawings dated October 28, 2022.

**NOTICE TO BIDDERS**

NOTICE IS HEREBY GIVEN, that sealed Bids, in duplicate, are sought and requested by the Board of Education, Beacon City School District (hereinafter called "Owner"), for the Reconstruction to: JV Forrestal ES, Sargent ES, South Ave ES, Rombout Middle School, Beacon High School, and Addition and Alterations to: Glenham ES.

Separate Bids are requested for the Prime Contracts for:

General Work GC-D1  
General Work GC-D2  
Mechanical Work MC-D1  
Mechanical Work MC-D2  
Electrical Work EC-D1  
Plumbing Work PC-D1  
Site Work SC-D4

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  
500 Bi-County Blvd, Suite 104  
Farmingdale, New York 11735

A pre-bid conference for potential Bidders and other interested parties will be held on **Tuesday, August 22, 2023 at 10:00 a.m., local time at District Office, 10 Education Drive, Beacon, New York 12508**. Refer to Instructions to Bidders for special instructions.

Sealed Bids will be received by the Owner until **Tuesday, September 12, 2023, at 2:00 p.m.**, local time at the District Office Conference Room, 10 Education Drive, Beacon, New York 12508 at which time and place Bids received will be publicly opened and read aloud.

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

Beacon City School District, 10 Education Drive, Beacon, NY 12508  
Tetra Tech Architects & Engineers, 500 Bi-County Blvd, Suite 104, Farmingdale, New York 11735

Complete digital sets of Bidding Documents, drawings and specifications, may be obtained online as a download at [www.tetratchaeplanroom.com](http://www.tetratchaeplanroom.com) 'public projects' for a non-refundable fee of \$49.00 (Forty Nine Dollars).

Complete hard copy sets of Bidding Documents, drawings and specifications, may be obtained online at [www.tetratchaeplanroom.com](http://www.tetratchaeplanroom.com) 'public projects'. Checks shall be made payable to **Beacon City School District** in the sum of \$100.00 (One Hundred Dollars) for each set of documents. A scanned copy of the deposit check can be emailed to [projects@revplans.com](mailto:projects@revplans.com). Once the scanned copy of the executed deposit check is received, Bidding Documents will be shipped. Mail checks to Lohrius Blueprint, 226 Newtown Road, Plainview, New York 11803. Plan deposit is refundable in accordance with the terms in the Instructions to Bidders to all submitting bids. 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 REV [www.tetratheaepplanroom.com](http://www.tetratheaepplanroom.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.tetratheaepplanroom.com](http://www.tetratheaepplanroom.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 REV 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: Reconstruction to: JV Forrestal ES, Sargent ES, South Ave ES, Rombout Middle School, and Beacon High School; Addition and Alteration to Glenham ES.
  - a. Project Locations:
    - 1) JV Forrestal Elementary School: 125 Liberty Street, Beacon, NY 12508.
    - 2) Glenham Elementary School: 20 Chase Drive, Fishkill, NY 12524.
    - 3) Sargent Elementary School: 29 Education Drive, Beacon, NY 12508.
    - 4) South Avenue Elementary School: 60 South Avenue Beacon, NY 12508.
    - 5) Rombout Middle School: 88 Matteawan Road, Beacon, NY 12508.
    - 6) Beacon High School: 99 Matteawan Road, Beacon, NY 12508.
2. Owner: Beacon City School District.
  - a. Address: 10 Education Drive, Beacon, NY 12508.
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, September 12, 2023 at 2:00 p.m.**, local time.
  - b. Bid Opening Location: District Office Conference Room, 10 Education Drive, Beacon, New York 12508.
4. Bidders are invited to submit Bids for any, or all, of the following Prime Contracts:
  - a. General Work Contract GC-D1
  - b. General Work Contract GC-D2
  - c. Mechanical Work Contract MC-D1
  - d. Mechanical Work Contract MC-D2
  - e. Electric Work EC-D1
  - f. Plumbing Work PC-D1
  - g. Site Work SC-D4 (By Bid Addendum)
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 9:00 a.m. until 2:00 p.m., except legal holidays.
  - a. Contact Construction Manager below, prior to visiting Project site, to arrange access.
    1. UW Marx, Inc. – Jeff West (518) 272-2541.

6. Pre-Bid Conference: A pre-bid conference for potential Bidders and other interested parties will be held as follows:
  - 1) Pre-Bid Conference Date, Times and Location: Tuesday, August 22, 2023 at 10 a.m. at District Office Conference Room, 10 Education Drive, Beacon, New York 12508.
  - 2) **Special Instructions: Each attendee must show proper photo identification at check-in to be put into Owner's RAPTOR Visitor ID system prior to access of each building.**
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 A201 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.
    - 2) "Alternates": Amount stated in the Bid to be added to or deducted from the amount of the Base Bid if the corresponding change in the Work, as described in the Bidding Documents, is accepted.
  - 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.
  - a. In the event of a discrepancy between amounts written in words and figures, the amount written in words shall govern.
  - b. Bid Forms without amounts expressed both in words and figures will not be accepted.
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
- e. Attachment #5: Subcontractors List.
- f. Attachment #6: Bidder's Qualifications
- g. Attachment #7: Insurance Certification Form

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 7 attachments.
  - 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.tetratetchaeplanroom.com](http://www.tetratetchaeplanroom.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".

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.

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.

- a. Lowest Bid may be Base Bid plus any Alternates the Owner desires to accept.
- b. If the acceptance of Alternates does not change the low Bidder, the Owner reserves the right to accept any or all Alternates within 45 days following Notice of Award.

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. 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) Bond Certification 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 New York State, 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.
    1. In addition, the Surety shall be rated as equal to "A" or better as to "Policy Holder Ratings", and "VII" or better as to "Financial Size Category".
    2. Limitations: Bonding limits or bonding capacity refers to the limit or amount of bond on any one project.
  - 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 is 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





**TETRA TECH**  
ARCHITECTS & ENGINEERS

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

**SUBMIT FORM BY EMAIL TO [INE.Beacon@tetratech.com](mailto:INE.Beacon@tetratech.com)**

**Project No.:** 279180-22004

**Date:**

**Project Name:** Project D Reconstruction to: JVF ES, South Ave ES, Sargent ES, Rombout MS, Beacon HS;  
Addition and Alteration to: Glenham ES

-----  
**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

500 Bi-County Blvd., Suite 104  
Farmingdale, NY 11735  
(631) 847-7762

Farmingdale, New York  
Albany, New York  
Ithaca, 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 WORK GC-D1**

**PROJECT TITLE: RECONSTRUCTION PROJECT D**

**DATE: OCTOBER 28, 2022**

**PROJECT NO.: 279180-22004**

**BID TO:** Beacon City School District  
10 Education Drive  
Beacon, New York 12508

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.

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### **ALTERNATE NO. 7 - ROMBOUT MIDDLE SCHOOL CORRIDOR CEILINGS AND LIGHTING REPLACEMENT AREA D, FIRST AND SECOND FLOOR**

**ADD** to the Base Bid the sum of:

\_\_\_\_\_ ( \$ \_\_\_\_\_ )  
(words) (figures)

**OR**

**DEDUCT** from the Base Bid the sum of:

\_\_\_\_\_ ( \$ \_\_\_\_\_ )  
(words) (figures)

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### **ALTERNATE NO. 8 - ROMBOUT MIDDLE SCHOOL CORRIDOR CEILINGS AND LIGHTING REPLACEMENT AREA F**

**ADD** to the Base Bid the sum of:

\_\_\_\_\_ ( \$ \_\_\_\_\_ )  
(words) (figures)

**OR**

**DEDUCT** from the Base Bid the sum of:

\_\_\_\_\_ ( \$ \_\_\_\_\_ )  
(words) (figures)

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### **ALTERNATE NO. 9 - ROMBOUT MIDDLE SCHOOL CORRIDOR LIGHTING REPLACEMENT AREA A**

**ADD** to the Base Bid the sum of:

\_\_\_\_\_ ( \$ \_\_\_\_\_ )  
(words) (figures)

**OR**

**DEDUCT** from the Base Bid the sum of:

\_\_\_\_\_ ( \$ \_\_\_\_\_ )  
(words) (figures)

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**ALTERNATE NO. 10 - ROMBOUT MIDDLE SCHOOL CORRIDOR CEILINGS AND LIGHTING  
REPLACEMENT AREA B, SECOND FLOOR**

**ADD** to the Base Bid the sum of:

\_\_\_\_\_ ( \$ \_\_\_\_\_ )  
(words) (figures)

**OR**

**DEDUCT** from the Base Bid the sum of:

\_\_\_\_\_ ( \$ \_\_\_\_\_ )  
(words) (figures)

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## 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
- Attachment #5 – Subcontractors List
- Attachment #6 – Bidder's Qualifications
- Attachment #7 – Insurance Certification

## 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: _____                     |

Federal Employer's Identification Number: \_\_\_\_\_

**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.

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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.

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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

500 Bi-County Blvd., Suite 104  
Farmingdale, NY 11735  
(631) 847-7762

Farmingdale, New York  
Albany, New York  
Ithaca, 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 WORK GC-D2**

**PROJECT TITLE: RECONSTRUCTION PROJECT D**

**DATE: OCTOBER 28, 2022**

**PROJECT NO.: 279180-22004**

**BID TO:** Beacon City School District  
10 Education Drive  
Beacon, New York 12508

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.

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---

### **ALTERNATE NO. 1 - RECONSTRUCTION OF GLENHAM ELEMENTARY SCHOOL BOYS' T12B AND GIRLS' T12A BATHROOMS**

**ADD** to the Base Bid the sum of:

\_\_\_\_\_ ( \$ \_\_\_\_\_ )  
(words) (figures)

**OR**

**DEDUCT** from the Base Bid the sum of:

\_\_\_\_\_ ( \$ \_\_\_\_\_ )  
(words) (figures)

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### **ALTERNATE NO. 2 - GLENHAM ELEMENTARY SCHOOL ATTENDANCE OFFICE E6 ALTERATIONS**

**ADD** to the Base Bid the sum of:

\_\_\_\_\_ ( \$ \_\_\_\_\_ )  
(words) (figures)

**OR**

**DEDUCT** from the Base Bid the sum of:

\_\_\_\_\_ ( \$ \_\_\_\_\_ )  
(words) (figures)

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### **ALTERNATE NO. 3 - GLENHAM ELEMENTARY SCHOOL CORRIDOR LIGHTING REPLACEMENT**

**ADD** to the Base Bid the sum of:

\_\_\_\_\_ ( \$ \_\_\_\_\_ )  
(words) (figures)

**OR**

**DEDUCT** from the Base Bid the sum of:

\_\_\_\_\_ ( \$ \_\_\_\_\_ )  
(words) (figures)

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**ALTERNATE NO. 4 - GLENHAM ELEMENTARY SCHOOL STUDENT CUBBIES REPLACEMENT**

**ADD** to the Base Bid the sum of:

\_\_\_\_\_ ( \$ \_\_\_\_\_ )  
(words) OR (figures)

**DEDUCT** from the Base Bid the sum of:

\_\_\_\_\_ ( \$ \_\_\_\_\_ )  
(words) (figures)

---

---

**ALTERNATE NO. 5 - SOUTH AVE ELEMENTARY SCHOOL CORRIDOR-STAIR CEILINGS AND LIGHTING REPLACEMENT**

**ADD** to the Base Bid the sum of:

\_\_\_\_\_ ( \$ \_\_\_\_\_ )  
(words) OR (figures)

**DEDUCT** from the Base Bid the sum of:

\_\_\_\_\_ ( \$ \_\_\_\_\_ )  
(words) (figures)

---

---

**ALTERNATE NO. 11 - BEACON HIGH SCHOOL FITNESS CENTER ALTERATIONS**

**ADD** to the Base Bid the sum of:

\_\_\_\_\_ ( \$ \_\_\_\_\_ )  
(words) OR (figures)

**DEDUCT** from the Base Bid the sum of:

\_\_\_\_\_ ( \$ \_\_\_\_\_ )  
(words) (figures)

---

---

**ALTERNATE NO. 12 - BEACON HIGH SCHOOL SCIENCE ROOM C150**

**ADD** to the Base Bid the sum of:

\_\_\_\_\_ ( \$ \_\_\_\_\_ )  
(words) OR (figures)

**DEDUCT** from the Base Bid the sum of:

\_\_\_\_\_ ( \$ \_\_\_\_\_ )  
(words) (figures)

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**ALTERNATE NO. 13 - BEACON HIGH SCHOOL SCIENCE ROOM C125**

**ADD** to the Base Bid the sum of:

\_\_\_\_\_ ( \$ \_\_\_\_\_ )  
(words) (figures)

**OR**

**DEDUCT** from the Base Bid the sum of:

\_\_\_\_\_ ( \$ \_\_\_\_\_ )  
(words) (figures)

---

---

**ALTERNATE NO. 14 - BEACON HIGH SCHOOL TV STUDIO, CONTROL AND EDITING SUITE ALTERATIONS**

**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
- Attachment #5 – Subcontractors List
- Attachment #6 – Bidder's Qualifications
- Attachment #7 – Insurance Certification

## 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: _____                     |

Federal Employer's Identification Number: \_\_\_\_\_

**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.

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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.

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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

500 Bi-County Blvd., Suite 104  
Farmingdale, NY 11735  
(631) 847-7762

Farmingdale, New York  
Albany, New York  
Ithaca, 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 WORK PC-D1**

**PROJECT TITLE: RECONSTRUCTION PROJECT D**

**DATE: OCTOBER 28, 2022**

**PROJECT NO.: 279180-22004**

**BID TO:** Beacon City School District  
10 Education Drive  
Beacon, New York 12508

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.

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### **ALTERNATE NO. 1 - RECONSTRUCTION OF GLENHAM ELEMENTARY SCHOOL BOYS' T12B AND GIRLS' T12A BATHROOMS**

**ADD** to the Base Bid the sum of:

\_\_\_\_\_ ( \$ \_\_\_\_\_ )  
(words) (figures)

**OR**

**DEDUCT** from the Base Bid the sum of:

\_\_\_\_\_ ( \$ \_\_\_\_\_ )  
(words) (figures)

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### **ALTERNATE NO. 11 - BEACON HIGH SCHOOL FITNESS CENTER ALTERATIONS**

**ADD** to the Base Bid the sum of:

\_\_\_\_\_ ( \$ \_\_\_\_\_ )  
(words) (figures)

**OR**

**DEDUCT** from the Base Bid the sum of:

\_\_\_\_\_ ( \$ \_\_\_\_\_ )  
(words) (figures)

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### **ALTERNATE NO. 12 - BEACON HIGH SCHOOL SCIENCE ROOM C150**

**ADD** to the Base Bid the sum of:

\_\_\_\_\_ ( \$ \_\_\_\_\_ )  
(words) (figures)

**OR**

**DEDUCT** from the Base Bid the sum of:

\_\_\_\_\_ ( \$ \_\_\_\_\_ )  
(words) (figures)

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**ALTERNATE NO. 13 - BEACON HIGH SCHOOL SCIENCE ROOM C125**

**ADD** to the Base Bid the sum of:

\_\_\_\_\_ ( \$ \_\_\_\_\_ )  
(words) (figures)

**OR**

**DEDUCT** from the Base Bid the sum of:

\_\_\_\_\_ ( \$ \_\_\_\_\_ )  
(words) (figures)

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## 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
- Attachment #5 – Subcontractors List
- Attachment #6 – Bidder's Qualifications
- Attachment #7 – Insurance Certification

## 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: _____                     |

Federal Employer's Identification Number: \_\_\_\_\_

**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.

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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.

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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

500 Bi-County Blvd., Suite 104  
Farmingdale, NY 11735  
(631) 847-7762

Farmingdale, New York  
Albany, New York  
Ithaca, 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 WORK MC-D1**

**PROJECT TITLE: RECONSTRUCTION PROJECT D**

**DATE: OCTOBER 28, 2022**

**PROJECT NO.: 279180-22004**

**BID TO:** Beacon City School District  
10 Education Drive  
Beacon, New York 12508

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.

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### **ALTERNATE NO. 7 - ROMBOUT MIDDLE SCHOOL CORRIDOR CEILINGS AND LIGHTING REPLACEMENT AREA D, FIRST AND SECOND FLOOR**

**ADD** to the Base Bid the sum of:

\_\_\_\_\_ ( \$ \_\_\_\_\_ )  
(words) (figures)

**OR**

**DEDUCT** from the Base Bid the sum of:

\_\_\_\_\_ ( \$ \_\_\_\_\_ )  
(words) (figures)

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### **ALTERNATE NO. 10 - ROMBOUT MIDDLE SCHOOL CORRIDOR CEILINGS AND LIGHTING REPLACEMENT AREA B, SECOND FLOOR**

**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
- Attachment #5 – Subcontractors List
- Attachment #6 – Bidder's Qualifications
- Attachment #7 – Insurance Certification

## 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: _____                     |

Federal Employer's Identification Number: \_\_\_\_\_

**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.

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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.

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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

500 Bi-County Blvd., Suite 104  
Farmingdale, NY 11735  
(631) 847-7762

Farmingdale, New York  
Albany, New York  
Ithaca, 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 WORK MC-D2**

**PROJECT TITLE: RECONSTRUCTION PROJECT D**

**DATE: OCTOBER 28, 2022**

**PROJECT NO.: 279180-22004**

**BID TO:** Beacon City School District  
10 Education Drive  
Beacon, New York 12508

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.

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### **ALTERNATE NO. 1 - RECONSTRUCTION OF GLENHAM ELEMENTARY SCHOOL BOYS' T12B AND GIRLS' T12A BATHROOMS**

**ADD** to the Base Bid the sum of:

\_\_\_\_\_ ( \$ \_\_\_\_\_ )  
(words) (figures)

**OR**

**DEDUCT** from the Base Bid the sum of:

\_\_\_\_\_ ( \$ \_\_\_\_\_ )  
(words) (figures)

---

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### **ALTERNATE NO. 2 - GLENHAM ELEMENTARY SCHOOL ATTENDANCE OFFICE E6 ALTERATIONS**

**ADD** to the Base Bid the sum of:

\_\_\_\_\_ ( \$ \_\_\_\_\_ )  
(words) (figures)

**OR**

**DEDUCT** from the Base Bid the sum of:

\_\_\_\_\_ ( \$ \_\_\_\_\_ )  
(words) (figures)

---

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### **ALTERNATE NO. 11 - BEACON HIGH SCHOOL FITNESS CENTER ALTERATIONS**

**ADD** to the Base Bid the sum of:

\_\_\_\_\_ ( \$ \_\_\_\_\_ )  
(words) (figures)

**OR**

**DEDUCT** from the Base Bid the sum of:

\_\_\_\_\_ ( \$ \_\_\_\_\_ )  
(words) (figures)

---

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**ALTERNATE NO. 14 - BEACON HIGH SCHOOL TV STUDIO, CONTROL AND EDITING SUITE  
ALTERATIONS**

**ADD** to the Base Bid the sum of:

\_\_\_\_\_ ( \$ \_\_\_\_\_ )  
(words) OR (figures)

**DEDUCT** from the Base Bid the sum of:

\_\_\_\_\_ ( \$ \_\_\_\_\_ )  
(words) (figures)

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## 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
- Attachment #5 – Subcontractors List
- Attachment #6 – Bidder's Qualifications
- Attachment #7 – Insurance Certification

## 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: _____                     |

Federal Employer's Identification Number: \_\_\_\_\_

**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.

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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.

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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

500 Bi-County Blvd., Suite 104  
Farmingdale, NY 11735  
(631) 847-7762

Farmingdale, New York  
Albany, New York  
Ithaca, 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 WORK EC-D1**

**PROJECT TITLE: RECONSTRUCTION PROJECT D**

**DATE: OCTOBER 28, 2022**

**PROJECT NO.: 279180-22004**

**BID TO:** Beacon City School District  
10 Education Drive  
Beacon, New York 12508

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.

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### **ALTERNATE NO. 1 - RECONSTRUCTION OF GLENHAM ELEMENTARY SCHOOL BOYS' T12B AND GIRLS' T12A BATHROOMS**

**ADD** to the Base Bid the sum of:

\_\_\_\_\_ ( \$ \_\_\_\_\_ )  
(words) (figures)

**OR**

**DEDUCT** from the Base Bid the sum of:

\_\_\_\_\_ ( \$ \_\_\_\_\_ )  
(words) (figures)

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### **ALTERNATE NO. 2 - GLENHAM ELEMENTARY SCHOOL ATTENDANCE OFFICE E6 ALTERATIONS**

**ADD** to the Base Bid the sum of:

\_\_\_\_\_ ( \$ \_\_\_\_\_ )  
(words) (figures)

**OR**

**DEDUCT** from the Base Bid the sum of:

\_\_\_\_\_ ( \$ \_\_\_\_\_ )  
(words) (figures)

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### **ALTERNATE NO. 3 - GLENHAM ELEMENTARY SCHOOL CORRIDOR LIGHTING REPLACEMENT**

**ADD** to the Base Bid the sum of:

\_\_\_\_\_ ( \$ \_\_\_\_\_ )  
(words) (figures)

**OR**

**DEDUCT** from the Base Bid the sum of:

\_\_\_\_\_ ( \$ \_\_\_\_\_ )  
(words) (figures)

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**ALTERNATE NO. 5 - SOUTH AVE ELEMENTARY SCHOOL CORRIDOR-STAIR CEILINGS AND LIGHTING REPLACEMENT**

**ADD** to the Base Bid the sum of:

\_\_\_\_\_ ( \$ \_\_\_\_\_ )  
(words) OR (figures)

**DEDUCT** from the Base Bid the sum of:

\_\_\_\_\_ ( \$ \_\_\_\_\_ )  
(words) (figures)

---

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**ALTERNATE NO. 6 - ROMBOUT MIDDLE SCHOOL COURTYARD OUTDOOR LEARNING CLASSROOM UTILITIES**

**ADD** to the Base Bid the sum of:

\_\_\_\_\_ ( \$ \_\_\_\_\_ )  
(words) OR (figures)

**DEDUCT** from the Base Bid the sum of:

\_\_\_\_\_ ( \$ \_\_\_\_\_ )  
(words) (figures)

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**ALTERNATE NO. 7 - ROMBOUT MIDDLE SCHOOL CORRIDOR CEILINGS AND LIGHTING REPLACEMENT AREA D, FIRST AND SECOND FLOOR**

**ADD** to the Base Bid the sum of:

\_\_\_\_\_ ( \$ \_\_\_\_\_ )  
(words) OR (figures)

**DEDUCT** from the Base Bid the sum of:

\_\_\_\_\_ ( \$ \_\_\_\_\_ )  
(words) (figures)

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**ALTERNATE NO. 8 - ROMBOUT MIDDLE SCHOOL CORRIDOR CEILINGS AND LIGHTING REPLACEMENT AREA F**

**ADD** to the Base Bid the sum of:

\_\_\_\_\_ ( \$ \_\_\_\_\_ )  
(words) OR (figures)

**DEDUCT** from the Base Bid the sum of:

\_\_\_\_\_ ( \$ \_\_\_\_\_ )  
(words) (figures)

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**ALTERNATE NO. 9 - ROMBOUT MIDDLE SCHOOL CORRIDOR LIGHTING REPLACEMENT AREA A**

**ADD** to the Base Bid the sum of:

\_\_\_\_\_ ( \$ \_\_\_\_\_ )  
(words) OR (figures)

**DEDUCT** from the Base Bid the sum of:

\_\_\_\_\_ ( \$ \_\_\_\_\_ )  
(words) (figures)

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**ALTERNATE NO. 10 - ROMBOUT MIDDLE SCHOOL CORRIDOR CEILINGS AND LIGHTING REPLACEMENT AREA B, SECOND FLOOR**

**ADD** to the Base Bid the sum of:

\_\_\_\_\_ ( \$ \_\_\_\_\_ )  
(words) OR (figures)

**DEDUCT** from the Base Bid the sum of:

\_\_\_\_\_ ( \$ \_\_\_\_\_ )  
(words) (figures)

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**ALTERNATE NO. 11 - BEACON HIGH SCHOOL FITNESS CENTER ALTERATIONS**

**ADD** to the Base Bid the sum of:

\_\_\_\_\_ ( \$ \_\_\_\_\_ )  
(words) OR (figures)

**DEDUCT** from the Base Bid the sum of:

\_\_\_\_\_ ( \$ \_\_\_\_\_ )  
(words) (figures)

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**ALTERNATE NO. 12 - BEACON HIGH SCHOOL SCIENCE ROOM C150**

**ADD** to the Base Bid the sum of:

\_\_\_\_\_ ( \$ \_\_\_\_\_ )  
(words) OR (figures)

**DEDUCT** from the Base Bid the sum of:

\_\_\_\_\_ ( \$ \_\_\_\_\_ )  
(words) (figures)

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**ALTERNATE NO. 13 - BEACON HIGH SCHOOL SCIENCE ROOM C125**

**ADD** to the Base Bid the sum of:

\_\_\_\_\_ ( \$ \_\_\_\_\_ )  
(words) (figures)

**OR**

**DEDUCT** from the Base Bid the sum of:

\_\_\_\_\_ ( \$ \_\_\_\_\_ )  
(words) (figures)

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**ALTERNATE NO. 14 - BEACON HIGH SCHOOL TV STUDIO, CONTROL AND EDITING SUITE ALTERATIONS**

**ADD** to the Base Bid the sum of:

\_\_\_\_\_ ( \$ \_\_\_\_\_ )  
(words) (figures)

**OR**

**DEDUCT** from the Base Bid the sum of:

\_\_\_\_\_ ( \$ \_\_\_\_\_ )  
(words) (figures)

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## 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
- Attachment #5 – Subcontractors List
- Attachment #6 – Bidder's Qualifications
- Attachment #7 – Insurance Certification

## 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: _____                     |

Federal Employer's Identification Number: \_\_\_\_\_

**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.

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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.

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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

500 Bi-County Blvd., Suite 104  
Farmingdale, NY 11735  
(631) 847-7762

Farmingdale, New York  
Albany, New York  
Ithaca, 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: SITE WORK SC-D4**

**PROJECT TITLE: RECONSTRUCTION PROJECT D**

**DATE: OCTOBER 28, 2022**

**PROJECT NO.: 279180-22004**

**BID TO:** Beacon City School District  
10 Education Drive  
Beacon, New York 12508

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
- Attachment #5 – Subcontractors List
- Attachment #6 – Bidder's Qualifications
- Attachment #7 – Insurance Certification

## 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: _____                     |

Federal Employer's Identification Number: \_\_\_\_\_

**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.

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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.

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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

**BID FORM ATTACHMENT #5**

NAME OF BIDDER \_\_\_\_\_

**PROPOSED SUBCONTRACTORS FORM****THIS FORM MUST BE SUBMITTED WITH THE BID**

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.

| <b><u>Subcontractor Name</u></b> | <b><u>Specification Section</u></b> |
|----------------------------------|-------------------------------------|
|                                  |                                     |
|                                  |                                     |
|                                  |                                     |
|                                  |                                     |
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|                                  |                                     |

**BID FORM ATTACHMENT # 6**

NAME OF BIDDER \_\_\_\_\_

**BIDDER'S QUALIFICATIONS FORM****THIS FORM MUST BE NOTARIZED AND SUBMITTED WITH THE BID**

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:

- Tetra Tech  
Architects & Engineers

**BID FORM ATTACHMENT #7**

Beacon City School District  
 10 Education Drive  
 Beacon, NY 12508

**INSURANCE CERTIFICATION FORM**  
**THIS FORM MUST BE SUBMITTED WITH THE BID**

**Project Number: 279180-22004**    **Project Name: Reconstruction to: Beacon CSD**

Your Insurance representative must complete the form below in order to be considered for the award of this Bid or Project, and it is important that you complete the Bidder's Acknowledgement section of this form (below).

Please note that a Standard Certificate of Insurance must accompany your Bid submission in order for your Bid to be considered.

**Insurance Representative's Acknowledgement:**

We have reviewed the insurance requirements set forth in the Bid and are capable of providing such insurance to our insured in accordance with such requirements in the event the Contract is awarded to our insured and provided our insured pays the appropriate premium.

Insurance Representative: \_\_\_\_\_

Address: \_\_\_\_\_

Are you an agent for the companies providing coverage? Yes \_\_\_\_\_ No \_\_\_\_\_

\_\_\_\_\_  
 Insurance Representative

\_\_\_\_\_  
 Date

**Bidder's Acknowledgement:**

I acknowledge that I have received the insurance requirements of this Bid and have considered the costs, if any, of procuring the required insurance and will be able to supply the insurance required in accordance with the Bid, if it is awarded. I understand that a Standard Certificate of Insurance must be submitted with my Bid; and if it is not, the Beacon City School District may reject my Bid and award to the next lowest Bidder.

Firm Name: \_\_\_\_\_

Address: \_\_\_\_\_

Date: \_\_\_\_\_

\_\_\_\_\_  
 Bidder's Signature

Beacon City School District  
10 Education Drive  
Beacon, NY 12508

\_\_\_\_\_ Work Contract act

**BOND CERTIFICATION FORM**

THIS FORM MUST BE SUBMITTED WITH THE BID

**Project Number: 279180-22004** **Project Name: Beacon Project D Reconstruction**

I acknowledge that I have reviewed the Performance Bond and Payment Bond requirements of this Bid and have considered the costs, if any, of procuring the required bonding and will be able to supply the bonds required in accordance with the Bid, if it is awarded.

I understand that this form must be submitted with my Bid; and if it is not, the Beacon City School District may reject my Bid and award to the next lowest Bidder.

Name of Bonding Company:\_\_\_\_\_

Address of Bonding  
Company:\_\_\_\_\_

Bidder's Firm Name:\_\_\_\_\_

Address:\_\_\_\_\_

Date:\_\_\_\_\_

\_\_\_\_\_  
Bidder's Signature

\_\_\_\_\_  
Print Name

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: \_\_\_\_\_

### **TAX EXEMPTION**

The Owner is exempt from payment of FEDERAL, STATE, LOCAL TAXES, AND SALES AND COMPENSATING USE TAXES of the State of New York and of Cities and Counties on all materials and supplies sold to the Owner pursuant to the provisions of this Contract. These taxes are **not** to be included in bids. This exemption does not, however, apply to tools, machinery, equipment, or other property leased by or to the Contractor or a subcontractor and the Contractor and his subcontractor shall be responsible for and pay any and all applicable taxes, including sales and compensating ue taxes, on such leased tools, machinery, equipment or other property.

### **PAYROLL RECORDS**

In accordance with Section 1, Paragraph a of Subdivision 3-a of Section 220 of the Labor Law, the Contractor shall submit to the Owner within 30 days after issuance of Contractor's first payroll, and every 30 days thereafter, a transcript of the original payroll record, subscribed and affirmed as true under the penalties of perjury.



# 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)*

#### **Project D:**

Reconstruction to  
Beacon High School  
Rombout Middle School  
JV Forrestal Elementary School  
Sargent Elementary School  
South Avenue Elementary School

SED #13-02-00-01-0-020-012  
SED #13-02-00-01-0-004-023  
SED #13-02-00-01-0-002-021  
SED #13-02-00-01-0-008-020  
SED #13-02-00-01-0-003-016

Addition and Alterations to  
Glenham Elementary School

SED #13-02-00-01-0-006-022

Tt Project Number 279180-22004

### **THE CONSTRUCTION MANAGER:**

*(Name, legal status, and address)*

UW Marx  
20 Gurley Avenue  
Troy, New York 12182

### **THE OWNER:**

*(Name, legal status, and address)*

Beacon City School District  
10 Education Drive  
Beacon, New York 12508

### **THE ARCHITECT:**

*(Name, legal status, and address)*

Tetra Tech Engineers, Architects & Landscape Architects, P.C.  
d/b/a Tetra Tech Architects & Engineers  
Cornell Business & Technology Park  
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, Addenda issued prior to execution of the Contract, other documents listed in the Agreement, and Modifications issued after execution of the Contract. 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 include the Notice to Bidders, Instructions to Bidders, sample forms and the Contractor's bid.

**§ 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.

**§ 1.1.3 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 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.

### § 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.

**§ 1.2.3.1** In the event of conflicts or discrepancies among the Contract Documents, interpretations will be based on the following priorities:

- .1 Modifications, as defined in Section 1.1.1.
- .2 The Agreement.
- .3 Addenda, with those of later date having precedence over those of earlier date.
- .4 The General Conditions of the Contract for Construction.
- .5 Division 01 of the Specifications.
- .6 Drawings and remaining Divisions of the Specifications.

In the case of conflicts or discrepancies between Drawings and Divisions of the Specifications (other than Division 01), or within or among the Contract Documents and not clarified by Addendum, the Architect will determine which takes precedence in accordance with Sections 4.2.11, 4.2.12, and 4.2.13.

### **§ 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.

### **§ 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 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 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.

## **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.

**§ 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.

### **§ 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.

### **§ 2.3 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, 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 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 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 but shall exercise proper precautions relating to the safe performance of the Work.

**§ 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** The Owner shall furnish the Contractor three (3) copies of the Contract Documents, including one set to be used for the Project Record Drawings. The Contractor may purchase additional copies at the cost of reproduction, postage and handling.

**§ 2.3.8** The Owner shall endeavor to forward all communications to the Contractor through the Construction Manager and shall contemporaneously provide the same communications to the Architect about matters arising out of or relating to the Contract Documents.

### **§ 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 repeatedly fails to carry out Work in accordance with the Contract Documents, or fails or refuses to provide a sufficient amount of properly supervised and coordinated labor, materials or equipment so as to be able to complete the work within the Contract time, or disregards the instruction of the Architect or Owner when based upon the requirements of the Contract, 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 written 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 (including reasonable attorney's fees) 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.

## **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.

**§ 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**

**§ 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.

**§ 3.2.2** 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 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** Do not scale Drawings. Follow figure dimensions, confirming on site.

**§ 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 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 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 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 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.

### **§ 3.3 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. 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 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, the Contractor shall perform the Work using its alternative means, methods, techniques, sequences, or procedures.

**§ 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.

**§ 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.

### **§ 3.4 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.

**§ 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.

**§ 3.4.2.1** After the Contract has been executed, the Owner and Architect will consider requests for the substitution of products in place of those specified only under the conditions set forth in the General Requirements (Division 01 of the Specifications). By making requests for substitutions, the Contractor:

- .1 represents that it has personally investigated the proposed substitute product and determined that it is equal or superior in all respects to that specified;
- .2 represents that it will provide the same warranty for the substitution as it would have provided for the product specified;
- .3 certifies that the cost data presented is complete and includes all related costs for the substituted product and for Work that must be changed as a result of the substitution, except for the Architect's redesign costs, and waives all claims for additional costs related to the substitution that subsequently become apparent; and
- .4 shall coordinate the installation of the accepted substitute, making such changes as may be required for the Work to be complete in all respects.

**§ 3.4.2.2** The Owner shall be entitled to reimbursement from the Contractor for amounts paid to the Architect for



reviewing the Contractor's proposed substitutions for convenience after the period noted in Division 01 Section "Substitution Procedures" and making agreed-upon changes in the Drawings and Specifications resulting from such substitutions.

**§ 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.

### **§ 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 may 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.

**§ 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.

### **§ 3.6 Taxes**

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.

**§ 3.6.1** The Owner is exempt from payment of Federal, State, local taxes, and from payment of sales and compensating use taxes of the State of New York and of cities and counties on all materials and supplies sold to the Owner pursuant to the provisions of this Contract. These taxes are not to be included in bids. This exemption does not, however, apply to tools, machinery, equipment, or other property leased by, or to the Contractor or a subcontractor; and the Contractor and its subcontractor 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.

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

**§ 3.7.1** Unless otherwise provided in the Contract Documents, the Owner, assisted by the Construction Manager, shall secure and pay for the building permit from the New York State Education Department. The Contractor shall secure and pay for all 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.

**§ 3.7.1.1** The Owner shall secure the building permit from the New York State Education Department.

**§ 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.

**§ 3.7.2.1** In accordance New York State Labor Law Article 8, Section 220, subd. 3-a(a), the Contractor shall submit to the Owner within 30 days after issuance of Contractor's first payroll, and every 30 days thereafter, a transcript of the original payroll record, subscribed and affirmed as true under the penalties of perjury.

**§ 3.7.2.2** The Contractor shall comply with all applicable New York State Department of Labor requirements, including the provision that every worker employed in performance of a public work contract shall be certified as having completed an OSHA 10-hour safety training course. The Contractor and subcontractor shall be solely responsible for compliance with this requirement with respect to their employees. The Contractor's or subcontractor's failure to comply with this requirement shall not transfer or in any way impose the responsibility for worker safety upon the Owner or the Architect.

§ 3.7.3 If the Contractor or any of its Subcontractors performs Work knowing 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.

§ 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 notice to the Owner, Construction Manager, and the Architect before conditions are disturbed and in no event later than 14 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, 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.

### § 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, but the Contractor shall not be required to employ persons or entities to whom the Contractor has reasonable objection.

§ 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;
- .2 Lump Sum Allowances, Unit Cost Allowances and Quantity Allowances: 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;
- .3 Contingency Allowances: Contractor's costs, including all such subcontractor 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. Contractor, and subcontractor, Overhead and profit related to the allowance shall be included as part of the Contract Sum and not part of the allowance; and
- .4 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.
- .5 The Architect shall create and process Allowance Access Authorizations for the Construction Manager and Owner's approval and execution in accordance with the Contract Documents.

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

§ 3.8.4 Refer to Division 01 Section "Allowances" for additional information.

### **§ 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. The superintendent shall represent the Contractor, and communications given to the superintendent shall be as binding as if given to the Contractor.

**§ 3.9.2** The Contractor, as soon as practicable after award of the Contract, shall notify the Owner and Architect in writing, 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.

**§ 3.9.3** 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 consent, which shall not unreasonably be withheld or delayed.

### **§ 3.10 Contractor's Construction and Submittal Schedules**

**§ 3.10.1** The Contractor, within 10 business days after being awarded the Contract, shall prepare and 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. 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, shall be related to the entire Project to the extent required by the Contract Documents, and shall provide for expeditious and practicable execution of the Work. 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.

**§ 3.10.2** 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.

**§ 3.10.3** 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.

*(Paragraph deleted)*

### **§ 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.

**§ 3.12.2** Product Data are illustrations, standard schedules, performance charts, instructions, brochures, diagrams, 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.

**§ 3.12.5** The Contractor shall review for compliance with the Contract Documents, approve, and submit to the Construction Manager, Shop Drawings, Product Data, Samples, and similar submittals required by the Contract Documents, 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.

**§ 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** 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.

**§ 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 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.

**§ 3.12.11** The Contractor is required to provide all submittals for the Architect's review; all submittals to be provided to the Architect by the Submittal deadlines noted in the Contract Documents. The Architect's review of Contractor's submittals will be limited to the time preceding the Submittal deadline and will consist of an examination of an initial submittal and **one (1)** resubmittal[s]. The Owner is entitled to obtain reimbursement from the Contractor for amounts paid to the Architect for evaluation of additional resubmittals, and for evaluation of submittals for which the initial submission is received after the Submittal deadlines.

### **§ 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.

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

**§ 3.13.3** The Contractor shall be responsible for enforcing **the Owner's security and access policies and procedures**, the Owner's Code of Conduct, and the following rules of conduct for its personnel and those of its subcontractors, sub-subcontractors, and suppliers at the Project site, and the Owner's Project Representative shall provide interpretations should a question arise if the rules of conduct are being adequately enforced by the Contractor:

- .1 No smoking or use of tobacco products.
- .2 No drinking of alcoholic beverages or use of controlled substances.
- .3 No working, or presence on site, under the influence of alcoholic beverages or controlled substances.
- .4 No use of indecent language or display of indecent images, publications or terms.
- .5 No use of radios or other entertainment devices.
- .6 No horseplay or dangerous behavior.
- .7 No firearms or other weapons.
- .8 No communication with staff or students.

**§ 3.13.4** The Contractor shall require its personnel and those of its subcontractors, sub-subcontractors and suppliers to wear visible photo-identification badges acceptable to the Owner, at all times for identification and security purposes.

### **§ 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.

**§ 3.14.2** 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.

**§ 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.

### **§ 3.16 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, defend, 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 expenses, including but not limited to attorneys' fees, arising out of or resulting from performance of the Work, 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), but only to the extent caused by the negligent acts or omissions 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 a party indemnified hereunder. Such 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.

**§ 3.18.2** 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 3.18.1 shall not be limited by a limitation on amount or type of damages, compensation, or benefits payable by or for the Contractor or a Subcontractor under workers' compensation acts, disability benefit acts, or other employee benefit acts.

## **ARTICLE 4 ARCHITECT AND CONSTRUCTION MANAGER**

### **§ 4.1 General**

**§ 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.

**§ 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.

**§ 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.

### **§ 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. 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, 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. The Architect will not have control over, 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. 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 known deviations from the Contract Documents and defects and deficiencies observed in the Work.

**§ 4.2.2.1** The Owner is entitled to reimbursement from the Contractor for amounts paid to the Architect for site visits made necessary by the fault of the Contractor or by defects and deficiencies in the Work.

**§ 4.2.2.2** The Owner is entitled to reimbursement from the Contractor for amounts paid to the Construction Manager for site visits made necessary by the fault of the Contractor or by defects and deficiencies in 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. 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.

**§ 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, 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, and neither will be responsible for the Contractor's failure to perform the Work in accordance with the requirements of the Contract Documents. 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.

**§ 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 to reject Work that does not conform to the Contract Documents and will notify the Owner and each other about the rejection. The Construction Manager shall determine in general 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 additional 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, material and equipment 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 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 Contractors, the Construction Manager will also check and coordinate the information contained within each submittal received from the Contractor and other 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.

**§ 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 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.

**§ 4.2.12** 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 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 Architect will prepare Change Orders, Construction Change Directives and Allowance Change Authorizations.

**§ 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 duties, responsibilities and limitations of authority of the Project representatives shall be as set forth in an exhibit to be incorporated in the Contract Documents. 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.

**§ 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.

**§ 4.2.20** The Architect's decisions 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 or otherwise furnish labor, materials, equipment, or other services with respect to the Work. 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 Separate Contractors or the subcontractors of 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 or otherwise furnishes labor, materials, equipment, or other services with respect to the Work. 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** Unless otherwise stated in the Contract Documents, the Contractor within 10 business days after award of the Contract, shall notify 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 for each principal portion of the Work. 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 for review. Failure of the Construction Manager to provide notice within the 14-day period shall constitute notice of no reasonable objection.

**§ 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.

**§ 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.

**§ 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.

**§ 5.2.5** The Contractor shall perform at least twenty-five percent (25%) of the cost of the Contract (not including the costs of materials, insurance, bonds, submittals and similar items) with its own employees.

### **§ 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, 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, 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.

**§ 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.

## **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 term "Separate Contractor(s)" shall mean other contractors retained by the Owner under separate agreements. 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. If the Contractor claims that delay or additional cost is involved because of such action by the Owner, the Contractor shall make such Claim as provided in Article 15.

**§ 6.1.2** When separate contracts are awarded for different portions of the Project or other construction or operations on the site, the term "Contractor" in the Contract Documents in each case shall mean the Contractor who executes each separate Owner-Contractor Agreement.

**§ 6.1.3** The Owner shall provide for coordination of the activities of the Owner's own forces and of each Separate Contractor with the Work of the Contractor, who shall cooperate with them. The Contractor shall participate with any Separate Contractors and the Owner in reviewing their construction schedules. The Contractor shall make any revisions to its construction schedule deemed necessary after a joint review and mutual agreement. The construction schedules shall then constitute the schedules to be used by the Contractor, Separate Contractors, and the Owner until subsequently revised.

**§ 6.1.4** 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.

## **§ 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. 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.

**§ 6.2.5** 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.

## **§ 6.3 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 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.

§ 7.1.3 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 The combined overhead and profit (for Contractor, subcontractors, suppliers, and contractors of a lower-tier) included in the total cost to the Owner for a change in the Work shall be as follows:

- .1 Maximum combined overhead and profit, fifteen percent (15%) of the cost.
- .2 Cost to which overhead and profit is to be applied shall be determined in accordance with Section 7.3.4.
- .3 To facilitate checking of quotations for extras or credits, all proposals shall be accompanied by a complete itemization of costs including labor, materials, rental costs, and Subcontracts. Subcontracts shall be itemized also.

### § 7.2 Change Orders

A Change Order is a written instrument prepared by the Architect 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.

### § 7.3 Construction Change Directives

§ 7.3.1 A Construction Change Directive is a written order prepared by the Architect 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

*(Paragraphs deleted)*

unit prices are stated in the Contract Documents or subsequently agreed upon, and if quantities originally contemplated are materially changed in a proposed Change Order or Construction Change Directive so that application of such unit prices to quantities of Work proposed will cause substantial inequity to the Owner or Contractor, the applicable unit prices shall be equitably adjusted.

**§ 7.3.5** 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. 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, fringe benefits required by agreement or custom, workers' compensation insurance, and other employee costs approved by the Construction Manager and Architect;
- .2 Costs of materials, supplies, and equipment, including cost of transportation, whether incorporated or consumed;
- .3 Rental costs of machinery and equipment, exclusive of hand tools, whether rented from the Contractor or others;

**§ 7.3.6** 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.

**§ 7.3.7** 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.

**§ 7.3.8** 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.

**§ 7.3.9** 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.

**§ 7.3.10** 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.

**§ 7.3.11** 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.

#### **§ 7.4 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.

## 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 limits stated in the Contract Documents are of the essence of the Contract. By executing the Agreement, the Contractor confirms that the Contract Time is a reasonable period for performing the Work.

§ 8.2.2 The Contractor shall not knowingly, except by agreement or instruction of the Owner in writing, commence the Work prior to the effective date of insurance required 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.

### § 8.3 Delays and Extensions of Time

§ 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 The Owner shall not be liable to the Contractor and/or any subcontractor for claims or damages of any nature caused by or arising out of delays. The sole remedy against the Owner for delays shall be the allowance of additional time for completion of the Work, the amount of which shall be subject to the claims procedure set forth herein. Except to the extent, if any, expressly prohibited by law, the Contractor expressly agrees not to make and hereby waives any claim for damages for delay, including, but not limited to, those resulting from increased labor or material costs; directions given or not given by the Owner, Construction Manager or Architect, including scheduling and coordination of the Work; the Architect's preparation of drawings and specifications or review of shop drawings and requests for instruction(s); or, on account of any delay, obstruction or hindrance for any cause whatsoever by the Owner, Construction Manager, Architect, or any other contractor on the project, whether or not foreseeable or anticipated. The Contractor agrees that its sole right and remedy therefor shall be an extension of time, if appropriate.

**IT IS EMPHASIZED THAT NO MONETARY RECOVERY MAY BE OBTAINED BY THE CONTRACTOR FOR DELAY AGAINST THE OWNER, CONSTRUCTION MANAGER, OR ARCHITECT BASED ON ANY REASON AND THAT THE CONTRACTOR'S SOLE REMEDY, IF APPROPRIATE, IS ADDITIONAL TIME."**

## 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 materially changed so that application of such unit prices to the actual quantities causes substantial inequity to the Owner or Contractor, the applicable unit prices shall be equitably adjusted.

## **§ 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, 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 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 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 and shall reflect retainage if provided for in the Contract Documents. The form of Application for Payment, duly notarized, shall be a current authorized edition of AIA Document G7032, Application and Certificate for Payment. Alternative payment application forms are not permitted. AIA Document G732 shall be supported by a current authorized edition of AIA Document G703, Continuation Sheet [or equivalent continuation sheet, subject to the approval of Owner and Architect].

**§ 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 95 percent of the amount due the Contractor on account of progress payments. At Substantial Completion, the Construction Manager and Architect may authorize remaining partial payments to be made in full, less twice the value of items remaining to be completed and an amount necessary to satisfy any outstanding claims, liens, or judgments.

**§ 9.3.1.4** "Applications for Payment must be accompanied by any and all releases of liens for previous applications from Contractor and his/her subcontractors and a sworn and notarized statement that all subcontractors have been paid to at least 95% of previously requisitioned sums.

**§ 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 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, to the best of the Contractor's knowledge, information, and belief, be free and clear of liens, claims, security interests, or

encumbrances, in favor of the Contractor, Subcontractors, material suppliers, or other persons or entities that provided labor, materials and equipment relating to the Work.

#### **§ 9.4 Certificates for Payment**

**§ 9.4.1** 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** The Construction Manager's certification of an Application 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.

*(Paragraph deleted)*

**§ 9.4.3** The Architect's issuance of a 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 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 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.

**§ 9.4.5** The issuance of a 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.

*(Paragraph deleted)*

#### **§ 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 9.4.2 and 9.4.3 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. 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; or
- .7 repeated failure to carry out the Work in accordance with the Contract Documents.

§ 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 for Work properly performed or material or equipment suitably delivered. 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.

#### § 9.6 Progress Payments

§ 9.6.1 After the Architect has issued a 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 material and equipment 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. 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.

§ 9.6.5 The Contractor's payments to material and equipment 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.

### **§ 9.8 Substantial Completion**

**§ 9.8.1** Substantial Completion is the stage in the progress of the Work when the Work or designated portion thereof is sufficiently complete in accordance with the Contract Documents so the Owner can occupy or utilize the Work for its intended use.

*(Paragraph deleted)*

**§ 9.8.2** No later than 14 days prior to the Contract-scheduled date of Substantial Completion, the Contractor shall issue a letter to the Architect and Construction Manager confirming their 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. Absence the contractor letter confirming readiness of work, the Architect may elect to postpone the substantial completion inspection. If the Architect's inspection discloses any item 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 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 to determine the actual date of Substantial Completion.

**§ 9.8.2.1** The Architect will perform no more than one inspection to determine whether the Work or a designated portion thereof has attained Substantial Completion in accordance with the Contract Documents. The Owner is entitled to reimbursement from the Contractor for amounts paid to the Architect for any additional inspections.

**§ 9.8.3** When the Work or designated portion thereof is substantially complete, the Architect will prepare 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.

**§ 9.8.4** 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.

*(Paragraph deleted)*

### **§ 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 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. 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.

## **§ 9.10 Final Completion and Final Payment**

**§ 9.10.1** On or within seven (7) days following the date of Final Completion (as established in the bid documents or modified by Change Order) the Architect will conduct a final inspection of the work. As a result of that inspection, the Architect will issue a Final Inspection Report. This report will document the condition of the work and will render a formal opinion as to the whether or not the work or designated portion is complete. If, as a result of the Architect's inspection, it is determined that the work is not complete and in accordance with the Contract Documents, the Architect shall notify the Owner and Contractor in writing of this opinion. This notice will include the Final Inspection Report documenting the conditions of the work and will be considered a formal notice to the Contractor of their failure to fulfill the terms and conditions of their contract.

If as a result of this inspection, it is determined that the work is complete, the Contractor shall submit their Final Payment Application and Certificate for Payment. The Architect will then certify and issue the final Certificate for Payment stating that to the best of the Architects knowledge, information and belief, and on the basis of the Architect's periodic site visits and inspections, the Work has been completed in accordance with the terms and conditions of 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 Architect's final Certificate for payment will constitute a further representation that the conditions listed in section 9.10.2 as precedent to the Contractor's being entitled to final payment have been fulfilled. The final Certificate for Payment will not be issued until all work on the final inspection report is completed or corrected.

**§ 9.10.1.1** The Architect will perform no more than one on-site observation to determine whether the Work or a designated portion thereof has attained Final Completion in accordance with the Contract Documents. The Owner is entitled to reimbursement from the Contractor for amounts paid to the Architect for any additional on-site observations.

**§ 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 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 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, if permitted by the Contract Documents, 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** If the Contractor is responsible for delays in the final completion and closeout beyond the contract specified time, the Owner is entitled to reimbursement from the Contractor for amounts paid by the Owner to subsequently extend the Electronic Submittal System (Submittal Exchange).

## **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 Contractor shall be responsible for maintaining safety data sheets at the site.

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, a Subcontractor, or a Sub-subcontractor;
- .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.

**§ 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.

**§ 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 either party 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, written notice of the injury or damage, whether or not insured, shall be given to the other party within a reasonable time not exceeding 21 days after discovery. The notice shall provide sufficient detail to enable the other party to investigate the matter.

**§ 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 notify the Owner, Construction Manager and Architect of the condition.

**§ 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.

**§ 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.

**§ 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.

#### **§ 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.

### **ARTICLE 11 INSURANCE AND BONDS**

#### **§ 11.1 Contractor's Insurance and Bonds**

**§ 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. The policy certificate must include the project name.

**§ 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.

**§ 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.

**§ 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 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**

**§ 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.

**§ 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**

**§ 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.

**§ 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.

### **§ 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.

## **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.

#### **§ 12.2.2 After Substantial Completion**

**§ 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 written 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.

**§ 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.

**§ 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** 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.



**§ 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, caused by the Contractor's correction or removal of Work that is not in accordance with the requirements of the Contract Documents.

**§ 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 as described in Section 12.2.2 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 affected 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. Any lawsuits arising from disputes under the contract and related to this Project shall be brought in the Supreme Court of New York, Dutchess County, or the United States District Court, Southern District of New York, if applicable.

### **§ 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. Except as provided in Section 13.2.2, neither party to the Contract shall 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.

**§ 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.

### **§ 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.

### **§ 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, 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 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 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.

### **§ 13.6 Time Limits on Claims**

The Owner and Contractor shall commence all claims and causes of action, whether in contract, tort, breach of warranty or otherwise, against the other arising out of or related to the Contract in accordance with the requirements of the final dispute resolution method selected in the Agreement within the time period specified by applicable law.

### **§ 13.7 Equal Opportunity**

**§ 13.7.1** The Contractor shall maintain policies of employment as follows:

- 1** The Contractor and the Contractor's subcontractors shall not discriminate against any employee or applicant for employment because of race, religion, color, sex, or national origin. The Contractor shall take affirmative action to ensure that applicants are employed, and that employees are treated during employment without regard to their race, religion, color, sex, or natural origin. Such action shall include, but not be limited to, the following: employment, upgrading, demotion or transfer; recruitment or recruitment advertising; layoff or termination; rates of pay or other forms of compensation; and selection for training, including apprenticeship. The Contractor agrees to post in conspicuous places, available to employees and applicants for employment, notice setting forth the policies of non-discrimination.
- 2** The Contractor and the Contractor's subcontractors shall, in all solicitations or advertisement for employees placed by them or on their behalf, state that all qualified applicants will receive consideration for employment without regard to race, religion, color, sex or national origin.

### **§ 13.8 Wage Rates**

**§ 13.8.1** The Contractor shall comply with Prevailing Wage Rates issued and periodically updated, by the New York State Department of Labor, for the location and duration of the Project.

## **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 30 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, under direct or indirect contract with the Contractor, 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;
- .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.

**§ 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, under direct or indirect contract with the Contractor, 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' notice to the Owner, Construction Manager and Architect, 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 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' 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** 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
- .4 otherwise breaches a material provision of the Contract Documents.

**§ 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' written 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.

**§ 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.

**§ 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.

#### **§ 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. Adjustment of the Contract Sum shall include profit. 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** The Owner may, at any time, terminate the Contract for the Owner's convenience and without cause.

**§ 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 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.

### **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, 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.

#### **§ 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.

#### **§ 15.1.3 Notice of Claims**

**§ 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.

*(Paragraph deleted)*

**§ 15.1.3.2** Written notice shall contain a heading stating "Notice of Claim" to clearly identify it as such. Such notice shall set forth in detail the circumstances that form the basis for the Claim and shall include the following:

- .1 Clear statement of claim matter, including background and chronology.
- .2 Documentation in support of claim matter.
- .3 Documentation in support of claimed damages.
- .4 Certification by responsible officer of claimant.

§ 15.1.3.3 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**

§ 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. The Architect will prepare Change Orders and issue Certificates for Payment in accordance with the decisions of the Initial Decision Maker.

§ 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, written 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.

**§ 15.1.6 Claims for Additional Time**

§ 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. 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.

§ 15.1.6.3 Claims for increase in the Contract Time shall set forth in detail the circumstances that form the basis for the Claim, the date upon which each cause of delay began to affect the progress of the Work, the date upon which each cause of delay ceased to affect the progress of the Work and the number of days' increase in the Contract Time claimed as a consequence of each such cause of delay. The Contractor shall provide such supporting documentation as the Owner may require including, where appropriate, a revised construction schedule indicating all the activities affected by the circumstances forming the basis of the Claim.

§ 15.1.6.4 The Contractor shall not be entitled to a separate increase in the Contract Time for each one of the number of causes of delay which may have concurrent or interrelated effects on the progress of the Work, or for concurrent delays due to the fault of the Contractor.

§ 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.

## **§ 15.2 Initial Decision**

**§ 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, 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 of final payment is due. If an initial decision has not been rendered within 30 days 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 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 the 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) 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 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, 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. If such a demand is made and the party receiving the demand fails to file for mediation within 30 days of receipt thereof, then both parties waive their rights to mediate or pursue binding dispute resolution proceedings 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**

**§ 15.3.2** The parties may 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 Construction Industry Mediation Procedures in effect on the date of the Agreement. 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. 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** 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.

**§ 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.

*(Paragraphs deleted)*

# Additions and Deletions Report for AIA® Document A232® – 2019

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

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## PAGE 1

### Project D:

#### Reconstruction to

|                                       |                                   |
|---------------------------------------|-----------------------------------|
| <u>Beacon High School</u>             | <u>SED #13-02-00-01-0-020-012</u> |
| <u>Rombout Middle School</u>          | <u>SED #13-02-00-01-0-004-023</u> |
| <u>JV Forrestal Elementary School</u> | <u>SED #13-02-00-01-0-002-021</u> |
| <u>Sargent Elementary School</u>      | <u>SED #13-02-00-01-0-008-020</u> |
| <u>South Avenue Elementary School</u> | <u>SED #13-02-00-01-0-003-016</u> |

#### Addition and Alterations to

|                                  |                                   |
|----------------------------------|-----------------------------------|
| <u>Glenham Elementary School</u> | <u>SED #13-02-00-01-0-006-022</u> |
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Tt Project Number 279180-22004

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## 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 issued prior to execution of the Contract, other documents listed in the Agreement, and Modifications issued after execution of the Contract. 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 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. The Contract Documents include the Notice to Bidders, Instructions to Bidders, sample forms and the Contractor's bid.

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

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**§ 1.2.3.1** In the event of conflicts or discrepancies among the Contract Documents, interpretations will be based on the following priorities:

- .1 Modifications, as defined in Section 1.1.1.
- .2 The Agreement.
- .3 Addenda, with those of later date having precedence over those of earlier date.
- .4 The General Conditions of the Contract for Construction.
- .5 Division 01 of the Specifications.
- .6 Drawings and remaining Divisions of the Specifications.

In the case of conflicts or discrepancies between Drawings and Divisions of the Specifications (other than Division 01), or within or among the Contract Documents and not clarified by Addendum, the Architect will determine which takes precedence in accordance with Sections 4.2.11, 4.2.12, and 4.2.13.

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**§ 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. The Owner shall furnish the Contractor three (3) copies of the Contract Documents, including one set to be used for the Project Record Drawings. The Contractor may purchase additional copies at the cost of reproduction, postage and handling.~~

**§ 2.3.8** ~~The Owner shall endeavor to forward all communications to the Contractor through the Construction Manager. Other communication shall be made as set forth in Section 4.2.6. Manager and shall contemporaneously provide the same communications to the Architect about matters arising out of or relating to the Contract Documents.~~

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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, or fails or refuses to provide a sufficient amount of properly supervised and coordinated labor, materials or equipment so as to be able to complete the work within the Contract time, or disregards the instruction of the Architect or Owner when based upon the requirements of the Contract, 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.

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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 written 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 (including reasonable attorney's fees) 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.

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§ 3.2.2.1 Do not scale Drawings. Follow figure dimensions, confirming on site.

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§ 3.2.5 The Owner is entitled to reimbursement from the Contractor for amounts paid to the 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.

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§ 3.4.2.1 After the Contract has been executed, the Owner and Architect will consider requests for the substitution of products in place of those specified only under the conditions set forth in the General Requirements (Division 01 of the Specifications). By making requests for substitutions, the Contractor:

- .1 represents that it has personally investigated the proposed substitute product and determined that it is equal or superior in all respects to that specified;
- .2 represents that it will provide the same warranty for the substitution as it would have provided for the product specified;
- .3 certifies that the cost data presented is complete and includes all related costs for the substituted product and for Work that must be changed as a result of the substitution, except for the Architect's redesign costs, and waives all claims for additional costs related to the substitution that subsequently become apparent; and
- .4 shall coordinate the installation of the accepted substitute, making such changes as may be required for the Work to be complete in all respects.

§ 3.4.2.2 The Owner shall be entitled to reimbursement from the Contractor for amounts paid to the Architect for reviewing the Contractor's proposed substitutions for convenience after the period noted in Division 01 Section "Substitution Procedures" and making agreed-upon changes in the Drawings and Specifications resulting from such substitutions.

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§ 3.6.1 The Owner is exempt from payment of Federal, State, local taxes, and from payment of sales and compensating use taxes of the State of New York and of cities and counties on all materials and supplies sold to the Owner pursuant to the provisions of this Contract. These taxes are not to be included in bids. This exemption does not, however, apply to tools, machinery, equipment, or other property leased by, or to the Contractor or a subcontractor; and the Contractor and its subcontractor 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.

§ 3.7.1 Unless otherwise provided in the Contract Documents, the Owner, assisted by the Construction Manager, shall secure and pay for the building ~~permit~~-permit from the New York State Education Department. The Contractor shall secure and pay for all 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.

§ 3.7.1.1 The Owner shall secure the building permit from the New York State Education Department.

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**§ 3.7.2.1** In accordance New York State Labor Law Article 8, Section 220, subd. 3-a(a), the Contractor shall submit to the Owner within 30 days after issuance of Contractor's first payroll, and every 30 days thereafter, a transcript of the original payroll record, subscribed and affirmed as true under the penalties of perjury.

**§ 3.7.2.2** The Contractor shall comply with all applicable New York State Department of Labor requirements, including the provision that every worker employed in performance of a public work contract shall be certified as having completed an OSHA 10-hour safety training course. The Contractor and subcontractor shall be solely responsible for compliance with this requirement with respect to their employees. The Contractor's or subcontractor's failure to comply with this requirement shall not transfer or in any way impose the responsibility for worker safety upon the Owner or the Architect.

**§ 3.7.3** If the Contractor or any of its Subcontractors performs Work knowing 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.

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- .1 ~~allowances~~ Allowances shall cover the cost to the Contractor of materials and equipment delivered at the site and all required taxes, less applicable trade discounts;
- .2 Lump Sum Allowances, Unit Cost Allowances and Quantity Allowances: 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;
- .3 Contingency Allowances: Contractor's costs, including all such subcontractor 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. Contractor, and subcontractor, Overhead and profit related to the allowance shall be included as part of the Contract Sum and not part of the allowance; and
- ~~.3~~ Whenever ~~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.
- .5 The Architect shall create and process Allowance Access Authorizations for the Construction Manager and Owner's approval and execution in accordance with the Contract Documents.

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**§ 3.8.4** Refer to Division 01 Section "Allowances" for additional information.

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**§ 3.9.2** The Contractor, as soon as practicable after award of the Contract, shall notify the Owner and ~~Architect~~, Architect in writing, 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.

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**§ 3.10.1** The Contractor, ~~promptly~~ within 10 business days after being awarded the Contract, shall prepare and 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. 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~~. Project, shall be related to the entire Project to the extent required

by the Contract Documents, and shall provide for expeditious and practicable execution of the Work. 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.

**§ 3.10.2** The Contractor, promptly after being awarded the Contract 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. 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.

**§ 3.10.3** 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 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.

**§ 3.10.4** 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.

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**§ 3.12.5** The Contractor shall review for compliance with the Contract Documents, approve, 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.

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**§ 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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**§ 3.12.11** The Contractor is required to provide all submittals for the Architect's review; all submittals to be provided to the Architect by the Submittal deadlines noted in the Contract Documents. The Architect's review of Contractor's submittals will be limited to the time preceding the Submittal deadline and will consist of an examination of an initial submittal and one (1) resubmittal[s]. The Owner is entitled to obtain reimbursement from the Contractor for amounts paid to the Architect for evaluation of additional resubmittals, and for evaluation of submittals for which the initial submission is received after the Submittal deadlines.

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**§ 3.13.3** The Contractor shall be responsible for enforcing **the Owner's security and access policies and procedures**, the Owner's Code of Conduct, and the following rules of conduct for its personnel and those of its subcontractors, sub-subcontractors, and suppliers at the Project site, and the Owner's Project Representative shall provide interpretations should a question arise if the rules of conduct are being adequately enforced by the Contractor:

- .1 No smoking or use of tobacco products.
- .2 No drinking of alcoholic beverages or use of controlled substances.
- .3 No working, or presence on site, under the influence of alcoholic beverages or controlled substances.
- .4 No use of indecent language or display of indecent images, publications or terms.
- .5 No use of radios or other entertainment devices.
- .6 No horseplay or dangerous behavior.
- .7 No firearms or other weapons.
- .8 No communication with staff or students.

**§ 3.13.4** The Contractor shall require its personnel and those of its subcontractors, sub-subcontractors and suppliers to wear visible photo-identification badges acceptable to the Owner, at all times for identification and security purposes.

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**§ 3.18.1** To the fullest extent permitted by law, the Contractor shall ~~indemnify~~ indemnify, defend, 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 expenses, including but not limited to attorneys' fees, arising out of or resulting from performance of the Work, 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), but only to the extent caused by the negligent acts or omissions 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 a party indemnified hereunder. Such 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.

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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, 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. The Architect will not have control over, 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. 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 known deviations from the Contract Documents and defects and deficiencies observed in the Work.

**§ 4.2.2.1** The Owner is entitled to reimbursement from the Contractor for amounts paid to the Architect for site visits made necessary by the fault of the Contractor or by defects and deficiencies in the Work.

**§ 4.2.2.2** The Owner is entitled to reimbursement from the Contractor for amounts paid to the Construction Manager for site visits made necessary by the fault of the Contractor or by defects and deficiencies in the Work.

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**§ 4.2.8** The Architect and Construction Manager have authority to reject Work that does not conform to the Contract Documents, Documents and will notify the Owner and each other about the rejection. The Construction Manager shall determine in general 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 additional 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, material and equipment suppliers, their agents or employees, or other persons performing any of the Work.

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§ 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.

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~~§ 4.2.13 The Construction Manager will prepare Change Orders and Construction Change Directives. Architect will prepare Change Orders, Construction Change Directives and Allowance Change Authorizations.~~

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§ 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 duties, responsibilities and limitations of authority of the Project representatives shall be as set forth in an exhibit to be incorporated in the Contract Documents. The Owner shall notify the Construction Manager of any change in the duties, responsibilities and limitations of authority of the Project representatives.

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§ 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, site or otherwise~~ furnish labor, materials, equipment, or other services with respect to the Work. 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, site or otherwise~~ furnishes labor, materials, equipment, or other services with respect to the Work. 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.

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§ 5.2.1 Unless otherwise stated in the Contract Documents, the ~~Contractor, as soon as practicable~~ Contractor within 10 business days after award of the Contract, shall notify 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.~~ design for each principal portion of the Work. 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 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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§ 5.2.5 The Contractor shall perform at least twenty-five percent (25%) of the cost of the Contract (not including the costs of materials, insurance, bonds, submittals and similar items) with its own employees.

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§ 6.1.1 The term "Separate Contractor(s)" shall mean other contractors retained by the Owner under separate agreements. 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. If the Contractor claims that delay or additional cost is involved because of such action by the Owner, the Contractor shall make such Claim as provided in Article 15.

§ 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. Separate contracts are awarded for different portions of the Project or other construction or operations on the site, the term "Contractor" in the Contract Documents in each case shall mean the Contractor who executes each separate Owner-Contractor Agreement.

§ 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. The Owner shall provide for coordination of the activities of the Owner's own forces and of each Separate Contractor with the Work of the Contractor, who shall cooperate with them. The Contractor shall participate with any Separate Contractors and the Owner in reviewing their construction schedules. The Contractor shall make any revisions to its construction schedule deemed necessary after a joint review and mutual agreement. The construction schedules shall then constitute the schedules to be used by the Contractor, Separate Contractors, and the Owner until subsequently revised.

§ 6.1.4 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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§ 7.1.4 The combined overhead and profit (for Contractor, subcontractors, suppliers, and contractors of a lower-tier) included in the total cost to the Owner for a change in the Work shall be as follows:

- .1 Maximum combined overhead and profit, fifteen percent (15%) of the cost.
- .2 Cost to which overhead and profit is to be applied shall be determined in accordance with Section 7.3.4.
- .3 To facilitate checking of quotations for extras or credits, all proposals shall be accompanied by a complete itemization of costs including labor, materials, rental costs, and Subcontracts. Subcontracts shall be itemized also.

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

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§ 7.3.1 A Construction Change Directive is a written order prepared by the ~~Construction Manager~~ Architect 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.

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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. 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, fringe benefits required by agreement or custom, workers' compensation insurance, and other employee costs approved by the Construction Manager and Architect;
- .2 — Costs of materials, supplies, and equipment, including cost of transportation, whether incorporated or consumed;
- .3 — Rental costs of machinery and equipment, exclusive of hand tools, whether rented from the Contractor or others;
- .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. unit prices are stated in the Contract Documents or subsequently agreed upon, and if quantities originally contemplated are materially changed in a proposed Change Order or Construction Change Directive so that application of such unit prices to quantities of Work proposed will cause substantial inequity to the Owner or Contractor, the applicable unit prices shall be equitably adjusted.

**§ 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. 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. 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, fringe benefits required by agreement or custom, workers' compensation insurance, and other employee costs approved by the Construction Manager and Architect;
- .2 — Costs of materials, supplies, and equipment, including cost of transportation, whether incorporated or consumed;
- .3 — Rental costs of machinery and equipment, exclusive of hand tools, whether rented from the Contractor or others;

**§ 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. 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.

**§ 7.3.7** 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. 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.

**§ 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. 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.

**§ 7.3.9** 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. 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.

**§ 7.3.10** 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. 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.

**§ 7.3.11** 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.

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**§ 8.2.2** The Contractor shall not knowingly, except by agreement or instruction of the Owner in writing, commence the Work prior to the effective date of insurance required 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.

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**§ 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. The Owner shall not be liable to the Contractor and/or any subcontractor for claims or damages of any nature caused by or arising out of delays. The sole remedy against the Owner for delays shall be the allowance of additional time for completion of the Work, the amount of which shall be subject to the claims procedure set forth herein. Except to the extent, if any, expressly prohibited by law, the Contractor expressly agrees not to make and hereby waives any claim for damages for delay, including, but not limited to, those resulting from increased labor or material costs; directions given or not given by the Owner, Construction Manager or Architect, including scheduling and coordination of the Work; the Architect's preparation of drawings and specifications or review of shop drawings and requests for instruction(s); or, on account of any delay, obstruction or hindrance for any cause whatsoever by the Owner, Construction Manager, Architect, or any other contractor on the project, whether or not foreseeable or anticipated. The Contractor agrees that its sole right and remedy therefor shall be an extension of time, if appropriate.~~ **IT IS EMPHASIZED THAT NO MONETARY RECOVERY MAY BE OBTAINED BY THE CONTRACTOR FOR DELAY AGAINST THE OWNER, CONSTRUCTION MANAGER, OR ARCHITECT BASED ON ANY REASON AND THAT THE CONTRACTOR'S SOLE REMEDY, IF APPROPRIATE, IS ADDITIONAL TIME.**

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**§ 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,~~ suppliers and shall reflect retainage if provided for in the Contract Documents. The form of Application for Payment, duly notarized, shall be a current authorized edition of AIA Document G7032, Application and Certificate for Payment. Alternative payment application forms are not permitted. AIA Document G732 shall be supported by a current authorized edition of AIA Document G703, Continuation Sheet [or equivalent continuation sheet, subject to the approval of Owner and Architect].

...

**§ 9.3.1.3** Until Substantial Completion, the Owner shall pay 95 percent of the amount due the Contractor on account of progress payments. At Substantial Completion, the Construction Manager and Architect may authorize remaining partial payments to be made in full, less twice the value of items remaining to be completed and an amount necessary to satisfy any outstanding claims, liens, or judgments.

**§ 9.3.1.4** "Applications for Payment must be accompanied by any and all releases of liens for previous applications from Contractor and his/her subcontractors and a sworn and notarized statement that all subcontractors have been paid to at least 95% of previously requisitioned sums.

**§ 9.3.3** The Contractor warrants that title to all Work covered by an Application for Payment will pass to the Owner 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, to the best of the Contractor's knowledge, information, and belief, be free and clear of liens, claims, security interests, or encumbrances, in favor of the Contractor, Subcontractors, material suppliers, or other persons or entities that provided labor, materials and equipment relating to the Work.

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**§ 9.4.1** ~~Where there is only one Contractor, the~~ 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.~~ The Construction Manager's certification of an Application 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.

**§ 9.4.2.1** 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 Architect's issuance of a 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 Construction Manager's Architect'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 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. 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.

**§ 9.4.5** 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. issuance of a 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.

**§ 9.4.6** 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.

**§ 9.5.1** 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 9.4.2 and 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. ~~9.4.1~~. 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 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

§ 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, Documents~~ and shall so notify the Construction Manager and Architect.

...

§ 9.6.4 The Owner has the right to request written evidence from the Contractor that the Contractor has properly paid Subcontractors and ~~suppliers material and equipment 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. 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.

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

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.

...

~~§ 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 list of items to be completed or corrected 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.~~

§ 9.8.2 No later than 14 days prior to the Contract-scheduled date of Substantial Completion, the Contractor shall issue a letter to the Architect and Construction Manager confirming their 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. Absence the contractor letter confirming readiness of work, the Architect may elect to postpone the substantial completion inspection. If the Architect's inspection discloses any item 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 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 to determine the actual date of Substantial Completion.

§ 9.8.2.1 The Architect will perform no more than one inspection to determine whether the Work or a designated portion thereof has attained Substantial Completion in accordance with the Contract Documents. The Owner is entitled to reimbursement from the Contractor for amounts paid to the Architect for any additional inspections.

~~§ 9.8.3 Upon receipt of the list, the Architect, assisted by the Construction Manager, will make an inspection to determine whether~~ When 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 complete, the Architect will prepare 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 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 unless otherwise provided in the Certificate of Substantial Completion.

**§ 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. 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.~~

**§ 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.~~

**§ 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 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.~~

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**§ 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. On or within seven (7) days following the date of Final Completion (as established in the bid documents or modified by Change Order) the Architect will conduct a final inspection of the work. As a result of that inspection, the Architect will issue a Final Inspection Report. This report will document the condition of the work and will render a formal opinion as to the whether or not the work or designated portion is complete. If, as a result of the Architect's inspection, it is determined that the work is not complete and in accordance with the Contract Documents, the Architect shall notify the Owner and Contractor in writing of this opinion. This notice will include the Final Inspection Report documenting the conditions of the work and will be considered a formal notice to the Contractor of their failure to fulfill the terms and conditions of their contract.~~

If as a result of this inspection, it is determined that the work is complete, the Contractor shall submit their Final Payment Application and Certificate for Payment. The Architect will then certify and issue the final Certificate for Payment stating that to the best of ~~their~~ the Architects knowledge, information and belief, and on the basis of ~~their~~ on-site the Architect's periodic site visits and inspections, the Work has been completed in accordance with the terms and conditions of 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~~ Architect's final Certificate for payment will constitute a further representation that the conditions listed in ~~Section~~ section 9.10.2 as precedent to the Contractor's being entitled to final payment have been fulfilled. The final Certificate for Payment will not be issued until all work on the final inspection report is completed or corrected.

**§ 9.10.1.1** The Architect will perform no more than one on-site observation to determine whether the Work or a designated portion thereof has attained Final Completion in accordance with the Contract Documents. The Owner is entitled to reimbursement from the Contractor for amounts paid to the Architect for any additional on-site observations.

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**§ 9.10.6** If the Contractor is responsible for delays in the final completion and closeout beyond the contract specified time, the Owner is entitled to reimbursement from the Contractor for amounts paid by the Owner to subsequently extend the Electronic Submittal System (Submittal Exchange).

...

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 Contractor shall be responsible for maintaining safety data sheets at the site.

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.

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If either party 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, written notice of the injury or damage, whether or not insured, shall be given to the other party within a reasonable time not exceeding 21 days after discovery. The notice shall provide sufficient detail to enable the other party to investigate the matter.

...

**§ 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~~ appropriately, and the Contract Sum shall be increased by the amount of the Contractor's reasonable additional costs of shutdown, delay, and start-up.

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§ 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. The policy certificate must include the project name.

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§ 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 written 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.

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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~~-affected whether or not final payment has been made.

...

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 is.~~ Any lawsuits arising from disputes under the contract and related to this Project shall be brought in the Supreme Court of New York, Dutchess County, or the United States District Court, Southern District of New York, if applicable.

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### **§ 13.6 Time Limits on Claims**

The Owner and Contractor shall commence all claims and causes of action, whether in contract, tort, breach of warranty or otherwise, against the other arising out of or related to the Contract in accordance with the requirements of the final dispute resolution method selected in the Agreement within the time period specified by applicable law.

### **§ 13.7 Equal Opportunity**

**§ 13.7.1** The Contractor shall maintain policies of employment as follows:

- .1 The Contractor and the Contractor's subcontractors shall not discriminate against any employee or applicant for employment because of race, religion, color, sex, or national origin. The Contractor shall take affirmative action to ensure that applicants are employed, and that employees are treated during employment without regard to their race, religion, color, sex, or natural origin. Such action shall include, but not be limited to, the following: employment, upgrading, demotion or transfer; recruitment or recruitment advertising; layoff or termination; rates of pay or other forms of compensation; and selection for training, including apprenticeship. The Contractor agrees to post in conspicuous places, available to employees and applicants for employment, notice setting forth the policies of non-discrimination.
- .2 The Contractor and the Contractor's subcontractors shall, in all solicitations or advertisement for employees placed by them or on their behalf, state that all qualified applicants will receive consideration for employment without regard to race, religion, color, sex or national origin.

### **§ 13.8 Wage Rates**

**§ 13.8.1** The Contractor shall comply with Prevailing Wage Rates issued and periodically updated, by the New York State Department of Labor, for the location and duration of the Project.

...

**§ 14.1.1** The Contractor may terminate the Contract if the Work is stopped for a period of 30 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, under direct or indirect contract with the Contractor, for any of the following reasons:

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**§ 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, under direct or indirect contract with the Contractor, 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.

...

**.4** otherwise is ~~guilty of substantial breach of a~~ breaches a material provision of the Contract Documents.

**§ 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' written notice, terminate employment of the Contractor and may, subject to any prior rights of the surety:

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**§ 14.4.2** Upon receipt of written notice from the Owner of such termination for the Owner's convenience, the Contractor shall

...

~~**§ 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.~~

**§ 15.1.3.2** Written notice shall contain a heading stating "Notice of Claim" to clearly identify it as such. Such notice shall set forth in detail the circumstances that form the basis for the Claim and shall include the following:

- .1 Clear statement of claim matter, including background and chronology.
- .2 Documentation in support of claim matter.
- .3 Documentation in support of claimed damages.
- .4 Certification by responsible officer of claimant.

~~**§ 15.1.3.3** 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.~~

**§ 15.1.4.1** 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. The Architect will prepare Change Orders and issue Certificates for Payment in accordance with the decisions of the Initial Decision Maker.

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**§ 15.1.5 Claims for Additional Cost.** If the Contractor wishes to make a Claim for an increase in the Contract Sum, written 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.

...

**§ 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.~~

...

**§ 15.1.6.3** Claims for increase in the Contract Time shall set forth in detail the circumstances that form the basis for the Claim, the date upon which each cause of delay began to affect the progress of the Work, the date upon which each cause of delay ceased to affect the progress of the Work and the number of days' increase in the Contract Time claimed as a consequence of each such cause of delay. The Contractor shall provide such supporting documentation as the Owner may require including, where appropriate, a revised construction schedule indicating all the activities affected by the circumstances forming the basis of the Claim.

**§ 15.1.6.4** The Contractor shall not be entitled to a separate increase in the Contract Time for each one of the number of causes of delay which may have concurrent or interrelated effects on the progress of the Work, or for concurrent delays due to the fault of the Contractor.

...

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, 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. Claim arising prior to the date of final payment is due.~~ If an initial decision has not been rendered within 30 days 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 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.

...

**§ 15.2.5** The Initial Decision Maker will render an initial decision approving or rejecting the ~~Claim. 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 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.

...

**§ 15.3.1** ~~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 15.1.7, shall be subject to mediation as a condition precedent to binding dispute resolution.~~

**§ 15.3.2** The parties ~~shall~~ may 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 Construction Industry Mediation Procedures in effect on the date of the Agreement. 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. 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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#### **§ 15.4 Arbitration**

**§ 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.

**§ 15.4.4.3** 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.

## ***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 10:21:57 ET on 08/11/2023 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.

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*(Signed)*

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*(Title)*

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*(Dated)*

## **INSURANCE REQUIREMENTS – CAPITAL CONSTRUCTION – Beacon City SD**

1. Notwithstanding any terms, conditions or provisions, in any other writing between the parties, the contractor hereby agrees to effectuate the naming of the District as an Additional Insured on the contractor's insurance policies, except for workers' compensation and N.Y. State Disability insurance.
2. The policy naming the District as an Additional Insured shall:
  - a. Be an insurance policy from an A.M. Best A- rated or better insurer, licensed to conduct business in New York State. A New York licensed and admitted insurer is strongly preferred. The decision to accept non-licensed and non-admitted carriers lies exclusively with the District and may create significant vulnerability and costs for the District.
  - b. State that the organization's coverage shall be primary and non-contributory coverage for the District, its Board, employees and volunteers with a waiver of subrogation in favor of the District.
  - c. Additional insured status shall be provided by standard or other endorsements that extend coverage to the District for on-going operations (CG 20 38) and products and completed operations (CG 20 37). The decision to accept an endorsement rests solely with the District. A completed copy of the endorsements must be attached to the Certificate of Insurance.
3.
  - a. The certificate of insurance must describe the services provided by the contractor (e.g., roofing, carpentry or plumbing) that are covered by the liability policies.
  - b. At the District's request, the contractor shall provide a copy of the declaration page of the liability and umbrella/excess policies with a list of endorsements and forms. If requested, the contractor will provide a copy of the policy endorsements and forms.
  - c. There will be no coverage restrictions and/or exclusions involving New York State Labor Law statutes or gravity related injuries.
  - d. A fully completed New York Construction Certificate of Liability Insurance Addendum (ACORD 855 2014/15) must be included with the certificates of insurance. Policy exclusions may not be accepted.
4. The contractor agrees to indemnify the District for applicable deductibles and self-insured retentions.
5. Minimum Required Insurance:
  - a. **Commercial General Liability Insurance**  
\$1,000,000 per Occurrence/\$2,000,000 Aggregate  
\$2,000,000 Products and Completed Operations  
\$1,000,000 Personal and Advertising Injury  
\$100,000 Fire Damage  
\$10,000 Medical Expense

The general aggregate shall apply on a per-project basis.

b. **Owners Contractors Protective (OCP) Insurance**

For projects less than or equal to \$1,000,000 and work on 1 story (10 feet) only; \$1 million per occurrence, \$2 million aggregate with the District as the Named Insured.

For projects greater than \$1,000,000 and/or work over 1 story (10 feet); \$2 million per occurrence, \$4 million aggregate with the District as the Named Insured.

For all projects where General Liability, Auto and Umbrella/Excess Coverage is with non-licensed and non-admitted carriers in New York State; \$2 million per occurrence, \$4 million aggregate with the District as the named Insured.

The District will be the Named Insured on OCP Policies. There will be no Additional Insureds on any OCP Policies.

c. **Automobile Liability**

\$1,000,000 combined single limit for owned, hired, borrowed and non-owned motor vehicles.

d. **Workers' Compensation and NYS Disability Insurance**

Statutory Workers' Compensation (C-105.2 or U-26.3); and NYS Disability Insurance (DB-120.1) for all employees. Proof of coverage must be on the approved specific form, as required by the New York State Workers' Compensation Board. ACORD certificates are not acceptable. A person seeking an exemption must file a CE-200 Form with the state. The form can be completed and submitted directly to the WC Board online.

e. **Builder's Risk**

Must be purchased by the contractor to include interest of the Owner and Contractor jointly in a form satisfactory to the owner. The limit must reflect the total completed value – all material and labor costs and provide coverage for fire, lightning, explosion, extended coverage, vandalism, malicious mischief, windstorm, hail and/or flood.

f. **Umbrella/Excess Insurance**

\$5 million each Occurrence and Aggregate for general construction and no work at elevation (1 story – 10 feet) or project values less than or equal to \$1,000,000.

\$10 million each Occurrence and Aggregate for high-risk construction, work at elevation (>1 story or 10 feet) or project values greater than \$1,000,000.

Umbrella/Excess coverage shall be on a follow-form basis over the Auto Liability and General Liability coverages.

6. Contractor acknowledges that failure to obtain such insurance on behalf of the District constitutes a material breach of contract and subjects it to liability for damages, indemnification and all other legal remedies available to the District/BOCES. The contractor is to provide the District/BOCES with a certificate of insurance, evidencing the above requirements have been met, prior to the commencement of work.
7. **Subcontractors are subject to the same terms and conditions as stated above and must submit same to the District for approval prior to the start of any work.**
8. In the event the General Contractor fails to obtain the required certificates of insurance from the Subcontractor and a claim is made or suffered, the Contractor shall indemnify, defend, and hold harmless the District, its Board, employees and volunteers from any and all claims for which the required insurance would have provided coverage. **This indemnity obligation is in addition to any other indemnity obligation provided in the Contract.**

## **ADDITIONAL REQUIREMENTS ASBESTOS, LEAD ABATEMENT AND/OR HAZARDOUS MATERIALS**

### **Asbestos/Lead Abatement/Pollution Liability Insurance**

\$2,000,000 per occurrence/\$2,000,000 aggregate, including products and completed operations. Such insurance shall include coverage for the Contractor's operations including, but not limited to, removal, replacement, enclosure, encapsulation and/or disposal of asbestos, or any other hazardous material, along with any related pollution events, including coverage for third-party liability claims for bodily injury, property damage and clean-up costs. If a retroactive date is used, it shall pre-date the inception of the Contract.

If the Contractor is using motor vehicles for transporting hazardous materials, the Contractor shall maintain pollution liability broadened coverage (ISO Endorsement CA 9948), as well as proof of MCS 90. Coverage shall fulfill all requirements of these specifications and shall extend for a period of three (3) years following acceptance by the District of the Certificate of Completion.

### **Testing Company Errors and Omission Insurance**

\$1,000,000 per occurrence/\$2,000,000 aggregate for the testing and other professional acts of the Contractor performed under the Contract with the District.



Kathy Hochul, Governor

Roberta Reardon, Commissioner

Beacon City School District

Lynn Hackett, PM  
500 Bi-County Blvd  
Suite 104  
Farmingdale NY 11735

Schedule Year 2023 through 2024  
Date Requested 08/03/2022  
PRC# 2022009106

Location various  
Project ID# 279180-22004  
Project Type interior and exterior alterations, addition

### 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](http://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 from 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](http://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](http://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](http://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, contemporaneous, 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

Beacon City School District

Lynn Hackett, PM  
500 Bi-County Blvd  
Suite 104  
Farmingdale NY 11735

Schedule Year 2023 through 2024  
Date Requested 08/03/2022  
PRC# 2022009106

Location various  
Project ID# 279180-22004  
Project Type interior and exterior alterations, addition

### 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: _____<br>_____                       |  |            |
| City: _____                                   | State: _____                                       | Zip: _____ |
| Amount of Contract: \$ _____                  | Contract Type:                                     |            |
| Approximate Starting Date: ____/____/____     | <input type="checkbox"/> (01) General Construction |            |
| Approximate Completion Date: ____/____/____   | <input type="checkbox"/> (02) Heating/Ventilation  |            |
|   | <input type="checkbox"/> (03) Electrical           |            |
|   | <input type="checkbox"/> (04) Plumbing             |            |
|   | <input type="checkbox"/> (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](mailto: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](http://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.

**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*

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#### **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](mailto:dol.misclassified@labor.ny.gov). All complaints of fraud and violations are taken seriously. You can remain anonymous.**

**Employer Name:**

IA 999 (09/16)



# 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.

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/public-work-and-prevailing-wage>

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) 568-5156 |              |                |

\* 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](http://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 or 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 requirements 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 than 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](http://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 |

## Dutchess County General Construction

### Boilermaker

08/01/2023

**JOB DESCRIPTION** Boilermaker

**DISTRICT** 4

#### ENTIRE COUNTIES

Bronx, Dutchess, Kings, Nassau, New York, Orange, Putnam, Queens, Richmond, Rockland, Suffolk, Sullivan, Ulster, Westchester

#### WAGES

| Per Hour:             | 07/01/2023 | 01/01/2024 |
|-----------------------|------------|------------|
| Boilermaker           | \$ 65.88   | \$ 67.38   |
| Repairs & Renovations | 65.88      | 67.38      |

Repairs & Renovation: Includes Repairing, Renovating replacement of parts to an existing unit(s).

#### SUPPLEMENTAL BENEFITS

Per Hour:

|                       |                 |                 |
|-----------------------|-----------------|-----------------|
| Boilermaker           | 33.5% of hourly | 33.5% of Hourly |
| Repair \$ Renovations | Wage Paid       | Wage Paid       |
|                       | + \$ 26.49      | + \$26.85       |

NOTE: "Hourly Wage Paid" shall include any and all premium(s) pay.

Repairs & Renovation Includes replacement of parts and repairs & renovation of existing unit.

#### OVERTIME PAY

See (\*B, O, \*\*U) on OVERTIME PAGE

Note:\* Includes 9th & 10th hours, double for 11th or more.

\*\* Labor Day ONLY, if worked.

Repairs & Renovation see (B,E,Q) on OT Page

#### HOLIDAY

Paid: See (1) on HOLIDAY PAGE  
Overtime: See (5, 6, 11, 12, 15, 25, 26, 29) on HOLIDAY PAGE

#### REGISTERED APPRENTICES

Wage per hour:

(1/2) Year Terms at the following percentage of Boilermaker's Wage

|     |     |     |     |     |     |     |
|-----|-----|-----|-----|-----|-----|-----|
| 1st | 2nd | 3rd | 4th | 5th | 6th | 7th |
| 65% | 70% | 75% | 80% | 85% | 90% | 95% |

Supplemental Benefits Per Hour:

| Apprentice(s) | 33.5% of Hourly<br>Wage Paid Plus<br>Amount Below | 33.5% of Hourly<br>Wage Paid Plus<br>Amount Below |
|---------------|---|---|
| 1st Term      | \$ 20.12  | \$ 20.36  |
| 2nd Term      | 21.03   | 21.28   |
| 3rd Term      | 21.95   | 22.22   |
| 4th Term      | 22.83   | 23.12   |
| 5th Term      | 23.76   | 24.07   |
| 6th Term      | 24.67   | 25.00   |
| 7th Term      | 25.58   | 25.93   |

NOTE: "Hourly Wage Paid" shall include any and all premium(s)

4-5

### Carpenter

08/01/2023

**JOB DESCRIPTION** Carpenter

**DISTRICT** 8

#### ENTIRE COUNTIES

Dutchess, Orange

#### WAGES

Per hour: 07/01/2023

Building:  
Millwright \$ 46.00  
+ 8.17\*

\*This portion is not subject to overtime premiums

#### SUPPLEMENTAL BENEFITS

Per hour:

Journeyman \$ 34.31

#### OVERTIME PAY

See (B, E, E2, Q) on OVERTIME PAGE

#### HOLIDAY

Paid: See (18,19) on HOLIDAY PAGE.

Paid: See (5,6,11,13,16,18,19,25) for 1st & 2nd yr.Apprentices

Overtime: See (5,6,11,13,16,18,19,25) on HOLIDAY PAGE.

#### REGISTERED APPRENTICES

Wages per hour:

One (1) year terms:

| 1st     | 2nd     | 3rd     | 4th     |
|---------|---------|---------|---------|
| \$28.01 | \$30.34 | \$34.67 | \$43.33 |
| + 4.27* | + 5.06* | + 5.81* | + 7.31* |

\*This portion is not subject to overtime premiums

Supplemental benefits per hour:

| 1st     | 2nd     | 3rd     | 4th     |
|---------|---------|---------|---------|
| \$22.55 | \$24.34 | \$26.45 | \$29.18 |

8-740.2

#### Carpenter

08/01/2023

**JOB DESCRIPTION** Carpenter

**DISTRICT** 8

#### ENTIRE COUNTIES

Dutchess

#### PARTIAL COUNTIES

Orange: : The territory west demarcated by a line drawn from the Bear Mountain Bridge continuing east to the Bear Mountain Circle. The territory south demarcated by a line continuing north on 9W to the town of Cornwall where County Road 107 (also known as Quaker Rd) crosses under 9W to the centerline of Route 32, The territories south and east heading 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

Per hour: 07/01/2023

Carpet/Resilient

Floor Coverer \$ 34.45  
+ 3.25\*

\*This portion is not subject to overtime premiums

INCLUDES HANDLING & INSTALLATION OF ARTIFICIAL TURF AND SIMILAR TURF INDOORS/OUTDOORS.

#### SUPPLEMENTAL BENEFITS

Per hour:

\$ 28.33

#### OVERTIME PAY

See (B, E, Q) on OVERTIME PAGE

#### HOLIDAY

Paid: See (18, 19) on HOLIDAY PAGE

Paid for 1st & 2nd yr.

Apprentices: See (5, 6, 11, 13, 16, 18, 19, 25)

Overtime: See (5, 6, 11, 13, 16, 18, 19, 25) on HOLIDAY PAGE.

### REGISTERED APPRENTICES

Wage per hour - (1) year terms:

| 1st     | 2nd     | 3rd     | 4th     |
|---------|---------|---------|---------|
| \$15.75 | \$18.87 | \$23.55 | \$28.23 |
| + 2.48* | + 2.48* | + 2.48* | + 2.48* |

\*This portion is not subject to overtime premiums

Supplemental Benefits per hour - All apprentice terms:

\$ 20.87

8-2287D&O

### Carpenter

08/01/2023

**JOB DESCRIPTION** Carpenter

**DISTRICT** 8

### ENTIRE COUNTIES

Bronx, Dutchess, Kings, Nassau, New York, Orange, Putnam, Queens, Richmond, Rockland, Suffolk, Westchester

### WAGES

Per Hour: 07/01/2023

Marine Construction:

Marine Diver \$ 74.03  
+ 9.79\*

Marine Tender \$ 53.57  
+ 9.79\*

\*This portion is not subject to overtime premiums

### SUPPLEMENTAL BENEFITS

Per Hour:

Journeyworker \$ 45.34

### OVERTIME PAY

See (B, E, E2, Q) on OVERTIME PAGE

### HOLIDAY

Paid: See (18, 19) on HOLIDAY PAGE

Overtime: See (5, 6, 10, 11, 13, 16, 18, 19) on HOLIDAY PAGE

### REGISTERED APPRENTICES

Wages per hour:

One (1) year terms.

|          |                     |
|----------|---------------------|
| 1st year | \$ 25.60<br>+ 5.30* |
| 2nd year | 31.20<br>+ 5.30*    |
| 3rd year | 39.58<br>+ 5.30*    |
| 4th year | 47.97<br>+ 5.05*    |

\*This portion is not subject to overtime premiums

Supplemental Benefits

Per Hour:

All terms \$ 31.83

8-1456MC

### Carpenter - Building / Heavy&Highway

08/01/2023

**JOB DESCRIPTION** Carpenter - Building / Heavy&Highway

**DISTRICT** 11

### ENTIRE COUNTIES

Columbia, Dutchess, Orange, Sullivan, Ulster

## WAGES

WAGES (per hour)

Applies to Carpenter (Building/Heavy & Highway/Tunnel), Dockbuilder, Piledriver, Dive Tender, and Diver (Dry):

|           | 07/01/2023 | 07/01/2024 | 07/01/2025 | 07/01/2026 |
|-----------|------------|------------|------------|------------|
|           |            | Additional | Additional | Additional |
| Base Wage | \$ 35.81   | \$ 2.16**  | \$ 2.23**  | \$ 2.30**  |
|           | + 4.88*    |            |            |            |

Applies to Diver (Wet):

|           |          |
|-----------|----------|
| Base Wage | \$ 50.00 |
|           | + 4.88*  |

\*For all hours paid straight or premium.

\*\*To be allocated at a later date.

SHIFT DIFFERENTIAL: When mandated by a Government Agency irregular or off shift can be worked. The Carpenter shall receive an additional fifteen percent (15%) of the base wage.

## SUPPLEMENTAL BENEFITS

Per hour:

|               |          |
|---------------|----------|
| Journeyworker | \$ 31.30 |
|---------------|----------|

## OVERTIME PAY

See (B, E, Q) on OVERTIME PAGE

## HOLIDAY

BUILDING:

Paid: See ( 1 ) on HOLIDAY PAGE.

Overtime: See ( 5, 6, 16, 25 ) on HOLIDAY PAGE.

- Holidays that fall on Sunday will be observed Monday.

HEAVY&HIGHWAY/TUNNEL:

Paid: See ( 5, 6, 25 ) on HOLIDAY PAGE

Overtime: See ( 5, 6 ) on HOLIDAY PAGE

- Holidays that fall on Sunday will be observed Monday

- Must be employed during the five (5) work days immediately preceding a holiday or during the five (5) work days following the paid holiday to receive holiday pay

- If Employee is entitled to a paid holiday, the Employee is paid the Holiday wage and supplemental benefits whether they work or not. If Employee works the Holiday, the Employee will receive holiday pay (including supplemental benefits), plus the applicable premium wage for working the Holiday. If Employee works in excess of 8 hours on Holiday, then benefits will be paid for any hours in excess of 8 hours.

## REGISTERED APPRENTICES

1 Year terms at the following wage rates.

| 1st      | 2nd      | 3rd      | 4th      | 5th      |
|----------|----------|----------|----------|----------|
| \$ 17.91 | \$ 21.49 | \$ 23.28 | \$ 25.07 | \$ 28.65 |
| +2.58*   | +2.58*   | +2.58*   | +2.58*   | +2.58*   |

\*For all hours paid straight or premium

SUPPLEMENTAL BENEFITS per hour:

|           |          |
|-----------|----------|
| All Terms | \$ 16.32 |
|-----------|----------|

11-279.2B/H&H

## Electrician

08/01/2023

JOB DESCRIPTION Electrician

DISTRICT 11

## ENTIRE COUNTIES

Orange, Putnam, Rockland

## PARTIAL COUNTIES

Dutchess: Towns of Fishkill, East Fishkill, and Beacon.

## WAGES

Per hour:

|                                | 07/01/2023 | 04/01/2024 |
|--------------------------------|------------|------------|
| Electrician Wireman/Technician | \$ 49.50   | \$ 50.50   |
|                                | +9.00*     | + 9.50*    |

**SHIFT DIFFERENTIAL:** On Public Work in New York State when shift work is mandated either in the job specifications or by the contracting agency, the following rates apply when shift is worked:

|                          |                     |                     |
|--------------------------|---------------------|---------------------|
| Between 4:30pm & 12:30am | \$ 58.08<br>+ 9.00* | \$ 59.30<br>+ 9.50* |
| Between 12:30am & 8:30am | \$ 65.06<br>+ 9.00* | \$66.35<br>+ 9.50*  |

\*For all hours paid straight or premium, not to be included in 3% calculation for supplemental benefits.

**NOTE ADDITIONAL AMOUNTS PAID FOR THE FOLLOWING WORK LISTED BELOW** (subject to overtime premiums):

- On jobs where employees are required to work from boatswain chairs, swinging scaffolds, etc., forty (40) feet or more above the ground, or under compressed air, using Scottair packs, or gas masks, they shall receive an additional \$2.00 per hour above the regular straight time rate.

- Journeyman Wireman working in Shafts, Tunnels or on Barges: \$5.00 above the Journeyman Wireman rate of pay

- Journeyman Wireman when performing welding or cable splicing: \$3.00 above the Journeyman Wireman rate of pay

- Journeyman Wireman required to have a NYS Asbestos Certificate: \$3.00 above the Journeyman Wireman rate of pay

- Journeyman Wireman required to have a CDL: \$3.00 above the Journeyman Wireman rate of pay.

### SUPPLEMENTAL BENEFITS

|            |  |  |
|------------|--|--|
| Per hour:  | 07/01/2023   | 04/01/2024   |
| Journeyman | \$ 28.68 plus<br>3% of straight<br>or premium wage | \$ 29.68 plus<br>3% of straight<br>or premium wage |

### OVERTIME PAY

See (B, E, Q) on OVERTIME PAGE

### HOLIDAY

Paid: See (1) on HOLIDAY PAGE

Overtime: See (5, 6, 13, 15, 16, 25) on HOLIDAY PAGE

When the holiday falls on a Saturday it is observed the Friday before. When the holiday falls on a Sunday it is observed on the Monday after.

### REGISTERED APPRENTICES

WAGES:

(1)year terms at the following rates

|            |                    |                    |                    |                    |                    |                    |
|------------|--------------------|--------------------|--------------------|--------------------|--------------------|--------------------|
| 07/01/2023 | 1st                | 2nd                | 3rd                | 4th                | 5th                | 6th                |
| 1st Shift  | \$ 14.25<br>+1.00* | \$ 19.00<br>+1.00* | \$ 23.75<br>+1.50* | \$ 28.50<br>+2.00* | \$ 33.25<br>+2.50* | \$ 35.63<br>+2.50* |
| 2nd Shift  | 16.72<br>+1.00*    | 22.29<br>+1.00*    | 27.86<br>+1.50*    | 33.43<br>+2.00*    | 39.00<br>+2.50*    | 41.79<br>+2.50*    |
| 3rd Shift  | 18.72<br>+1.00*    | 24.97<br>+1.00*    | 31.21<br>+1.50*    | 37.45<br>+2.00*    | 43.69<br>+2.50*    | 46.82<br>+2.50*    |
| 09/01/2023 | 1st                | 2nd                | 3rd                | 4th                | 5th                | 6th                |
| 1st Shift  | \$ 15.68<br>+1.00* | \$ 19.00<br>+1.00* | \$ 23.75<br>+1.50* | \$ 28.50<br>+2.00* | \$ 33.25<br>+2.50* | \$ 35.63<br>+2.50* |
| 2nd Shift  | 18.39<br>+1.00*    | 22.29<br>+1.00*    | 27.86<br>+1.50*    | 33.43<br>+2.00*    | 39.00<br>+2.50*    | 41.79<br>+2.50*    |
| 3rd Shift  | 20.60<br>+1.00*    | 24.97<br>+1.00*    | 31.21<br>+1.50*    | 37.45<br>+2.00*    | 43.69<br>+2.50*    | 46.82<br>+2.50*    |
| 04/01/2024 | 1st                | 2nd                | 3rd                | 4th                | 5th                | 6th                |
| 1st Shift  | \$ 16.01<br>+1.00* | \$ 19.40<br>+1.00* | \$ 24.25<br>+1.50* | \$ 29.10<br>+2.00* | \$ 33.95<br>+2.50* | \$ 36.38<br>+2.50* |
| 2nd Shift  | 18.78<br>+1.00*    | 22.76<br>+1.00*    | 28.45<br>+1.50*    | 34.13<br>+2.00*    | 39.82<br>+2.50*    | 42.67<br>+2.50*    |
| 3rd Shift  | 21.04<br>+1.00*    | 25.49<br>+1.00*    | 31.86<br>+1.50*    | 38.24<br>+2.00*    | 44.61<br>+2.50*    | 47.80<br>+2.50*    |
| 09/01/2024 | 1st                | 2nd                | 3rd                | 4th                | 5th                | 6th                |
| 1st Shift  | \$ 16.01<br>+1.00* | \$ 19.40<br>+1.00* | \$ 24.25<br>+1.00* | \$ 29.10<br>+2.00* | \$ 33.95<br>+2.50* | \$ 36.38<br>+2.50* |
| 2nd Shift  | 18.78<br>+1.00*    | 22.76<br>+1.00*    | 28.45<br>+1.00*    | 34.13<br>+2.00*    | 39.82<br>+2.50*    | 42.67<br>+2.50*    |
| 3rd Shift  | 21.04<br>+1.00*    | 25.49<br>+1.00*    | 31.86<br>+1.00*    | 38.24<br>+2.00*    | 44.61<br>+2.50*    | 47.80<br>+2.50*    |

| 04/01/2025 | 1st      | 2nd      | 3rd      | 4th      | 5th      | 6th      |
|------------|----------|----------|----------|----------|----------|----------|
| 1st Shift  | \$ 16.34 | \$ 19.80 | \$ 24.75 | \$ 29.70 | \$ 34.65 | \$ 37.13 |
|            | +1.00*   | +1.00*   | +1.00*   | +2.00*   | +2.50*   | +2.50*   |
| 2nd Shift  | 19.17    | 23.23    | 29.03    | 34.84    | 40.64    | 43.55    |
|            | +1.00*   | +1.00*   | +1.00*   | +2.00*   | +2.50*   | +2.50*   |
| 3rd Shift  | 21.47    | 26.02    | 32.52    | 39.03    | 45.53    | 48.79    |
|            | +1.00*   | +1.00*   | +1.00*   | +2.00*   | +2.50*   | +2.50*   |

\*For all hours paid straight or premium, not to be included in 3% calculation for supplemental benefits.

SUPPLEMENTAL BENEFITS per hour:

07/01/2023

|          |  |
|----------|--|
| 1st term | \$ 16.28 plus 3% of straight or premium wage |
| 2nd term | \$ 16.28 plus 3% of straight or premium wage |
| 3rd term | \$ 18.28 plus 3% of straight or premium wage |
| 4th term | \$ 18.78 plus 3% of straight or premium wage |
| 5th term | \$ 20.28 plus 3% of straight or premium wage |
| 6th term | \$ 20.28 plus 3% of straight or premium wage |

09/01/2024

|          |  |
|----------|--|
| 1st term | \$ 16.28 plus 3% of straight or premium wage |
| 2nd term | \$ 17.78 plus 3% of straight or premium wage |
| 3rd term | \$ 18.78 plus 3% of straight or premium wage |
| 4th term | \$ 19.78 plus 3% of straight or premium wage |
| 5th term | \$ 21.28 plus 3% of straight or premium wage |
| 6th term | \$ 21.28 plus 3% of straight or premium wage |

11-363/1

**Electrician**

**08/01/2023**

**JOB DESCRIPTION** Electrician

**DISTRICT** 11

**ENTIRE COUNTIES**

Sullivan, Ulster

**PARTIAL COUNTIES**

Delaware: Only in the Townships of Andes, Harpersfield, Kortwright, Stamford, Bovina, Roxbury, Middletown and those portions of Colchester and Hancock south of the East Branch of the Delaware River.

Dutchess: All of the county except for the towns of Fishkill, East Fishkill, and Beacon.

Greene: That portion of the county south of a line following the south limits of the city of Catskill in a Westerly direction from the Hudson River to Highway 23A along 23A to the road following the Little Westkill and continuing along this road to Delaware County.

**WAGES**

---IMPORTANT NOTE: Applies to all electrical wiring of single or multiple family dwellings and apartments up to and including two (2) stories that do not exceed four (4) unit apartments.

Per hour:

| Electrician Wireman/ Technician<br>Electrical/Technician Projects<br>under \$ 250,000.00 | 07/01/2023 | 04/01/2024 |
|--|------------|------------|
|  | \$ 45.50   | \$ 46.50   |
|  | + 9.00*    | + 9.50*    |
| over \$ 250,000.00   | \$ 49.50   | \$ 50.50   |
|  | + 9.00*    | + 9.50*    |

SHIFT DIFFERENTIAL: On Public Work in New York State when shift work is mandated either in the job specifications or by the contracting agency, the following rates apply:

Shift worked between 4:30pm & 12:30am

| Electrical/Technician Projects<br>under \$ 250,000.00 |          |          |
|---|----------|----------|
|   | \$ 53.39 | \$ 54.56 |
|   | + 9.00*  | + 9.50*  |
| over \$ 250,000.00                                    | \$ 58.08 | \$ 59.30 |
|   | + 9.00*  | + 9.50*  |

Shift worked between 12:30am & 8:30am

| Electrical/Technician Projects<br>under \$ 250,000.00 |          |          |
|---|----------|----------|
|   | \$ 59.81 | \$ 61.12 |
|   | + 9.00*  | + 9.50*  |

|                    |                     |                     |
|--------------------|---------------------|---------------------|
| over \$ 250,000.00 | \$ 65.06<br>+ 9.00* | \$ 66.35<br>+ 9.50* |
|--------------------|---------------------|---------------------|

\*For all hours paid straight or premium, not to be included in 3% calculation for supplemental benefits.

NOTE ADDITIONAL AMOUNTS PAID FOR THE FOLLOWING WORK LISTED BELOW (subject to overtime premiums):

- On jobs where employees are required to work from boatswain chairs, swinging scaffolds, etc., forty (40) feet or more above the ground, or under compressed air, using Scottair packs, or gas masks, they shall receive an additional \$2.00 per hour above the regular straight time rate.
- Journeyman Wireman working in Shafts, Tunnels or on Barges: \$5.00 above the Journeyman Wireman rate of pay
- Journeyman Wireman when performing welding or cable splicing: \$3.00 above the Journeyman Wireman rate of pay
- Journeyman Wireman required to have a NYS Asbestos Certificate: \$3.00 above the Journeyman Wireman rate of pay
- Journeyman Wireman required to have a CDL: \$3.00 above the Journeyman Wireman rate of pay.

#### SUPPLEMENTAL BENEFITS

|            |  |  |
|------------|--|--|
| Per hour:  | 07/01/2023   | 04/01/2024   |
| Journeyman | \$ 28.68 plus<br>3% of straight<br>or premium wage | \$ 29.68 plus<br>3% of straight<br>or premium wage |

#### OVERTIME PAY

See (B, E, Q) on OVERTIME PAGE

#### HOLIDAY

Paid: See (1) on HOLIDAY PAGE  
Overtime: See (5, 6, 13, 15, 16, 25) on HOLIDAY PAGE

When the holiday falls on a Saturday it is observed the Friday before. When the holiday falls on a Sunday it is observed on the Monday after.

#### REGISTERED APPRENTICES

WAGES:

(1)year terms at the following rates

|            |                    |                    |                    |                    |                    |                    |
|------------|--------------------|--------------------|--------------------|--------------------|--------------------|--------------------|
| 07/01/2023 | 1st                | 2nd                | 3rd                | 4th                | 5th                | 6th                |
| 1st Shift  | \$ 14.25<br>+1.00* | \$ 19.00<br>+1.00* | \$ 23.75<br>+1.50* | \$ 28.50<br>+2.00* | \$ 33.25<br>+2.50* | \$ 35.63<br>+2.50* |
| 2nd Shift  | 16.72<br>+1.00*    | 22.29<br>+1.00*    | 27.86<br>+1.50*    | 33.43<br>+2.00*    | 39.00<br>+2.50*    | 41.79<br>+2.50*    |
| 3rd Shift  | 18.72<br>+1.00*    | 24.97<br>+1.00*    | 31.21<br>+1.50*    | 37.45<br>+2.00*    | 43.69<br>+2.50*    | 46.82<br>+2.50*    |
| 09/01/2023 | 1st                | 2nd                | 3rd                | 4th                | 5th                | 6th                |
| 1st Shift  | \$ 15.68<br>+1.00* | \$ 19.00<br>+1.00* | \$ 23.75<br>+1.50* | \$ 28.50<br>+2.00* | \$ 33.25<br>+2.50* | \$ 35.63<br>+2.50* |
| 2nd Shift  | 18.39<br>+1.00*    | 22.29<br>+1.00*    | 27.86<br>+1.50*    | 33.43<br>+2.00*    | 39.00<br>+2.50*    | 41.79<br>+2.50*    |
| 3rd Shift  | 20.60<br>+1.00*    | 24.97<br>+1.00*    | 31.21<br>+1.50*    | 47.45<br>+2.00*    | 43.69<br>+2.50*    | 46.82<br>+2.50*    |
| 04/01/2024 | 1st                | 2nd                | 3rd                | 4th                | 5th                | 6th                |
| 1st Shift  | \$ 16.01<br>+1.00* | \$ 19.40<br>+1.00* | \$ 24.25<br>+1.50* | \$ 29.10<br>+2.00* | \$ 33.95<br>+2.50* | \$ 36.38<br>+2.50* |
| 2nd Shift  | 18.78<br>+1.00*    | 22.76<br>+1.00*    | 28.45<br>+1.50*    | 34.13<br>+2.00*    | 39.82<br>+2.50*    | 42.67<br>+2.50*    |
| 3rd Shift  | 21.04<br>+1.00*    | 25.49<br>+1.00*    | 31.86<br>+1.50*    | 38.24<br>+2.00*    | 44.61<br>+2.50*    | 47.80<br>+2.50*    |
| 09/01/2024 | 1st                | 2nd                | 3rd                | 4th                | 5th                | 6th                |
| 1st Shift  | \$ 16.01<br>+1.00* | \$ 19.40<br>+1.00* | \$ 24.25<br>+1.00* | \$ 29.10<br>+2.00* | \$ 33.95<br>+2.50* | \$ 36.38<br>+2.50* |
| 2nd Shift  | 18.78<br>+1.00*    | 22.76<br>+1.00*    | 28.45<br>+1.00*    | 34.13<br>+2.00*    | 39.82<br>+2.50*    | 42.67<br>+2.50*    |
| 3rd Shift  | 21.04<br>+1.00*    | 25.49<br>+1.00*    | 31.86<br>+1.00*    | 38.24<br>+2.00*    | 44.61<br>+2.50*    | 47.80<br>+2.50*    |
| 04/01/2025 | 1st                | 2nd                | 3rd                | 4th                | 5th                | 6th                |
| 1st Shift  | \$ 16.34<br>+1.00* | \$ 19.80<br>+1.00* | \$ 24.75<br>+1.00* | \$ 29.70<br>+2.00* | \$ 34.65<br>+2.50* | \$ 37.13<br>+2.50* |
| 2nd Shift  | 19.17<br>+1.00*    | 23.23<br>+1.00*    | 29.03<br>+1.00*    | 34.84<br>+2.00*    | 40.64<br>+2.50*    | 43.55<br>+2.50*    |



|           |                 |                 |                 |                 |                 |                 |
|-----------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|
| 3rd Shift | 21.47<br>+1.00* | 26.02<br>+1.00* | 32.52<br>+1.00* | 39.03<br>+2.00* | 45.53<br>+2.50* | 48.79<br>+2.50* |
|-----------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|

\*For all hours paid straight or premium, not to be included in 3% calculation for supplemental benefits.

**SUPPLEMENTAL BENEFITS** per hour:

**07/01/2023**

|          |  |
|----------|--|
| 1st term | \$ 16.28 plus 3% of straight or premium wage |
| 2nd term | \$ 16.28 plus 3% of straight or premium wage |
| 3rd term | \$ 18.28 plus 3% of straight or premium wage |
| 4th term | \$ 18.78 plus 3% of straight or premium wage |
| 5th term | \$ 20.28 plus 3% of straight or premium wage |
| 6th term | \$ 20.28 plus 3% of straight or premium wage |

**09/01/2024**

|          |  |
|----------|--|
| 1st term | \$ 16.28 plus 3% of straight or premium wage |
| 2nd term | \$ 17.78 plus 3% of straight or premium wage |
| 3rd term | \$ 18.78 plus 3% of straight or premium wage |
| 4th term | \$ 19.78 plus 3% of straight or premium wage |
| 5th term | \$ 21.28 plus 3% of straight or premium wage |
| 6th term | \$ 21.28 plus 3% of straight or premium wage |

11-363/2

**Elevator Constructor**

**08/01/2023**

**JOB DESCRIPTION** Elevator Constructor

**DISTRICT 1**

**ENTIRE COUNTIES**

Columbia, Dutchess, Greene, Orange, Putnam, Sullivan, Ulster

**PARTIAL COUNTIES**

Delaware: Towns of Andes, Bovina, Colchester, Davenport, Delhi, Harpersfield, Hemdon, Kortright, Meredith, Middletown, Roxbury, Hancock & Stamford

Rockland: Only the Township of Stony Point.

Westchester: Only the Townships of Bedford, Lewisboro, Cortland, Mt. Kisco, North Salem, Pound Ridge, Somers and Yorktown.

**WAGES**

| Per Hour | 07/01/2023                   | 01/01/2024                   |
|----------|------------------------------|------------------------------|
| Mechanic | \$ 67.35                     | \$ 70.15                     |
| Helper   | 70% of Mechanic<br>Wage Rate | 70% of Mechanic<br>Wage Rate |

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 | 01/01/2024 |
|-------------------|------------|------------|
| Journeyman/Helper | \$ 37.335* | \$ 37.885* |

(\*)Plus 6% of regular hourly if less than 5 years of service. Plus 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 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:

|         |         |        |        |        |
|---------|---------|--------|--------|--------|
| 0-6 mo* | 6-12 mo | 2nd yr | 3rd yr | 4th yr |
| 50 %    | 55 %    | 65 %   | 70 %   | 80 %   |

(\*)Plus 6% of the hourly rate, no additional supplemental benefits.

Supplemental Benefits per hour worked:

Same as Journeyperson/Helper

1-138

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**Glazier****08/01/2023****JOB DESCRIPTION** Glazier**DISTRICT 8****ENTIRE COUNTIES**

Bronx, Dutchess, Kings, Nassau, New York, Orange, Putnam, Queens, Richmond, Rockland, Suffolk, Sullivan, Ulster, Westchester

**WAGES**

Per hour: 7/01/2023

Glazier & Glass Tinting \$ 61.64

\*Scaffolding 65.64

Window Film

\*\*Repair & Maintenance 30.76

\*Scaffolding includes swing scaffold, mechanical equipment, scissor jacks, man lifts, booms & buckets 30' or more, but not pipe scaffolding.

\*\*Repair & Maintenance- All repair & maintenance work on a particular building whenever performed, where the total cumulative Repair & Maintenance contract value is under \$184,000.

**SUPPLEMENTAL BENEFITS**

Per hour: 7/01/2023

Glazier & Glass Tinting \$ 40.20

Window Film

Repair & Maintenance 23.19

**OVERTIME PAY**

See (B, E, Q, V) on OVERTIME PAGE

For 'Repair & Maintenance' see (B, B2, I, S) on overtime page.

**HOLIDAY**

Paid: See (1) on HOLIDAY PAGE

Overtime: See (4, 6, 16, 25) on HOLIDAY PAGE

For 'Repair & Maintenance'

Paid: See(5, 6, 16, 25)

Overtime: See(5, 6, 16, 25)

**REGISTERED APPRENTICES**

Wage per hour:

(1) year terms at the following wage rates:

7/01/2023

1st term \$ 21.93

2nd term 30.05

3rd term 39.95

4th term 48.97

Supplemental Benefits:

(Per hour)

1st term \$ 18.25

2nd term 25.97

3rd term 31.27

4th term 34.32

8-1087 (DC9 NYC)

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**Insulator - Heat & Frost****08/01/2023****JOB DESCRIPTION** Insulator - Heat & Frost**DISTRICT 8**

## ENTIRE COUNTIES

Dutchess, Orange, Putnam, Rockland, Westchester

## WAGES

| Per hour:                          | 07/01/2023 | 06/01/2024 |
|------------------------------------|------------|------------|
| Insulator                          | \$ 59.25   | + \$ 2.50  |
| Discomfort & Additional Training** | 62.31      | + \$ 2.50  |
| Fire Stop Work*                    | 31.77      | + \$ 2.50  |

\* Applies on all exclusive Fire Stop Work (When contract is for Fire Stop work only). No apprentices on these contracts only.

\*\*Applies to work requiring: garb or equipment worn against the body not customarily worn by insulators; psychological evaluation ;special training, including but not limited to "Yellow Badge" radiation training

Note: Additional \$0.50 per hour for work 30 feet or more above floor or ground level.

## SUPPLEMENTAL BENEFITS

Per hour:

|                                  |          |
|----------------------------------|----------|
| Journeyworker                    | \$ 37.35 |
| Discomfort & Additional Training | 39.39    |
| Fire Stop Work:<br>Journeyworker | 19.03    |

## OVERTIME PAY

See (B, E, E2, Q, \*T) on OVERTIME PAGE

## HOLIDAY

Paid: See (1) on HOLIDAY PAGE

Note: Last working day preceding Christmas and New Years day, workers shall work no later than 12:00 noon and shall receive 8 hrs pay.

Overtime: See ( 2\*, 4, 6, 16, 25 ) on HOLIDAY PAGE.

\*Note: Labor Day triple time if worked.

## REGISTERED APPRENTICES

(1) year terms:

Insulator Apprentices:

| 1st      | 2nd      | 3rd      | 4th      |
|----------|----------|----------|----------|
| \$ 31.77 | \$ 37.26 | \$ 42.76 | \$ 48.26 |

Discomfort & Additional Training Apprentices:

| 1st      | 2nd      | 3rd      | 4th      |
|----------|----------|----------|----------|
| \$ 33.30 | \$ 39.09 | \$ 44.90 | \$ 50.71 |

Supplemental Benefits paid per hour:

Insulator Apprentices:

|          |          |
|----------|----------|
| 1st term | \$ 19.03 |
| 2nd term | 22.69    |
| 3rd term | 26.36    |
| 4th term | 30.03    |

Discomfort & Additional Training Apprentices:

|          |          |
|----------|----------|
| 1st term | \$ 20.06 |
| 2nd term | 23.92    |
| 3rd term | 27.78    |
| 4th term | 31.66    |

8-91

**Ironworker**

**08/01/2023**

**JOB DESCRIPTION** Ironworker

**DISTRICT** 11

## ENTIRE COUNTIES

Dutchess, Orange, Putnam, Rockland, Sullivan, Ulster

## WAGES

Per hour:

|                  | 07/01/2023 | 07/01/2024<br>Additional | 07/01/2025<br>Additional | 07/01/2026<br>Additional |
|------------------|------------|--------------------------|--------------------------|--------------------------|
| Structural       | \$ 52.63   | \$ 2.00*                 | \$ 2.00*                 | \$2.00*                  |
| Reinforcing*     | 52.63      | 2.00*                    | 2.00*                    | 2.00*                    |
| Ornamental       | 52.63      | 2.00*                    | 2.00*                    | 2.00*                    |
| Chain Link Fence | 52.63      | 2.00*                    | 2.00*                    | 2.00*                    |

\* To be allocated at a later date.

NOTE: For Reinforcing classification ONLY, Ironworker 4-46Reinf rates apply in Rockland County's southern section (south of Convent Road and east of Blue Hills Road).

On Government Mandated Irregular Work Days or Shift Work, the following wage will be paid:

|           |          |
|-----------|----------|
| 1st Shift | \$ 52.63 |
| 2nd Shift | 67.34    |
| 3rd Shift | 72.24    |

\*\*Note- Any shift that works past 12:00 midnight shall receive the 3rd shift differential.

## SUPPLEMENTAL BENEFITS

Per hour:

|            |          |
|------------|----------|
| Journeyman | \$ 43.47 |
|------------|----------|

## OVERTIME PAY

See (B1, Q, V) on OVERTIME PAGE

## HOLIDAY

Paid: See (1) on HOLIDAY PAGE

Overtime: See (5, 6, 16) on HOLIDAY PAGE

If a holiday falls on Saturday, it will be observed Friday. If a holiday falls on Sunday, it will be observed Monday.

## REGISTERED APPRENTICES

Wages:

(1) year terms at the following wage:

|           | 1st yr   | 2nd yr   | 3rd yr   | 4th yr   |
|-----------|----------|----------|----------|----------|
| 1st Shift | \$ 26.32 | \$ 31.58 | \$ 36.85 | \$ 42.10 |
| 2nd Shift | 36.16    | 42.40    | 48.64    | 54.86    |
| 3rd Shift | 39.45    | 46.00    | 52.57    | 59.12    |

Supplemental Benefits per hour:

|          |          |
|----------|----------|
| 1st year | \$ 37.35 |
| 2nd year | 38.57    |
| 3rd year | 39.80    |
| 4th year | 41.02    |

11-417

## Laborer - Building

08/01/2023

JOB DESCRIPTION Laborer - Building

DISTRICT 11

## ENTIRE COUNTIES

Dutchess

## PARTIAL COUNTIES

Columbia: Only the Townships of Greenport, Claverack, Philmont, Clermont, Germantown, Livingston, Hillsdale, Gallatin, Copake, Ancram, Taghkanic and the City of Hudson.

## WAGES

\*ALL WORK RELATED WITH TOXIC OR ANY ASBESTOS OR HAZARDOUS MATERIAL\*

WAGES: (per hour)

|         | 07/01/2023 | 06/01/2024 | 06/01/2025<br>Additional | 06/01/2026<br>Additional |
|---------|------------|------------|--------------------------|--------------------------|
| Class 4 | \$ 47.30   | \$ 49.00   | \$ 2.90*                 | \$ 3.00*                 |

\*To be allocated at a later date.

These rates will cover all work within five feet of the building foundation line.

Shift Differential: On all Governmental mandated irregular or off shift work, an additional 25% of wage is required. The 25% shift differential will be paid on public works contract for shifts or irregular workdays outside the normal working hours for 2nd and 3rd shifts or irregular work day or when mandated or required by state, federal, county, local or other governmental agency contracts.

#### SUPPLEMENTAL BENEFITS

|            |          |          |
|------------|----------|----------|
| Per hour:  |          |          |
| Journeyman | \$ 32.40 | \$ 33.50 |
| Shift      | 39.46    | \$ 40.84 |

#### OVERTIME PAY

See (B, \*E, E5, \*\*Q) on OVERTIME PAGE

\*For first 8 hours on Saturday

\*\*When an employee is required to work on a holiday which falls on a Sunday the employee shall be paid three (3) times the hourly rate and one (1) hour benefits for every hour worked. When an employee is required to work on a holiday which falls on a Saturday the employee shall be paid two and a half (2.5) times the hourly rate and one hour benefits for every hour worked.

#### HOLIDAY

Paid: See (1) on HOLIDAY PAGE  
Overtime: See (5, 6, 16, 25) on HOLIDAY PAGE

Holidays that fall on Saturday shall be observed on Friday, when holidays fall on Sunday they shall be observed on Monday.

#### REGISTERED APPRENTICES

(1000) hour terms at the following wages.

|          | 07/01/2023 | 06/01/2024 |
|----------|------------|------------|
| 1st term | \$ 27.05   | \$ 28.05   |
| 2nd term | 31.25      | 32.35      |
| 3rd term | 35.40      | 36.70      |
| 4th term | 39.55      | 41.00      |

|                                 |          |          |
|---------------------------------|----------|----------|
| Supplemental Benefits per hour: |          |          |
| All Terms Regular               | \$ 28.33 | \$ 29.23 |
| All Terms Shift Rate            | 34.27    | TBD      |

11-17tox B

|                           |                   |
|---------------------------|-------------------|
| <b>Laborer - Building</b> | <b>08/01/2023</b> |
|---------------------------|-------------------|

**JOB DESCRIPTION** Laborer - Building

**DISTRICT** 8

#### ENTIRE COUNTIES

Dutchess

#### PARTIAL COUNTIES

Columbia: Only the Townships of Ancram, Claverack, Clermont, Copake, Gallatin, Germantown, Greenport, Hillsdale, Hudson, Livingston, Philmont and Taconic.

#### WAGES

GROUP # 1:

All Laborers except those listed in Group 2

GROUP # 2:

Blaster, Laser Beam Oper., Asphalt Rakers, & Drilling Equipment Only Where a Separate Air Compressor Unit Supplies Power

WAGES per hour

|           | 07/01/2023 | 06/01/2024 |
|-----------|------------|------------|
| GROUP # 1 | \$ 39.00*  | + \$ 2.00  |
| GROUP # 2 | 41.35*     | + \$ 2.00  |

\*Subtract \$ 4.50 to calculate overtime premium

Note: Any job requiring Hazwopper Certification will pay \$1.00 above job classification wage rate.

#### SUPPLEMENTAL BENEFITS

Per hour:

Journeyman \$ 28.60

#### OVERTIME PAY

See (B, F, R) on OVERTIME PAGE

#### HOLIDAY

Paid: See (1) on HOLIDAY PAGE

Overtime: See (5, 6) on HOLIDAY PAGE

Note: Whenever a holidays falls on Sunday, it will be observed on the following Monday.

### REGISTERED APPRENTICES

Wages per hour: 07/01/2023

1000 Hour terms

|          |          |
|----------|----------|
| 1st term | \$ 28.08 |
| 2nd term | 31.90    |
| 3rd term | 35.72    |
| 4th term | 39.54    |

Note: Any job requiring Hazwopper Certification will pay \$1.00 above job classification wage rate.

Supplemental Benefits per hour:

All terms \$ 23.20

8-235

### Laborer - Heavy&Highway

08/01/2023

**JOB DESCRIPTION** Laborer - Heavy&Highway

**DISTRICT** 8

#### ENTIRE COUNTIES

Dutchess

#### PARTIAL COUNTIES

Columbia: Only the Townships of Ancram, Claverack, Clermont, Copake, Gallatin, Germantown, Greenport, Hillsdale, Hudson, Livingston, Philmont and Taconic.

#### WAGES

GROUP I: Blaster, Asphalt Screedman, ACI Certified Flatwork Finisher, Pipe Jacking and Boring Operations, Operator Qualified Dead Condition Pipe Fuser (B Mechanic)

GROUP II: Burner, Drill Operator, Jumbo Driller, Wagon Driller, Air Track Driller, Hydraulic Driller, Self Contained Rotary Drill Operator, Pneumatic Dowel Driller, Concrete Form Aligner, Concrete Form and Curb Form Highway, Concrete Finisher, Asphalt Raker, Pipe Fusion, Wrecking "Bar Person", Operator Qualified Peer Checker.

GROUP III: Asphalt Curb Machine Operator, Jeepers Operator, Pavement Breaker Operator, Power Saw Operator, Jack Hammer Drill, all types Pneumatic Tool and Gasoline Drill, Concrete Saw, Gunning, Railroad, Spike Puller, Sandblasting, Shoring, Pipe Layer, Deck Winches on Scows, Power Buggy and Operator, Power Wheelbarrow Operator, Laser Beam and X-Ray Operator, Pipe Religner, Underpinning, Chain Saw, Tree Cutter, Jack Leg Driller, Hydraulic Rock Splitter, certified, Certified Scaffold Erector, Remote Controlled Demolition Robot, Wrecking "Bar Person" Helper, Utility Per Diem Laborer, Compressed air-lance, Water jet lance

Group IV: General Concrete Laborers - anything pertaining to concrete, aggregate or concrete material handling, Puddlers, Asphalt Worker, Crack Router Operator, Rock Scalars, Vibrator Operator, Bit Grinder, Concrete Grinder, Remote Walk Behind Roller (Wacker, Rammax, etc), Air Tampers and All Tampers not covered by any other classification, Form Pin Pullers, Pumps and their operation, Service of Air Power, Epoxy and Waterproofing Worker, Fine Grade person between forms, Barco Rammer, Guard Rail Installation and Demolition Link Fence, Steel Kings, Wire Mesh, Setting of all Paving Blocks, Brick Paver and Rubber Pavers, Rip Rap and Dry Stone Layer Wall, Stone Work and Pointing, Cement Spray Men, Gabion Basket Assembler, Installation of Noise Barrier, Jersey Barrier and Joints, Pre-Cast Manholes, and Pre-cast and Pre-cast Catch Basins, Crib Retaining Walls

Group V: All Driller Helpers(including Hydraulic Wagon Air Track). Common Laborers, Certified Fire Watch Laborers, All AFL/CIO Trades, Signal Person Truck Spotters, Power Person, Landscaping and Nursery Person, Artificial Turf, Placing Fabric on Landfill, Sign Installer, Temporary and Interim Pavement Line Striping, String Line Automation Grades, Lock Level, Certified Traffic Safety and Control (Pattern)

Group V (A): Flagperson

Group VI: Confined Space Laborer

| WAGES per hour | 07/01/2023 | 05/01/2024 |
|----------------|------------|------------|
| Group I:       | \$ 48.05   | + \$ 2.25  |
| Group II:      | 46.70      | + \$ 2.25  |
| Group III:     | 46.30      | + \$ 2.25  |
| Group IV:      | 45.95      | + \$ 2.25  |
| Group V:       | 45.60      | + \$ 2.25  |
| Group V(A):    | 39.25      | + \$ 2.25  |
| Group VI:      | 47.60      | + \$ 2.25  |

Note: All employees working on a project that requires Hazwopper Certification will receive \$1.00 per hour over job classification rate of pay.

#### SUPPLEMENTAL BENEFITS

Per hour: 07/01/2023  
Journeyman \$ 28.05

#### OVERTIME PAY

See (B, E, E2, Q) on OVERTIME PAGE

#### HOLIDAY

Paid: See (5, 6) on HOLIDAY PAGE  
Overtime: See (5, 6) on HOLIDAY PAGE

Note: Whenever a holidays falls on Sunday, it will be observed on the following Monday.

#### REGISTERED APPRENTICES

Wages per hour

1000 hour year terms

|          |          |
|----------|----------|
| 1st Term | \$ 28.08 |
| 2nd Term | 31.90    |
| 3rd Term | 35.72    |
| 4th Term | 39.54    |

Note: All employees working on a project that requires Hazwopper Certification will receive \$1.00 per hour over job classification rate of pay.  
All employees who work an irregular work day that starts after 9:00 AM on a governmental mandated schedule shall be paid an additional 15% per hour.

Supplemental Benefits per hour:  
All Terms \$ 23.20

8-235h

#### Laborer - Heavy&Highway

08/01/2023

**JOB DESCRIPTION** Laborer - Heavy&Highway

**DISTRICT** 11

#### ENTIRE COUNTIES

Dutchess

#### PARTIAL COUNTIES

Columbia: Only the Townships of Claverack, Clermont, Greenport, Philmont, Germantown, Livingston, Hillsdale, Taghkanic, Gallatin, Copake, Ancram, City of Hudson.

#### WAGES

\*ALL WORK RELATED WITH TOXIC OR ANY ASBESTOS OR HAZARDOUS MATERIAL, BIO REMEDIATION AND PHYTO REMEDIATION\*(Five feet or more outside of building foundation line)

|                  |            |            |
|------------------|------------|------------|
| WAGES:(per hour) | 07/01/2023 | 06/01/2024 |
|                  |            | Additional |
| Class 3          | \$ 49.40   | \$ 2.45*   |

\* To be allocated at a later date.

SHIFT DIFFERENTIAL: Night work and irregular shift require 20% increase on wages for all Government mandated night and irregular shift work.

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 \$ 32.28  
Shift 37.96

#### OVERTIME PAY

See (B, E, P, \*R, \*\*S, \*\*\*T, X) on OVERTIME PAGE

\*For Mon-Fri Holidays, Double Benefits to be paid for all hours worked.

\*\*For Saturday Holidays, Two and one Half Benefits for all hours worked.

\*\*\*For Sunday Holidays, Triple Benefits for all hours worked.

## HOLIDAY

Paid: See (5, 6, 15, 25) on HOLIDAY PAGE  
Overtime: See (5, 6, 15, 25) on HOLIDAY PAGE

To be eligible for a paid holiday, an employee must work at least two (2) days in the calendar week or payroll week in which the holiday falls.

## REGISTERED APPRENTICES

(1000) hour terms at the following wages.

|          | 07/01/2023 | 06/01/2024 |
|----------|------------|------------|
| 1st term | \$ 27.05   | \$ 28.05   |
| 2nd term | 31.25      | 32.35      |
| 3rd term | 35.40      | 36.70      |
| 4th term | 39.55      | 41.00      |

Supplemental Benefits per hour:

|                      |          |          |
|----------------------|----------|----------|
| All Terms Regular    | \$ 28.33 | \$ 29.23 |
| All Terms Shift Rate | 33.08    | TBD      |

11-17tox HH

## Laborer - Tunnel

08/01/2023

**JOB DESCRIPTION** Laborer - Tunnel

**DISTRICT** 11

### ENTIRE COUNTIES

Columbia, Dutchess, Greene, Orange, Otsego, Putnam, Rockland, Sullivan, Ulster, Westchester

### PARTIAL COUNTIES

Chenango: Townships of Columbus, Sherburne and New Berlin.

Delaware: Townships of Andes, Bovina, Middletown, Roxbury, Franklin, Hamden, Stamford, Delhi, Kortright, Harpersfield, Merideth and Davenport.

## WAGES

Class 1: All support laborers/sandhogs working above the shaft or tunnel.

Class 2: All laborers/sandhogs working in the shaft or tunnel.

Class 4: Safety Miners

Class 5: Site work related to Shaft/Tunnel

WAGES: (per hour)

|         | 07/01/2023 | 06/01/2024 | 06/01/2025 |
|---------|------------|------------|------------|
| Class 1 | \$ 55.55   | \$ 57.05   | \$ 58.55   |
| Class 2 | 57.70      | 59.20      | 60.70      |
| Class 4 | 64.10      | 65.60      | 67.10      |
| Class 5 | 47.65      | 49.90      | 51.40      |

Toxic and hazardous waste, lead abatement and asbestos abatement work will be paid an additional \$ 3.00 an hour.

SHIFT DIFFERENTIAL...On all Government mandated irregular shift work:

- Employee shall be paid at time and one half the regular rate Monday through Friday.
- Saturday shall be paid at 1.65 times the regular rate.
- Sunday shall be paid at 2.15 times the regular rate.

## SUPPLEMENTAL BENEFITS

Per hour:

|           |          |          |          |
|-----------|----------|----------|----------|
| Benefit 1 | \$ 35.73 | \$ 36.98 | \$ 38.23 |
| Benefit 2 | 51.01    | TBD      | TBD      |
| Benefit 3 | 71.28    | TBD      | TBD      |

Benefit 1 applies to straight time hours, paid holidays not worked.

Benefit 2 applies to over 8 hours in a day (M-F), irregular shift work hours worked, and Saturday hours worked.

Benefit 3 applies to Sunday and Holiday hours worked.

## OVERTIME PAY

See (B, E, Q, X) on OVERTIME PAGE

## HOLIDAY

Paid: See (5, 6, 15, 25) on HOLIDAY PAGE  
Overtime: See (5, 6, 15, 16, 25) on HOLIDAY PAGE



When a recognized Holidays falls on Saturday or Sunday, holidays falling on Saturday shall be recognized or observed on Friday and holidays falling on Sunday shall be recognized or observed on Monday. Employees ordered to work on the Saturday or Sunday of the holiday or on the recognized or the observed Friday or Monday for those holidays falling on Saturday or Sunday shall receive double time the established rate and benefits for the holiday.

### REGISTERED APPRENTICES

FOR APPRENTICE RATES, refer to the appropriate Laborer Heavy & Highway wage rate contained in the wage schedule for the County and location where the work is to be performed.

11-17/60/235/754Tun

## Lineman Electrician

08/01/2023

### 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,<br>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,<br>or Equipment Operators<br>with Crane License | \$ 29.40<br>*plus 7% of<br>the hourly<br>wage paid | \$ 30.90<br>*plus 7% of<br>the hourly<br>wage paid |
| All other<br>Journeyman  | \$ 26.40<br>*plus 7% of<br>the hourly<br>wage paid | \$ 26.90<br>*plus 7% of<br>the hourly<br>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                               | \$ 26.90                               |
| *plus 7% of<br>the hourly<br>wage paid | *plus 7% of<br>the hourly<br>wage paid |

\*The 7% is based on the hourly wage paid, straight time or premium time.

6-1249a

### Lineman Electrician - Teledata

08/01/2023

**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                                | \$ 5.70                                | \$ 5.70                                |
|            | *plus 3% of<br>the hourly<br>wage paid | *plus 3% of<br>the hourly<br>wage paid | *plus 3% of<br>the hourly<br>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**

**08/01/2023**

**JOB DESCRIPTION** Lineman Electrician - Traffic Signal, Lighting

**DISTRICT 6**

**ENTIRE COUNTIES**

Columbia, Dutchess, Orange, Putnam, Rockland, Ulster

**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 #14.01.02)

| Per hour:               | 07/01/2023 | 05/06/2024 |
|-------------------------|------------|------------|
| Lineman, Technician     | \$ 50.60   | \$ 51.82   |
| Crane, Crawler Backhoe  | 50.60      | 51.82      |
| Certified Welder        | 53.13      | 54.41      |
| Digging Machine         | 45.54      | 46.64      |
| Tractor Trailer Driver  | 43.01      | 44.05      |
| Groundman, Truck Driver | 40.48      | 41.46      |
| Equipment Mechanic      | 40.48      | 41.46      |
| Flagman                 | 30.36      | 31.09      |

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,<br>or Equipment Operators<br>with Crane License | \$ 29.40<br>*plus 7% of<br>the hourly<br>wage paid | \$ 30.90<br>*plus 7% of<br>the hourly<br>wage paid |
| All other<br>Journeyman  | \$ 26.40<br>*plus 7% of<br>the hourly<br>wage paid | \$ 26.90<br>*plus 7% of<br>the hourly<br>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 and Governor of NYS Election Day.

Overtime: See ( 5, 6, 8, 13, 25 ) on HOLIDAY PAGE and 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                               | \$ 26.90                               |
| *plus 7% of<br>the hourly<br>wage paid | *plus 7% of<br>the hourly<br>wage paid |

\*The 7% is based on the hourly wage paid, straight time or premium time.

6-1249aReg8LT

### Lineman Electrician - Tree Trimmer

08/01/2023

**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                                 | \$ 10.48                                 |
|            | *plus 4.5% of<br>the hourly<br>wage paid | *plus 4.5% of<br>the hourly<br>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

08/01/2023

**JOB DESCRIPTION** Mason - Building

**DISTRICT** 9

## ENTIRE COUNTIES

Bronx, Dutchess, Kings, Nassau, New York, Orange, Putnam, Queens, Richmond, Rockland, Suffolk, Sullivan, Ulster, Westchester

## WAGES

Per Hour:

07/01/2023 7/03/2023

Marble Cutters & Setters \$ 62.82 \$ 63.12

## SUPPLEMENTAL BENEFITS

Per Hour:

Journeyworker \$ 39.03 \$ 39.34

## OVERTIME PAY

See (B, E, Q, V) on OVERTIME PAGE

## HOLIDAY

Paid: See (1) on HOLIDAY PAGE  
Overtime: See (5, 6, 8, 11, 15, 16, 25) on HOLIDAY PAGE

## REGISTERED APPRENTICES

Wage Per Hour:

07/01/2023

750 hour terms at the following wage

| 1st      | 2nd       | 3rd       | 4th       | 5th       | 6th       | 7th       | 8th      |
|----------|-----------|-----------|-----------|-----------|-----------|-----------|----------|
| 0-3000   | 3001-3750 | 3751-4500 | 4501-5250 | 5251-6000 | 6001-6750 | 6751-7500 | 7500+    |
| \$ 26.42 | \$ 39.62  | \$ 42.91  | \$ 46.22  | \$ 49.52  | \$ 53.38  | \$ 59.67  | \$ 62.82 |

Supplemental Benefits per hour:

07/01/2023

| 1st      | 2nd      | 3rd      | 4th      | 5th      | 6th      | 7th      | 8th      |
|----------|----------|----------|----------|----------|----------|----------|----------|
| \$ 25.38 | \$ 28.86 | \$ 29.74 | \$ 30.60 | \$ 31.48 | \$ 36.44 | \$ 38.17 | \$ 39.03 |

07/03/2023

Wage Per Hour:

750 hour terms at the following wage.

| 1st      | 2nd       | 3rd       | 4th       | 5th       | 6th       | 7th       | 8th      |
|----------|-----------|-----------|-----------|-----------|-----------|-----------|----------|
| 0-3000   | 3001-3750 | 3751-4500 | 4501-5250 | 5251-6000 | 6001-6750 | 6751-7500 | 7500+    |
| \$ 26.60 | \$ 39.82  | \$ 43.13  | \$ 46.45  | \$ 49.78  | \$ 53.64  | \$ 59.95  | \$ 63.12 |

Supplemental Benefits Per Hour:

| 1st      | 2nd      | 3rd      | 4th      | 5th      | 6th      | 7th      | 8th      |
|----------|----------|----------|----------|----------|----------|----------|----------|
| \$ 25.54 | \$ 29.09 | \$ 29.97 | \$ 30.84 | \$ 31.72 | \$ 36.73 | \$ 38.48 | \$ 39.34 |

9-7/4

## Mason - Building

08/01/2023

**JOB DESCRIPTION** Mason - Building

**DISTRICT** 11

## ENTIRE COUNTIES

Dutchess, Sullivan, Ulster

## PARTIAL COUNTIES

Orange: Entire county except the Township of Tuxedo.

## WAGES

Per hour:

07/01/2023

|                       |          |
|-----------------------|----------|
| Bricklayer            | \$ 45.00 |
| Cement Mason          | 45.00    |
| Plasterer/Stone Mason | 45.00    |
| Pointer/Caulker       | 45.00    |

Additional \$1.00 per hour for power saw work

Additional \$0.50 per hour for swing scaffold or staging work

SHIFT WORK: When shift work or an irregular workday is mandated or required by state, federal, county, local or other governmental agency contracts, the following premiums apply:

Irregular workday requires 15% premium

Second shift an additional 15% of wage plus benefits to be paid

Third shift an additional 25% of wage plus benefits to be paid

## SUPPLEMENTAL BENEFITS

Per hour:

|            |          |
|------------|----------|
| Journeyman | \$ 37.39 |
|------------|----------|

## OVERTIME PAY

Cement Mason See ( B, E, Q, W ) on OVERTIME PAGE.

All Others See ( B, E, Q ) on OVERTIME PAGE.

## HOLIDAY

Paid: See (1) on HOLIDAY PAGE

Overtime: See (5, 6, 16, 25) on HOLIDAY PAGE

Whenever any of the above holidays fall on Sunday, they will be observed on Monday. Whenever any of the above holidays fall on Saturday, they will be observed on Friday.

## REGISTERED APPRENTICES

Wages per hour:

750 hour terms at the following percentage of Journeyman's wage

|     |     |     |     |     |     |     |     |
|-----|-----|-----|-----|-----|-----|-----|-----|
| 1st | 2nd | 3rd | 4th | 5th | 6th | 7th | 8th |
| 50% | 55% | 60% | 65% | 70% | 75% | 80% | 85% |

Supplemental Benefits per hour

750 hour terms at the following percentage of journeyman supplements

|     |     |     |     |     |     |     |     |
|-----|-----|-----|-----|-----|-----|-----|-----|
| 1st | 2nd | 3rd | 4th | 5th | 6th | 7th | 8th |
| 50% | 55% | 60% | 65% | 70% | 75% | 80% | 85% |

Apprentices indentured before June 1st, 2011 receive full journeyman benefits

11-5du-b

## Mason - Building

08/01/2023

**JOB DESCRIPTION** Mason - Building

**DISTRICT** 9

## ENTIRE COUNTIES

Dutchess, Orange, Putnam, Sullivan, Ulster

## WAGES

Per hour:

07/01/2023

12/04/2023

06/03/2024

Building:

Additional

Additional

Tile, Marble,& Terrazzo

Mechanic/Setter \$ 57.29

\$ 0.64

\$ 0.64

## SUPPLEMENTAL BENEFITS

Per Hour:

Journeyworker: \$ 23.06\*

+ \$7.68

\* This portion of benefits subject to same premium rate as shown for overtime wages.

### OVERTIME PAY

See (B, E, Q) on OVERTIME PAGE

Double time rate applies after 10 hours

### HOLIDAY

Paid: See (1) on HOLIDAY PAGE

Overtime: See (5, 6, 11, 15, 16, 25) on HOLIDAY PAGE

### REGISTERED APPRENTICES

Wage per hour:

(Counties of Orange & Putnam)

750 hour terms at the following wage rate:

| 1st        | 2nd     | 3rd     | 4th     | 5th     | 6th     | 7th     | 8th     | 9th     | 10th    |
|------------|---------|---------|---------|---------|---------|---------|---------|---------|---------|
| 1-         | 751-    | 1501-   | 2251-   | 3001-   | 3751-   | 4501-   | 5251-   | 6001-   | 6751-   |
| 750        | 1500    | 2250    | 3000    | 3750    | 4500    | 5250    | 6000    | 6750    | 7500    |
| 07/01/2023 |         |         |         |         |         |         |         |         |         |
| \$21.70    | \$26.66 | \$33.75 | \$38.69 | \$42.25 | \$45.70 | \$49.29 | \$54.23 | \$57.09 | \$61.25 |

Supplemental Benefits per hour:

(Counties of Orange & Putnam)

| 1st        | 2nd      | 3rd      | 4th      | 5th      | 6th      | 7th      | 8th      | 9th      | 10th     |
|------------|----------|----------|----------|----------|----------|----------|----------|----------|----------|
| 07/01/2023 |          |          |          |          |          |          |          |          |          |
| \$12.55*   | \$12.55* | \$15.36* | \$15.36* | \$16.36* | \$17.86* | \$18.86* | \$18.86* | \$16.86* | \$22.11* |
| +\$0.73    | +\$0.78  | +\$0.88  | +\$0.88  | +\$1.37  | +\$1.42  | +\$1.83  | +\$1.88  | +\$6.03  | +\$6.61  |

Wages per hour:

(Counties of Dutchess, Sullivan, Ulster)

750 hour terms at the following wage rate:

| 1st        | 2nd     | 3rd     | 4th     | 5th     | 6th     | 7th     | 8th     | 9th     | 10th    |
|------------|---------|---------|---------|---------|---------|---------|---------|---------|---------|
| 1-         | 751-    | 1501-   | 2251-   | 3001-   | 3751-   | 4501-   | 5251-   | 6001-   | 6751-   |
| 750        | 1500    | 2250    | 3000    | 3750    | 4500    | 5250    | 6000    | 6750    | 7500    |
| 07/01/2023 |         |         |         |         |         |         |         |         |         |
| \$19.83    | \$23.92 | \$25.89 | \$29.98 | \$32.74 | \$36.32 | \$39.61 | \$42.71 | \$44.31 | \$47.73 |

Supplemental Benefits per hour:

(Counties of Dutchess, Sullivan, Ulster)

| 1st        | 2nd      | 3rd      | 4th      | 5th      | 6th      | 7th      | 8th      | 9th      | 10th     |
|------------|----------|----------|----------|----------|----------|----------|----------|----------|----------|
| 07/01/2023 |          |          |          |          |          |          |          |          |          |
| \$12.55*   | \$12.55* | \$14.66* | \$14.66* | \$15.60* | \$16.16* | \$16.66* | \$17.66* | \$15.66* | \$20.41* |
| +\$0.65    | +\$0.69  | +\$0.74  | +\$0.78  | +\$1.15  | +\$1.19  | +\$1.53  | +\$1.57  | +\$6.09  | +\$6.18  |

\* This portion of benefits subject to same premium rate as shown for overtime wages.

9-7/52B

### Mason - Building

08/01/2023

**JOB DESCRIPTION** Mason - Building

**DISTRICT** 9

### ENTIRE COUNTIES

Dutchess, Orange, Putnam, Sullivan, Ulster



## WAGES

| Per hour:                            | 07/01/2023 | 12/04/2023 | 06/03/2024 |
|--------------------------------------|------------|------------|------------|
| Building                             |            | Additional | Additional |
| Tile, Marble, &<br>Terrazzo Finisher | \$ 47.06   | \$ 0.55    | \$ 0.54    |

## SUPPLEMENTAL BENEFITS

Journeyworker:

|          |           |
|----------|-----------|
| Per Hour | \$ 20.16* |
|          | + \$7.55  |

\*This portion of benefits subject to same premium rate as shown for overtime wages

## OVERTIME PAY

See (A, \*E, Q) on OVERTIME PAGE

Double time rate applies after 10 hours on Saturdays.

## HOLIDAY

|           |  |
|-----------|--|
| Paid:     | See (1) on HOLIDAY PAGE                    |
| Overtime: | See (5, 6, 11, 15, 16, 25) on HOLIDAY PAGE |

9-7/88B-tf

## Mason - Heavy&Highway

08/01/2023

**JOB DESCRIPTION** Mason - Heavy&Highway

**DISTRICT** 11

## ENTIRE COUNTIES

Dutchess, Sullivan, Ulster

## PARTIAL COUNTIES

Orange: Entire county except the Township of Tuxedo.

## WAGES

|           |            |
|-----------|------------|
| Per hour: | 07/01/2023 |
|-----------|------------|

|                    |          |
|--------------------|----------|
| Bricklayer         | \$ 45.50 |
| Cement Mason       | 45.50    |
| Marble/Stone Mason | 45.50    |
| Plasterer          | 45.50    |
| Pointer/Caulker    | 45.50    |

Additional \$1.00 per hour for power saw work

Additional \$0.50 per hour for swing scaffold or staging work

SHIFT WORK: When shift work or an irregular workday is mandated or required by state, federal, county, local or other governmental contracts, the following rates apply:

Irregular workday requires 15% premium

Second shift an additional 15% of wage plus benefits to be paid

Third shift an additional 25% of wage plus benefits to be paid

## SUPPLEMENTAL BENEFITS

|            |          |
|------------|----------|
| Per hour:  |          |
| Journeyman | \$ 37.39 |

## OVERTIME PAY

|              |                    |
|--------------|--------------------|
| Cement Mason | See ( B, E, Q, W ) |
| All Others   | See ( B, E, Q )    |

## HOLIDAY

|           |                                    |
|-----------|------------------------------------|
| Paid:     | See (5, 6, 16, 25) on HOLIDAY PAGE |
| Overtime: | See (5, 6, 16, 25) on HOLIDAY PAGE |

- Whenever any of the above holidays fall on Sunday, they will be observed on Monday. Whenever any of the above holidays fall on Saturday, they will be observed on Friday.

- Supplemental Benefits are not paid for paid Holiday

- If Holiday is worked, Supplemental Benefits are paid for hours worked.

- Whenever an Employee works within three (3) calendar days before a holiday, the Employee shall be paid for the Holiday.

## REGISTERED APPRENTICES

Wages per hour:

750 hour terms at the following percentage of Journeyman's wage

|     |     |     |     |     |     |     |     |
|-----|-----|-----|-----|-----|-----|-----|-----|
| 1st | 2nd | 3rd | 4th | 5th | 6th | 7th | 8th |
| 50% | 55% | 60% | 65% | 70% | 75% | 80% | 85% |

Supplemental Benefits per hour

750 hour terms at the following percentage of journeyman supplements

|     |     |     |     |     |     |     |     |
|-----|-----|-----|-----|-----|-----|-----|-----|
| 1st | 2nd | 3rd | 4th | 5th | 6th | 7th | 8th |
| 50% | 55% | 60% | 65% | 70% | 75% | 80% | 85% |

Apprentices indentured before June 1st, 2011 receive full journeyman benefits

11-5du-H/H

## **Operating Engineer - Building**

**08/01/2023**

**JOB DESCRIPTION** Operating Engineer - Building

**DISTRICT 9**

### **ENTIRE COUNTIES**

Bronx, Kings, New York, Putnam, Queens, Richmond, Westchester

### **PARTIAL COUNTIES**

Dutchess: that part of Dutchess County lying south of the North City Line of the City of Poughkeepsie.

### **WAGES**

NOTE: Construction surveying

Party Chief--One who directs a survey party

Instrument Man--One who runs the instrument and assists Party Chief.

Rodman--One who holds the rod and assists the Survey Crew

Wages:(Per Hour) 07/01/2023

Building Construction:

|                |          |
|----------------|----------|
| Party Chief    | \$ 77.39 |
| Instrument Man | 61.25    |
| Rodman         | 41.39    |

Steel Erection:

|                |       |
|----------------|-------|
| Party Chief    | 80.16 |
| Instrument Man | 63.60 |
| Rodman         | 44.23 |

Heavy Construction-NYC counties only:  
(Foundation, Excavation.)

|                |       |
|----------------|-------|
| Party Chief    | 85.74 |
| Instrument man | 64.40 |
| Rodman         | 54.90 |

### **SUPPLEMENTAL BENEFITS**

Per Hour: 07/01/2023

Building Construction \$ 28.04\* +\$ 7.65

Steel Erection 28.64\* +\$ 7.65

Heavy Construction 28.85\* +\$ 7.64

\* This portion subject to same premium as wages

Non-Worked Holiday Supplemental Benefit:

21.19

### **OVERTIME PAY**

See (A, B, E, Q) on OVERTIME PAGE

Code "A" applies to Building Construction and has double the rate after 7 hours on Saturdays.

Code "B" applies to Heavy Construction and Steel Erection and had double the rate after 8 hours on Saturdays.

**HOLIDAY**

Paid: See (5, 6, 9, 11, 15, 16, 25) on HOLIDAY PAGE  
Overtime: See (5, 6, 9, 11, 15, 16, 25) on HOLIDAY PAGE

9-15Db

**Operating Engineer - Building**

**08/01/2023**

**JOB DESCRIPTION** Operating Engineer - Building

**DISTRICT 8**

**ENTIRE COUNTIES**

Putnam, Westchester

**PARTIAL COUNTIES**

Dutchess: All the counties of Westchester and Putnam and the southern part of Dutchess County defined by the northern boundary line of the City of Poughkeepsie, then due east to Route 115, then north along Route 115 to Bedell Road, then east along Bedell Road to Van Wagner Road, then north along Van Wagner Road to Bower Road, then east along Bower Road to Route 44 and along Route 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 the border line of the State of Connecticut and bordered on the west by the middle of the Hudson River.

**WAGES**

**GROUP I:**

Cranes (All Types up to 49 tons), Boom Trucks, Cherry Pickers (All Types), Clamshell Crane, Derrick (Stone and Steel), Dragline, Franki Pile Rig or similar, High Lift (Lull or similar) with crane attachment and winch used for hoisting or lifting, Hydraulic Cranes, Pile Drivers, Potain and similar.

Cranes (All types 50-99 tons), Drill Rig Casa Grande (CAT or similar), Franki Pile Rig or similar, Hydraulic Cranes (All types including Crawler Cranes- No specific boom length).

Cranes (All types 100 tons and over), All Tower Cranes, All Climbing Cranes irrespective of manufacturer and regardless of how the same is rigged, Franki Pile Rig or similar, Conventional Cranes (All types including Crawler Cranes-No specific boom length), Hydraulic Cranes.

GROUP I-A: Barber Green Loader-Euclid Loader, Bulldozer, Carrier-Trailer Horse, Concrete Cleaning Decontamination Machine Operator, Concrete-Portable Hoist, Conway or Similar Mucking Machines, Elevator & Cage, Excavators all types, Front End Loaders, Gradall, Shovel, Backhoe, etc.(Crawler or Truck), Heavy Equipment Robotics Operator/Mechanic, Hoist Engineer-Material, Hoist Portable Mobile Unit, Hoist(Single, Double or Triple Drum), Horizontal Directional Drill Locator, Horizontal Directional Drill Operator and Jersey Spreader, Letourneau or Tournapull(Scrapers over 20 yards Struck), Lift Slab Console, etc., Lull HiLift or Similar, Master Environmental Maintenance Mechanics, Mucking Machines Operator/Mechanic or Similar Type, Overhead Crane, Pavement Breaker(Air Ram), Paver(Concrete), Post Hole Digger, Power House Plant, Road Boring Machine, Road Mix Machine, Ross Carrier and Similar Machines, Rubber tire double end backhoes and similar machines, Scoopmobile Tractor-Shovel Over 1.5 yards, Shovel (Tunnels), Spreader (Asphalt) Telephie(Cableway), Tractor Type Demolition Equipment, Trenching Machines-Vermeer Concrete Saw Trencher and Similar, Ultra High Pressure Waterjet Cutting Tool System, Vacuum Blasting Machine operator/mechanic, Winch Truck A Frame.

GROUP I-B: Compressor (Steel Erection), Mechanic (Outside All Types), Negative Air Machine (Asbestos Removal), Push Button (Buzz Box) Elevator.

GROUP II: Compactor Self-Propelled, Concrete Pump, Crane Operator in Training (Over 100 Tons), Grader, Machines Pulling Sheep's Foot Roller, Roller (4 ton and over), Scrapers (20 yards Struck and Under), Vibratory Rollers, Welder.

GROUP III-A: Asphalt Plant, Concrete Mixing Plants, Forklift (All power sources), Joy Drill or similar, Tractor Drilling Machine, Loader (1 1/2 yards and under), Portable Asphalt Plant, Portable Batch Plant, Portable Crusher, Skid Steer (Bobcat or similar), Stone Crusher, Well Drilling Machine, Well Point System.

GROUP III-B: Compressor Over 125 cu. Feet, Conveyor Belt Machine regardless of size, Compressor Plant, Ladder Hoist, Stud Machine.

GROUP IV-A: Batch Plant, Concrete Breaker, Concrete Spreader, Curb Cutter Machine, Finishing Machine-Concrete, Fine Grading Machine, Hepa Vac Clean Air Machine, Material Hopper(sand, stone, cement), Mulching Grass Spreader, Pump Gypsum etc, Pump-Plaster-Grout-Fireproofing. Roller(Under 4 Ton),Spreading and Fine Grading Machine, Steel Cutting Machine, Siphon Pump, Tar Joint Machine, Television Cameras for Water, Sewer, Gas etc. Turbo Jet Burner or Similar Equipment, Vibrator (1 to 5).

GROUP IV-B: Compressor (all types), Heater (All Types), Fire Watchman, Lighting Unit (Portable & Generator) Pump, Pump Station(Water, Sewer, Portable, Temporary), Welding Machine (Steel Erection & Excavation).

GROUP V: Mechanics Helper, Motorized Roller (walk behind), Stock Attendant, Welder's Helper, Maintenance Engineer Crane(75 ton and over).

Group VI-A: Welder Certified

GROUP VI-B: Utility Man, Warehouse Man.

WAGES: (per hour)

|                            | 07/01/2023 | 03/04/2024 |
|----------------------------|------------|------------|
| GROUP I                    |            |            |
| Cranes- up to 49 tons      | \$ 66.23   | \$ 67.43   |
| Cranes- 50 tons to 99 tons | 68.53      | 69.77      |
| Cranes- 100 tons and over  | 78.21      | 79.64      |
| GROUP I-A                  | 58.01      | 59.04      |
| GROUP I-B                  | 53.48      | 54.41      |
| GROUP II                   | 55.98      | 56.97      |
| GROUP III-A                | 53.94      | 54.88      |
| GROUP III-B                | 51.35      | 52.25      |
| GROUP IV-A                 | 53.40      | 54.33      |
| GROUP IV-B                 | 45.17      | 45.94      |
| GROUP V                    | 48.69      | 49.53      |
| Group VI-A                 | 56.96      | 57.96      |
| GROUP VI-B                 |            |            |
| Utility Man                | 46.21      | 47.00      |
| Warehouse Man              | 48.52      | 49.26      |

An additional 20% to wage when required to wear protective equipment on hazardous/toxic waste projects.  
Engineers operating cranes with booms 100 feet but less than 149 feet in length will be paid an additional \$2.00 per hour.  
Engineers operating cranes with booms 149 feet or over in length will be paid an additional \$3.00 per hour.  
Loader operators over 5 cubic yard capacity additional .50 per hour.  
Shovel operators over 4 cubic yard capacity additional \$1.00 per hour.

#### SUPPLEMENTAL BENEFITS

Per hour:

|               |          |          |
|---------------|----------|----------|
| Journeyworker | \$ 31.57 | \$ 32.32 |
|---------------|----------|----------|

#### OVERTIME PAY

See (B, E, Q, V) on OVERTIME PAGE

#### HOLIDAY

Paid: See (5, 6, 8, 15, 25, 26) on HOLIDAY PAGE  
Overtime: See (5, 6, 8, 15, 25, 26) on HOLIDAY PAGE

8-137B

|                                      |                   |
|--------------------------------------|-------------------|
| <b>Operating Engineer - Building</b> | <b>08/01/2023</b> |
|--------------------------------------|-------------------|

**JOB DESCRIPTION** Operating Engineer - Building

**DISTRICT 1**

#### ENTIRE COUNTIES

Albany, Clinton, Columbia, Essex, Franklin, Fulton, Greene, Hamilton, Herkimer, Montgomery, Otsego, Rensselaer, Saratoga, Schenectady, Schoharie, 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

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, vacuum 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* | \$ 50.93   | \$ 53.11   |
| Class A   | 50.44      | 52.62      |
| Class B   | 49.42      | 51.60      |
| Class C   | 46.52      | 48.70      |

**(\*) 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 on 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 | \$ 31.30   | \$32.40    |

**OVERTIME PAY**

See (B, E, Q) on OVERTIME PAGE

**HOLIDAY**

Paid: See (1) on HOLIDAY PAGE

Overtime: See (5, 6) on HOLIDAY PAGE

NOTE: All hours worked on designated holidays shall be paid a double the hourly rate of pay plus 8 hours of straight time.

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 | \$ 26.60   | \$27.70    |

1-158 Alb

**JOB DESCRIPTION** Operating Engineer - Heavy&Highway

**DISTRICT** 8

**ENTIRE COUNTIES**

Putnam, Westchester

**PARTIAL COUNTIES**

Dutchess: All the counties of Westchester and Putnam and the southern part of Dutchess County defined by the northern boundary line of the City of Poughkeepsie, then due east to Route 115, then north along Route 115 to Bedell Road, then east along Bedell Road to Van Wagner Road, then north along Van Wagner Road to Bower Road, then east along Bower Road to Route 44 and along Route 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 the border line of the State of Connecticut and bordered on the west by the middle of the Hudson River.

**WAGES**

GROUP I: Boom Truck, Cherry Picker, Clamshell, Crane, (Crawler, Truck),  
Dragline, Drill Rig (Casa Grande, Cat, or Similar), Floating Crane (Crane on Barges) under 100 tons, Gin Pole, Hoist Engineer-Concrete (Crane-Derrick-Mine Hoist), Knuckle Boom Crane, Rough Terrain Crane.

GROUP I-A: Auger (Truck or Truck Mounted), Boat Captain, Bulldozer-All Sizes, Central Mix Plant Operator, Chipper (all types), Close Circuit T.V., Combination Loader/Backhoe, Compactor with Blade, Concrete Finishing Machine, Gradall, Grader (Motor Grader), Elevator & Cage (Materials or Passenger), Excavator (and all attachments), Front End Loaders (1 1/2 yards and over), High Lift Lull and similar, Hoist (Single, Double, Triple Drum), Hoist Portable Mobile Unit, Hoist Engineer (Material), Jack and Bore Machine, Log Skidders, Mill Machines, Mucking Machines, Overhead Crane, Paver (concrete), Post Pounder (of any type), Push Cats, Road Reclaimer, Robot Hammer (Brokk or similar), Robotic Equipment (Scope of Engineer Schedule), Ross Carrier and similar, Scrapers (20 yard struck and over), Side Boom, Slip Form Machine, Spreader (Asphalt), Trenching Machines (Telephies-Vermeer Concrete Saw), Tractor Type Demolition Equipment, Vacuum Truck. Vibratory Roller(Riding) or Roller used in mainline paving operations.

GROUP I-B: Asphalt Mobile Conveyor/Transfer Machine, Road Paver (Asphalt).

GROUP II-A: Ballast Regulators, Compactor Self Propelled, Fusion Machine, Rail Anchor Machines, Roller (4 ton and over), Scrapers (20 yard struck and under).

GROUP II-B: Mechanic (Outside) All Types, Shop Mechanic.

GROUP III: Air Tractor Drill, Asphalt Plant, Batch Plant, Boiler (High Pressure), Concrete Breaker (Track or Rubber Tire), Concrete Pump, Concrete Spreader, Excavator Drill, Farm Tractor, Forklift (all types), Gas Tapping (Live), Hydroseeder, Loader (1 1/2 yards and under), Locomotive (all sizes), Machine Pulling Sheeps Foot Roller, Portable Asphalt Plant, Portable Batch Plant, Portable Crusher (Apprentice), Powerhouse Plant, Roller (under 4 ton), Sheer Excavator, Skid Steer/Bobcat, Stone Crusher, Sweeper (with seat), Well Drilling Machine.

GROUP IV: Service Person (Grease Truck), Deckhand.

GROUP IV-B: Conveyor Belt Machine (Truck Mounted), Heater (all types), Lighting Unit (Portable), Maintenance Engineer (For Crane Only), Mechanics Helper, Pump (Fireproofing), Pumps-Pump Station/Water/Sewer/Gypsum/Plaster, etc., Pump Truck (Sewer Jet or Similar), Welders Helper, Welding Machine (Steel Erection), Well Point System.

GROUP V: All Tower Cranes-All Climbing Cranes and all cranes of 100-ton capacity or greater (3900 Manitowac or similar) irrespective of manufacturer and regardless of how the same is rigged, Hoist Engineer (Steel), Engineer-Pile Driver, Jersey Spreader, Pavement Breaker/Post Hole Digger.

| WAGES: Per hour:                       | 07/01/2023 | 03/04/2024 |
|--|------------|------------|
| Group I                                | \$ 67.27   | \$ 68.63   |
| Group I-A                              | 59.26      | 60.42      |
| Group I-B                              | 62.46      | 63.70      |
| Group II-A                             | 56.74      | 57.84      |
| Group II-B                             | 58.52      | 59.67      |
| Group III                              | 55.74      | 56.81      |
| Group IV                               | 50.63      | 51.57      |
| Group IV-B                             | 43.43      | 44.19      |
| Group V                                |            |            |
| Engineer All Tower, Climbing and       |            |            |
| Cranes of 100 Tons                     | 76.24      | 77.82      |
| Hoist Engineer(Steel)                  | 69.01      | 70.41      |
| Engineer(Pile Driver)                  | 73.61      | 75.13      |
| Jersey Spreader, Pavement Breaker (Air |            |            |
| Ram)Post Hole Digger                   | 58.06      | 59.19      |

**SHIFT DIFFERENTIAL:**

A 15% premium on all hours paid, including overtime hours for 2nd, 3rd shifts  
on all government mandated off-shift work

Engineers operating cranes with booms 100 feet but less than 149 feet in length will be paid an additional \$2.00 per hour over the rate listed in the Wage Schedule. Engineers operating cranes with booms 149 feet or over in length will be paid an additional \$3.00 per hour over the rate listed in the Wage Schedule. Loader and Excavator Operators: over 5 cubic yards capacity \$0.50 per hour over the rate listed in the Wage Schedule. Shovel Operators: over 4 cubic yards capacity \$1.00 per hour over the rate listed in the Wage Schedule.

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:

|                |  |  |
|----------------|--|--|
| Journeyworker: | \$ 33.75 up<br>to 40 Hours   | \$ 34.85 up<br>to 40 hours   |
|                | After 40 hours<br>\$ 24.50* PLUS<br>\$ 1.25 on all<br>hours worked | After 40 hours<br>\$ 25.55* PLUS<br>\$ 1.25 on all<br>hours worked |

\*This amount is subject to premium

### OVERTIME PAY

See (B, E, P, \*R, \*\*U) on OVERTIME PAGE

### HOLIDAY

Paid:..... See ( 5, 6, 8, 15, 25, 26 ) on HOLIDAY PAGE

Overtime..... See ( 5, 6, 8, 15, 25, 26 ) on OVERTIME PAGE

\* For Holiday codes 8,15,25,26 code R applies

\*\* For Holiday Codes 5 & 6 code U applies

Note: If employees are required to work on Easter Sunday they shall be paid at the rate of triple time.

### REGISTERED APPRENTICES

(1)year terms at the following rate.

|                                 |          |          |
|---------------------------------|----------|----------|
| 1st term                        | \$ 29.63 | \$ 30.21 |
| 2nd term                        | 35.56    | 36.25    |
| 3rd term                        | 41.48    | 42.30    |
| 4th term                        | 47.41    | 48.34    |
| Supplemental Benefits per hour: |          |          |
|                                 | 25.70    | 26.85    |

8-137HH

### Operating Engineer - Heavy&Highway

08/01/2023

**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, Gunit 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, Revinus 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 Insertter (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 |
|--|------------|------------|

|                |          |          |
|----------------|----------|----------|
| Journey person | \$ 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 Journey person'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 - Heavy&Highway

08/01/2023

**JOB DESCRIPTION** Operating Engineer - Heavy&Highway

**DISTRICT** 9

## ENTIRE COUNTIES

Putnam, Westchester

## PARTIAL COUNTIES

Dutchess: South of the North city line of Poughkeepsie

## WAGES

Party Chief - One who directs a survey party

Instrument Man - One who runs the instrument and assists Party Chief

Rodman - One who holds the rod and in general, assists the Survey Crew

Categories cover GPS & Underground Surveying

Per Hour: 07/01/2023

Party Chief \$ 81.72

Instrument Man 61.43

Rodman 52.40

## SUPPLEMENTAL BENEFITS

Per Hour: 07/01/2023

All Categories

Straight Time: \$ 25.25\* + \$7.64

Premium:

Time & 1/2 \$ 37.88\* + \$7.64

Double Time

\$ 50.50\* + \$7.64

Non-Worked Holiday Supplemental Benefits:  
\$ 21.19

**OVERTIME PAY**

See (B, \*E, Q) on OVERTIME PAGE

\* Doubletime paid on all hours in excess of 8 hours on Saturday

**HOLIDAY**

Paid: See (5, 6, 7, 11, 12) on HOLIDAY PAGE

Overtime: See (5, 6, 7, 11, 12) on HOLIDAY PAGE

9-15Dh

**Operating Engineer - Heavy&Highway - Tunnel**

**08/01/2023**

**JOB DESCRIPTION** Operating Engineer - Heavy&Highway - Tunnel

**DISTRICT 8**

**ENTIRE COUNTIES**

Putnam, Westchester

**PARTIAL COUNTIES**

Dutchess: All the counties of Westchester and Putnam and the southern part of Dutchess County defined by the northern boundary line of the City of Poughkeepsie, then due east to Route 115, then north along Route 115 to Bedell Road, then east along Bedell Road to Van Wagner Road, then north along Van Wagner Road to Bower Road, then east along Bower Road to Route 44 and along Route 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 the border line of the State of Connecticut and bordered on the west by the middle of the Hudson River.

**WAGES**

GROUP I: Boom Truck, Cherry Picker, Clamshell, Crane(Crawler, Truck), Dragline, Drill Rig Casa Grande(Cat or Similar), Floating Crane(Crane on Barge-Under 100 Tons), Hoist Engineer(Concrete/Crane-Derrick-Mine Hoist), Knuckle Boom Crane, Rough Terrain Crane.

GROUP I-A: Auger(Truck or Truck Mounted), Boat Captain, Bull Dozer-all sizes, Central Mix Plant Operator, Chipper-all types, Close Circuit T.V., Combination Loader/Backhoe, Compactor with Blade, Concrete Finishing Machine, Gradall, Grader(Motor Grader), Elevator & Cage(Materials or Passengers), Excavator(and all attachments), Front End Loaders(1 1/2 yards and over), High Lift Lull, Hoist(Single, Double, Triple Drum), Hoist Portable Mobile Unit, Hoist Engineer(Material), Jack and Bore Machine, Log Skidder, Milling Machine, Moveable Concrete Barrier Transfer & Transport Vehicle, Mucking Machines. Overhead Crane, Paver(Concrete), Post Pounder of any type, Push Cats, Road Reclaimer, Robot Hammer(Brokk or similar), Robotic Equipment(Scope of Engineer Schedule), Ross Carrier and similar machines, Scrapers(20 yards struck and over), Side Boom, Slip Form Machine, Spreader(Asphalt), Trenching Machines, Telephies-Vermeer Concrete Saw, Tractor type demolition equipment, Vacuum Truck, Vibratory Roller (Riding) used in mainline paving operations.

GROUP I-B: Asphalt Mobile Conveyor/Transfer Machine, Road Paver(Asphalt).

GROUP II-A: Ballast Regulators, Compactor(Self-propelled), Fusion Machine, Rail Anchor Machines, Roller(4 ton and over), Scrapers(20 yard struck and under).

GROUP II-B: Mechanic(outside)all types, Shop Mechanic.

GROUP III: Air Tractor Drill, Asphalt Plant, Batch Plant, Boiler(High Pressure), Concrete Breaker(Track or Rubber Tire), Concrete Pump, Concrete Spreader, Excavator Drill, Farm Tractor, Forklift(all types of power), Gas Tapping(Live), Hydroseeder, Loader(1 1/2 yards and under), Locomotive(all sizes), Machine Pulling Sheeps Foot Roller, Portable Asphalt Plant, Portable Batch Plant, Portable Crusher(Apprentice), Powerhouse Plant, Roller(under 4 ton), Sheer Excavator, Skidsteer/Bobcat, Stone Crusher, Sweeper(with seat), Well Drilling Machine.

GROUP IV-A: Service Person(Grease Truck), Deckhand.

GROUP IV-B: Conveyor Belt Machine(Truck Mounted), Heater(all types), Lighting Unit(Portable), Maintenance Engineer(for Crane only), Mechanics Helper, Pump(Fireproofing), Pumps-Pump Station/Water/Sewer/Gypsum/Plaster, etc., Pump Truck(Sewer Jet or similar), Welding Machine(Steel Erection), Welders Helper.

GROUP V-A: Engineer(all Tower Cranes, all Climbing Cranes & all Cranes of 100 ton capacity or greater),Hoist Engineer(Steel-Sub Structure), Engineer-Pile Driver, Jersey-Spreader, Pavement breaker, Post Hole Digger

WAGES: (per hour)

07/01/2023 03/04/2024

|            |          |          |
|------------|----------|----------|
| GROUP I    | \$ 67.27 | \$ 68.63 |
| GROUP I-A  | 59.26    | 60.42    |
| GROUP I-B  | 62.46    | 63.70    |
| GROUP II-A | 56.74    | 57.84    |
| GROUP II-B | 58.52    | 59.67    |
| GROUP III  | 55.74    | 56.81    |
| GROUP IV-A | 50.63    | 51.57    |

|                      |       |       |
|----------------------|-------|-------|
| GROUP IV-B           | 43.43 | 44.19 |
| GROUP V-A            |       |       |
| Engineer-Cranes      | 76.24 | 77.82 |
| Engineer-Pile Driver | 73.61 | 75.13 |
| Hoist Engineer       | 69.01 | 70.41 |
| Jersey Spreader/Post |       |       |
| Hole Digger          | 58.06 | 59.19 |

**SHIFT DIFFERENTIAL:**

A 15% premium on all hours paid, including overtime hours for 2nd, 3rd shifts  
on all government mandated off-shift work

An additional 20% to wage when required to wear protective equipment on hazardous/toxic waste projects. Operators required to use two buckets pouring concrete on other than road pavement shall receive \$0.50 per hour over scale. Engineers operating cranes with booms 100 feet but less than 149 feet in length will be paid an additional \$2.00 per hour. Engineers operating cranes with booms 149 feet or over in length will be paid an additional \$3.00 per hour. Operators of shovels with a capacity over (4) cubic yards shall be paid an additional \$1.00 per hour. Operators of loaders with a capacity over (5) cubic yards shall be paid an additional \$0.50 per hour.

**SUPPLEMENTAL BENEFITS**

Per hour:

Journeyworker:

|                               |                               |
|-------------------------------|-------------------------------|
| \$ 33.75 up to<br>40 hours    | \$ 34.85 up to<br>40 hours    |
| After 40 hours                | After 40 hours                |
| \$24.50 plus                  | \$25.55 plus                  |
| \$1.25 on all<br>hours worked | \$1.25 on all<br>hours worked |

**OVERTIME PAY**

See (D, O, \*U, V) on OVERTIME PAGE

**HOLIDAY**

Paid: See (5, 6, 8, 15, 25, 26) on HOLIDAY PAGE

Overtime: See (5, 6, 8, 15, 25, 26) on HOLIDAY PAGE

\* Note: For Holiday codes 5 & 6, code U applies. For Holiday codes 8, 15, 25, 26, code R applies.

Note: If employees are required to work on Easter Sunday, they shall be paid at the rate of triple time.

**REGISTERED APPRENTICES**

(1)year terms at the following rates:

|          |          |          |
|----------|----------|----------|
| 1st term | \$ 29.63 | \$ 30.21 |
| 2nd term | 35.56    | 36.25    |
| 3rd term | 41.48    | 42.30    |
| 4th term | 47.41    | 48.34    |

Supplemental Benefits per hour:

|           |          |          |
|-----------|----------|----------|
| All terms | \$ 25.70 | \$ 26.85 |
|-----------|----------|----------|

8-137Tun

**Operating Engineer - Marine Dredging**

**08/01/2023**

**JOB DESCRIPTION** Operating Engineer - Marine Dredging

**DISTRICT 4**

**ENTIRE COUNTIES**

Albany, Bronx, Cayuga, Clinton, Columbia, Dutchess, Essex, Franklin, Greene, Jefferson, Kings, Monroe, Nassau, New York, Orange, Oswego, Putnam, Queens, Rensselaer, Richmond, Rockland, St. Lawrence, Suffolk, Ulster, Washington, Wayne, Westchester

**WAGES**

These wages do not apply to Operating Engineers on land based construction projects. For those projects, please see the Operating Engineer Heavy/Highway Rates. The wage rates below for all equipment and operators are only for marine dredging work in navigable waters found in the counties listed above.

|                                       |            |            |
|---------------------------------------|------------|------------|
| Per Hour:                             | 07/01/2023 | 10/01/2023 |
| CLASS A1                              | \$ 43.94   | \$ 45.26   |
| Deck Captain, Leverman                |            |            |
| Mechanical Dredge Operator            |            |            |
| Licensed Tug Operator 1000HP or more. |            |            |
| CLASS A2                              | 39.16      | 40.33      |

Crane Operator (360 swing)

CLASS B To conform to Operating Engineer  
Dozer, Front Loader Prevailing Wage in locality where work  
Operator on Land is being performed including benefits.

|                                    |       |       |
|------------------------------------|-------|-------|
| CLASS B1                           | 38.00 | 39.14 |
| Derrick Operator (180 swing)       |       |       |
| Spider/Spill Barge Operator        |       |       |
| Operator II, Fill Placer,          |       |       |
| Engineer, Chief Mate, Electrician, |       |       |
| Chief Welder, Maintenance Engineer |       |       |
| Licensed Boat, Crew Boat Operator  |       |       |

|                  |       |       |
|------------------|-------|-------|
| CLASS B2         | 35.77 | 36.84 |
| Certified Welder |       |       |

|                       |       |       |
|-----------------------|-------|-------|
| CLASS C1              | 34.79 | 35.83 |
| Drag Barge Operator,  |       |       |
| Steward, Mate,        |       |       |
| Assistant Fill Placer |       |       |

|               |       |       |
|---------------|-------|-------|
| CLASS C2      | 33.67 | 34.68 |
| Boat Operator |       |       |

|                            |       |       |
|----------------------------|-------|-------|
| CLASS D                    | 27.97 | 28.81 |
| Shoreman, Deckhand, Oiler, |       |       |
| Rodman, Scowman, Cook,     |       |       |
| Messman, Porter/Janitor    |       |       |

**SUPPLEMENTAL BENEFITS**

Per Hour:

THE FOLLOWING SUPPLEMENTAL BENEFITS APPLY TO ALL CATEGORIES

|                   |   |   |
|-------------------|---|---|
| All Classes A & B | \$ 11.85 plus 6%<br>of straight time<br>wage, Overtime hours<br>add \$ 0.63 | \$ 12.00 plus 6%<br>of straight time<br>wage, Overtime hours<br>add \$ 0.63 |
|-------------------|---|---|

|             |   |   |
|-------------|---|---|
| All Class C | \$ 11.60 plus 6%<br>of straight time<br>wage, Overtime hours<br>add \$ 0.50 | \$ 11.75 plus 6%<br>of straight time<br>wage, Overtime hours<br>add \$ 0.50 |
|-------------|---|---|

|             |   |   |
|-------------|---|---|
| All Class D | \$ 11.35 plus 6%<br>of straight time<br>wage, Overtime hours<br>add \$ 0.38 | \$ 11.60 plus 6%<br>of straight time<br>wage, Overtime hours<br>add \$ 0.50 |
|-------------|---|---|

**OVERTIME PAY**

See (B2, F, R) on OVERTIME PAGE

**HOLIDAY**

Paid: See (1) on HOLIDAY PAGE  
Overtime: See (5, 6, 8, 15, 26) on HOLIDAY PAGE

4-25a-MarDredge

**Operating Engineer - Survey Crew**

**08/01/2023**

**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       | \$ 49.47 |
| Instrument Person | 45.49    |
| Rod Person        | 33.87    |

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

08/01/2023

**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 - Survey Crew - Consulting Engineer**

**08/01/2023**

**JOB DESCRIPTION** Operating Engineer - Survey Crew - Consulting Engineer

**DISTRICT** 9

#### **ENTIRE COUNTIES**

Bronx, Kings, Nassau, New York, Putnam, Queens, Richmond, Suffolk, Westchester

#### **PARTIAL COUNTIES**

Dutchess: That part in Dutchess County lying South of the North City line of Poughkeepsie.

#### **WAGES**

Feasibility and preliminary design surveying, any line and grade surveying for inspection or supervision of construction.

Per hour: 07/01/2023  
Survey Classifications

|                |          |
|----------------|----------|
| Party Chief    | \$ 47.15 |
| Instrument Man | 39.30    |
| Rodman         | 34.35    |

#### **SUPPLEMENTAL BENEFITS**

Per Hour:

|                   |          |
|-------------------|----------|
| All Crew Members: | \$ 23.15 |
|-------------------|----------|

#### **OVERTIME PAY**

OVERTIME:.... See ( B, E\*, Q, V ) ON OVERTIME PAGE.

\*Double-time paid on the 9th hour on Saturday.

#### **HOLIDAY**

|       |                                       |
|-------|---------------------------------------|
| Paid: | See (5, 6, 7, 11, 16) on HOLIDAY PAGE |
|-------|---------------------------------------|

Overtime: See (5, 6, 7, 11, 16) on HOLIDAY PAGE

9-15dconsult

**Operating Engineer - Tunnel**

**08/01/2023**

**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, Schoenectady, 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 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 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 Insertter (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   | \$ 58.43   |
| CLASS B   | 52.30      | 54.69      | 57.21      |
| CLASS C   | 49.51      | 51.90      | 54.42      |
| CLASS D   | 46.50      | 48.89      | 51.41      |

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 | \$ 59.51 | \$ 62.03 |
| Crane 2 | 56.52    | 58.91    | 61.43    |
| Crane 3 | 55.52    | 57.91    | 60.43    |

#### SUPPLEMENTAL BENEFITS

|           |          |          |          |
|-----------|----------|----------|----------|
| Per hour: | \$ 24.20 | \$ 25.05 | \$ 25.55 |
|           | + 9.60*  | + 9.60*  | + 9.60*  |

\* 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

08/01/2023

#### JOB DESCRIPTION Painter

DISTRICT 1

#### ENTIRE COUNTIES

Columbia, Dutchess, Greene, Orange, Sullivan, Ulster

#### WAGES

| Per hour            | 07/01/2023 | 07/01/2024<br>Additional |
|---------------------|------------|--------------------------|
| Brush/Paper Hanger  | \$ 37.97   | + \$1.93*                |
| Dry Wall Finisher   | 37.97      | + \$1.93*                |
| Lead Abatement      | 37.97      | + \$1.93*                |
| Sandblaster-Painter | 37.97      | + \$1.93*                |
| Spray Rate          | 38.97      | + \$1.93*                |

(\*) To be allocated at later date.

See Bridge Painting rates for the following work:

Structural Steel, all work performed on tanks, ALL BRIDGES, towers, smoke stacks, flag poles. Rate shall apply to all of said areas from the ground up.

#### SUPPLEMENTAL BENEFITS

|               |          |
|---------------|----------|
| Per hour      |          |
| Journeyperson | \$ 26.28 |

#### 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

Six (6) month terms at the following percentage of Journeyperson's wage

|     |     |     |     |     |     |
|-----|-----|-----|-----|-----|-----|
| 1st | 2nd | 3rd | 4th | 5th | 6th |
| 50% | 55% | 65% | 75% | 85% | 95% |



Supplemental Benefits per hour worked

|            |          |
|------------|----------|
| 1st term   | \$ 11.14 |
| All others | 26.28    |

1-155

**Painter - Bridge & Structural Steel**

**08/01/2023**

**JOB DESCRIPTION** Painter - Bridge & Structural Steel

**DISTRICT 8**

**ENTIRE COUNTIES**

Albany, Bronx, Clinton, Columbia, Dutchess, Essex, Franklin, Fulton, Greene, Hamilton, Kings, Montgomery, Nassau, New York, Orange, Putnam, Queens, Rensselaer, Richmond, Rockland, Saratoga, Schenectady, Schoharie, Suffolk, Sullivan, Ulster, Warren, Washington, Westchester

**WAGES**

Per Hour:

STEEL:

|                  |            |            |
|------------------|------------|------------|
| Bridge Painting: | 07/01/2023 | 10/01/2023 |
|                  | \$ 54.50   | + 3.10     |
|                  | + 10.10*   |            |

ADDITIONAL \$6.50 per hour for POWER TOOL/SPRAY, whether straight time or overtime.

NOTE: All premium wages are to be calculated on base rate per hour only.

\* For the period of May 1st to November 15th, this amount is payable up to 40 hours. For the period of Nov 16th to April 30th, this amount is payable up to 50 hours. EXCEPTION: First and last week of employment, and for the weeks of Memorial Day, Independence Day and Labor Day, where the amount is paid for the actual number of hours worked (no cap).

NOTE: Generally, 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.

**SHIFT WORK:**

When directly specified in public agency or authority contract documents for an employer to work a second shift and works the second shift with employees other than from the first shift, all employees who work the second shift will be paid 10% of the base wage shift differential in lieu of overtime for the first eight (8) hours worked after which the employees shall be paid at time and one half of the regular wage rate. When a single irregular work shift is mandated in the job specifications or by the contracting agency, wages shall be paid at time and one half for single shifts between the hours of 3pm-11pm or 11pm-7am.

**SUPPLEMENTAL BENEFITS**

Per Hour:

|                |          |
|----------------|----------|
| Journeyworker: | \$ 11.78 |
|                | + 30.85* |

\* For the period of May 1st to November 15th, this amount is payable up to 40 hours. For the period of Nov 16th to April 30th, this amount is payable up to 50 hours. EXCEPTION: First and last week of employment, and for the weeks of Memorial Day, Independence Day and Labor Day, where the amount is paid for the actual number of hours worked (no cap).

**OVERTIME PAY**

See (B, F, R) on OVERTIME PAGE

**HOLIDAY**

|           |                            |
|-----------|----------------------------|
| Paid:     | See (1) on HOLIDAY PAGE    |
| Overtime: | See (4, 6) on HOLIDAY PAGE |

**REGISTERED APPRENTICES**

Wage - Per hour:

Apprentices: (1) year terms

|          |          |
|----------|----------|
| 1st year | \$ 21.80 |
|          | + 4.04   |
| 2nd year | \$ 32.70 |
|          | + 6.06   |
| 3rd year | \$ 43.60 |
|          | + 8.08   |

Supplemental Benefits - Per hour:

|          |                    |
|----------|--------------------|
| 1st year | \$ .90<br>+ 12.34  |
| 2nd year | \$ 7.07<br>+ 18.51 |
| 3rd year | \$ 9.42<br>+ 24.68 |

NOTE: All premium wages are to be calculated on base rate per hour only.

8-DC-9/806/155-BrSS

|                                |                   |
|--------------------------------|-------------------|
| <b>Painter - Line Striping</b> | <b>08/01/2023</b> |
|--------------------------------|-------------------|

**JOB DESCRIPTION** Painter - Line Striping

**DISTRICT 8**

**ENTIRE COUNTIES**

Albany, Clinton, Columbia, Dutchess, Essex, Franklin, Fulton, Greene, Hamilton, Montgomery, Nassau, Orange, Putnam, Rensselaer, Rockland, Saratoga, Schenectady, Schoharie, Suffolk, Sullivan, Ulster, Warren, Washington, Westchester

**WAGES**

Per hour:

|                             |            |
|-----------------------------|------------|
| Painter (Striping-Highway): | 07/01/2023 |
| Striping-Machine Operator*  | \$ 31.53   |

|                        |       |
|------------------------|-------|
| Linerman Thermoplastic | 38.34 |
|------------------------|-------|

Note: \* Includes but is not limited to: Positioning of cones and directing of traffic using hand held devices. Excludes the Driver/Operator of equipment used in the maintenance and protection of traffic safety.

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 paid:

|                            |          |
|----------------------------|----------|
| Journeyworker:             |          |
| Striping Machine Operator: | \$ 10.03 |
| Linerman Thermoplastic:    | 10.03    |

**OVERTIME PAY**

See (B, B2, E2, F, S) on OVERTIME PAGE

**HOLIDAY**

|           |                             |
|-----------|-----------------------------|
| Paid:     | See (5, 20) on HOLIDAY PAGE |
| Overtime: | See (5, 20) on HOLIDAY PAGE |

**REGISTERED APPRENTICES**

One (1) year terms at the following wage rates:

|           |          |
|-----------|----------|
| 1st Term: | \$ 15.00 |
| 2nd Term: | 18.92    |
| 3rd Term: | 25.22    |

Supplemental Benefits per hour:

|           |         |
|-----------|---------|
| 1st term: | \$ 9.16 |
| 2nd Term: | 10.03   |
| 3rd Term: | 10.03   |

8-1456-LS

|                                 |                   |
|---------------------------------|-------------------|
| <b>Painter - Metal Polisher</b> | <b>08/01/2023</b> |
|---------------------------------|-------------------|

**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

08/01/2023

**JOB DESCRIPTION** Plumber

**DISTRICT** 8

## ENTIRE COUNTIES

Dutchess

## PARTIAL COUNTIES

Delaware: Only the Townships of Middletown and Roxbury.

Ulster: Entire county (including Wallkill and Shawangunk Prisons in Town of Shawangunk) EXCEPT for remainder of Town of Shawangunk, and Towns of Plattekill, Marlboro, and Wawarsing.

## WAGES

|                          |            |
|--------------------------|------------|
| Per hour:                | 07/01/2023 |
| Plumber &<br>Steamfitter | \$ 57.08   |

**SHIFT WORK:**

When directly specified in public agency or authority contract documents, shift work outside the regular hours of work shall be comprised of eight (8) hours per shift not including Saturday, Sundays and holidays. One half (1/2) hour shall be allowed for lunch after the first four (4) hours of each shift. Wage and Fringes for shift work shall be straight time plus a shift premium of twenty-five (25%) percent. A minimum of five days Monday through Friday must be worked to establish shift work.

**SUPPLEMENTAL BENEFITS**

Per hour:

Journeyworker: \$ 42.38

**OVERTIME PAY**

See (B, E, E2, Q, V) on OVERTIME PAGE

**HOLIDAY**

Paid: See (1) on HOLIDAY PAGE

Overtime: See (5, 6, 8, 16, 25) on HOLIDAY PAGE

**REGISTERED APPRENTICES**

(1)year terms at the following rates:

07/01/2023

|          |          |
|----------|----------|
| 1st year | \$ 21.80 |
| 2nd year | 30.11    |
| 3rd year | 34.93    |
| 4th year | 41.89    |
| 5th year | 48.24    |

Supplemental Benefits per hour:

|          |          |
|----------|----------|
| 1st year | \$ 17.95 |
| 2nd year | 22.96    |
| 3rd year | 26.66    |
| 4th year | 30.82    |
| 5th year | 33.99    |

8-21.2-SF

**Plumber - HVAC / Service**

**08/01/2023**

**JOB DESCRIPTION** Plumber - HVAC / Service

**DISTRICT** 8

**ENTIRE COUNTIES**

Dutchess, Putnam, Westchester

**PARTIAL COUNTIES**

Delaware: Only the townships of Middletown and Roxbury

Ulster: Entire County(including Wallkill and Shawangunk Prisons) except for remainder of Town of Shawangunk and Towns of Plattekill, Marlboro, and Wawarsing.

**WAGES**

Per hour: 07/01/2023

HVAC Service \$ 42.68  
+ \$ 4.37\*

\*Note: This portion of wage is not subject to overtime premium.

**SUPPLEMENTAL BENEFITS**

Per hour:

Journeyworker HVAC Service  
\$ 28.99

**OVERTIME PAY**

See (B, F, R) on OVERTIME PAGE

**HOLIDAY**

Paid: See (5, 6, 16, 25) on HOLIDAY PAGE

Overtime: See (5, 6, 16, 25) on HOLIDAY PAGE

**REGISTERED APPRENTICES**

HVAC SERVICE

(1)year terms at the following wages:

| 1st yr.  | 2nd yr.  | 3rd yr.  | 4th yr.  | 5th yr.  |
|----------|----------|----------|----------|----------|
| \$ 19.32 | \$ 22.91 | \$ 28.56 | \$ 35.13 | \$ 38.15 |
| +\$2.39* | +\$2.70* | +\$3.25* | +\$3.88* | +\$4.12* |

\*Note: This portion of wage is not subject to overtime premium.

Supplemental Benefits per hour:

|             |            |
|-------------|------------|
| Apprentices | 07/01/2023 |
| 1st term    | \$ 20.84   |
| 2nd term    | 22.28      |
| 3rd term    | 23.85      |
| 4th term    | 26.01      |
| 5th term    | 27.55      |

8-21.1&2-SF/Re/AC

|  |                   |
|--|-------------------|
| <b>Plumber - Jobbing &amp; Alterations</b> | <b>08/01/2023</b> |
|--|-------------------|

**JOB DESCRIPTION** Plumber - Jobbing & Alterations

**DISTRICT** 8

**ENTIRE COUNTIES**

Dutchess, Putnam, Westchester

**PARTIAL COUNTIES**

Ulster: Entire county (including Wallkill and Shawangunk Prisons in Town of Shawangunk) EXCEPT for remainder of Town of Shawangunk, and Towns of Plattekill, Marlboro, and Wawarsing.

**WAGES**

|                |            |
|----------------|------------|
| Per hour:      | 07/01/2023 |
| Journeyworker: | \$ 48.51   |

Repairs, replacements and alteration work is any repair or replacement of a present plumbing system that does not change existing roughing or water supply lines.

**SHIFT WORK:**

When directly specified in public agency or authority contract documents, shift work outside the regular hours of work shall be comprised of eight (8) hours per shift not including Saturday, Sundays and holidays. One half (1/2) hour shall be allowed for lunch after the first four (4) hours of each shift. Wage and Fringes for shift work shall be straight time plus a shift premium of twenty-five (25%) percent. A minimum of five days Monday through Friday must be worked to establish shift work.

**SUPPLEMENTAL BENEFITS**

Per hour:

|               |          |
|---------------|----------|
| Journeyworker | \$ 34.76 |
|---------------|----------|

**OVERTIME PAY**

See (B, \*E, E2, Q, V) on OVERTIME PAGE

\*When used as a make-up day, hours after 8 on Saturday shall be paid at time and one half.

**HOLIDAY**

|           |                                       |
|-----------|---------------------------------------|
| Paid:     | See (1) on HOLIDAY PAGE               |
| Overtime: | See (5, 6, 8, 16, 25) on HOLIDAY PAGE |

**REGISTERED APPRENTICES**

(1) year terms at the following wages:

|          |          |
|----------|----------|
| 1st year | \$ 20.92 |
| 2nd year | 23.24    |
| 3rd year | 25.29    |
| 4th year | 35.48    |
| 5th year | 37.49    |

Supplemental Benefits per hour:

|          |          |
|----------|----------|
| 1st year | \$ 11.45 |
| 2nd year | 13.46    |
| 3rd year | 17.51    |
| 4th year | 23.67    |
| 5th year | 25.68    |

8-21.3-J&A

|               |                   |
|---------------|-------------------|
| <b>Roofer</b> | <b>08/01/2023</b> |
|---------------|-------------------|

**JOB DESCRIPTION** Roofer

**DISTRICT** 9

**ENTIRE COUNTIES**

Bronx, Dutchess, Kings, New York, Orange, Putnam, Queens, Richmond, Rockland, Sullivan, Ulster, Westchester

**WAGES**

|                     |            |            |
|---------------------|------------|------------|
| Per Hour:           | 07/01/2023 | 05/01/2024 |
|                     |            | Additional |
| Roofer/Waterproofer | \$ 46.50   | \$2.50     |
|                     | + \$7.00*  |            |

\* This portion is not subjected to overtime premiums.

Note: Abatement/Removal of Asbestos containing roofs and roofing material is classified as Roofer.

**SUPPLEMENTAL BENEFITS**

Per Hour: \$ 31.37

**OVERTIME PAY**

See (B, H) on OVERTIME PAGE

Note: An observed holiday that falls on a Sunday will be observed the following Monday.

**HOLIDAY**

Paid: See (1) on HOLIDAY PAGE  
Overtime: See (5, 6) on HOLIDAY PAGE

**REGISTERED APPRENTICES**

( 1 ) year term apprentices indentured prior to 01/01/2023

|              |          |          |          |          |
|--------------|----------|----------|----------|----------|
|              | 1st      | 2nd      | 3rd      | 4th      |
|              | \$ 16.28 | \$ 23.25 | \$ 27.90 | \$ 34.88 |
|              |          | + 3.50*  | + 4.20*  | + 5.26*  |
| Supplements: |          |          |          |          |
|              | 1st      | 2nd      | 3rd      | 4th      |
|              | \$ 4.03  | \$ 15.85 | \$ 18.95 | \$ 23.61 |

\* This portion is not subjected to overtime premiums.

(1) year term apprentices indentured after 01/01/2023

|              |          |          |          |          |          |
|--------------|----------|----------|----------|----------|----------|
|              | 1st      | 2nd      | 3rd      | 4th      | 5th      |
|              | \$ 17.67 | \$ 20.93 | \$ 23.25 | \$ 27.90 | \$ 34.88 |
|              |          | + 3.16*  | + 3.50*  | + 4.20*  | + 5.26   |
| Supplements: |          |          |          |          |          |
|              | 1st      | 2nd      | 3rd      | 4th      | 5th      |
|              | \$ 7.61  | \$ 14.29 | \$ 15.85 | \$ 18.95 | \$ 23.61 |

\* This portion is not subjected to overtime premiums.

9-8R

|                          |                   |
|--------------------------|-------------------|
| <b>Sheetmetal Worker</b> | <b>08/01/2023</b> |
|--------------------------|-------------------|

**JOB DESCRIPTION** Sheetmetal Worker

**DISTRICT** 8

**ENTIRE COUNTIES**

Dutchess, Orange, Putnam, Rockland, Sullivan, Ulster, Westchester

**WAGES**

|                   |            |
|-------------------|------------|
|                   | 07/01/2023 |
| SheetMetal Worker | \$ 47.00   |
|                   | + 3.60*    |

\*This portion is not subject to overtime premiums.

**SHIFT WORK**

For all NYS D.O.T. and other Governmental mandated off-shift work:  
10% increase for additional shifts for a minimum of five (5) days

**SUPPLEMENTAL BENEFITS**

Journeyworker \$ 45.62

**OVERTIME PAY**

OVERTIME:.. See ( B, E, Q, ) on OVERTIME PAGE.

**HOLIDAY**

Paid: See (1) on HOLIDAY PAGE  
Overtime: See (5, 6, 8, 15, 16, 23) on HOLIDAY PAGE

### REGISTERED APPRENTICES

| 1st      | 2nd      | 3rd      | 4th      | 5th      | 6th      | 7th      | 8th      |
|----------|----------|----------|----------|----------|----------|----------|----------|
| \$ 17.50 | \$ 19.67 | \$ 21.87 | \$ 24.05 | \$ 26.24 | \$ 28.44 | \$ 31.10 | \$ 33.75 |
| + 1.44*  | + 1.62*  | + 1.80*  | + 1.98*  | + 2.16*  | + 2.34*  | + 2.52*  | + 2.70*  |

\*This portion is not subject to overtime premiums.

Supplemental Benefits per hour:

#### Apprentices

|          |          |
|----------|----------|
| 1st term | \$ 19.53 |
| 2nd term | 21.99    |
| 3rd term | 24.42    |
| 4th term | 26.88    |
| 5th term | 29.32    |
| 6th term | 31.75    |
| 7th term | 33.72    |
| 8th term | 35.71    |

8-38

### Sprinkler Fitter

08/01/2023

**JOB DESCRIPTION** Sprinkler Fitter

**DISTRICT** 1

#### ENTIRE COUNTIES

Dutchess, Orange, Putnam, Rockland, Sullivan, Ulster, Westchester

#### WAGES

Per hour 07/01/2023

Sprinkler \$ 50.86  
Fitter

#### SUPPLEMENTAL BENEFITS

Per hour

Journeyman \$ 30.19

#### 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     |
|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|
| \$ 24.77 | \$ 27.53 | \$ 30.03 | \$ 32.78 | \$ 35.53 | \$ 38.29 | \$ 41.04 | \$ 43.79 | \$ 46.54 | \$ 49.30 |

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 |
|         |         |          |          |          |          |          |          |          | 1-669.2  |

### Teamster - Building / Heavy&Highway

08/01/2023

**JOB DESCRIPTION** Teamster - Building / Heavy&Highway

**DISTRICT** 11

#### ENTIRE COUNTIES

Dutchess, Orange, Rockland, Sullivan, Ulster

#### WAGES

GROUP 1: LeTourneau Tractors, Double Barrel Euclids, Athney Wagons and similar equipment (except when hooked to scrapers), I-Beam and Pole Trailers, Tire Trucks, Tractor and Trailers with 5 axles and over, Articulated Back Dumps and Road Oil Distributors, Articulated Water Trucks and Fuel Trucks/Trailers, positions requiring a HAZMAT CDL endorsement.

GROUP 1A: Drivers on detachable Gooseneck Low Bed Trailers rated over 35 tons.

GROUP 2: All equipment 25 yards and up to and including 30 yard bodies and cable Dump Trailers and Powder and Dynamite Trucks.

GROUP 3: All Equipment up to and including 24-yard bodies, Mixer Trucks, Dump Crete Trucks and similar types of equipment, Fuel Trucks, Batch Trucks and all other Tractor Trailers, Hi-Rail Truck.

GROUP 4: Tri-Axles, Ten Wheelers, Grease Trucks, Tillerman, Pattern Trucks, Attenuator Trucks, Water Trucks, Bus.

GROUP 5: Straight Trucks.

GROUP 6: Pick-up Trucks for hauling materials and parts, and Escort Man over-the-road.

WAGES: (per hour) 07/01/2023

|          |          |
|----------|----------|
| GROUP 1  | \$ 34.58 |
| GROUP 1A | 35.72    |
| GROUP 2  | 34.02    |
| GROUP 3  | 33.80    |
| GROUP 4  | 33.69    |
| GROUP 5  | 33.57    |
| GROUP 6  | 33.57    |

**NOTE ADDITIONAL PREMIUMS:**

- On projects requiring an irregular shift a premium of 10% will be paid on wages. The premium will be paid for off-shift or irregular shift work when mandated by Governmental Agency.
- Employees engaged in hazardous/toxic waste removal, on a State or Federally designated hazardous/toxic waste site, where the employee comes in contact with hazardous/toxic waste material and when personal protective equipment is required for respiratory, skin, or eye protection, the employee shall receive an additional 20% premium above the hourly wage.

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:      |          |
| First 40 hours | \$ 44.59 |
| Over 40 hours  | 36.99    |

**OVERTIME PAY**

See (\*B, E, \*\*E2, \*\*\*P, X) on OVERTIME PAGE

\*Holidays worked Monday through Friday receive Double Time (2x) after 8 hours.

\*\*Makeup day limited to the employees who were working on the site that week.

\*\*\*Sunday Holidays are paid at a rate of double time and one half (2.5x) for all hours worked.

**HOLIDAY**

|           |                                    |
|-----------|------------------------------------|
| Paid:     | See (5, 6, 15, 25) on HOLIDAY PAGE |
| Overtime: | See (*1) on HOLIDAY PAGE           |

- Any employee working two (2) days in any calendar week during which a holiday occurs shall receive a days pay for each holiday occurring during said week. This provision shall also apply if a holiday falls on a Saturday or Sunday.

\*See OVERTIME PAY section for when additional premium is applicable on Holiday hours worked.

11-445B/HH

**Teamster - Delivery - Building / Heavy&Highway**

**08/01/2023**

**JOB DESCRIPTION** Teamster - Delivery - Building / Heavy&Highway

**DISTRICT** 11

**ENTIRE COUNTIES**

Dutchess, Orange, Rockland, Sullivan, Ulster

**WAGES**

|         |                         |
|---------|-------------------------|
| Group 1 | Tractor Trailer Drivers |
| Group 2 | Tri- Axle               |



Wages: 07/01/2023

Group 1 \$ 33.70  
Group 2 29.70

Hazardous/Toxic Waste Removal additional 20% when personal protective equipment is required.

#### SUPPLEMENTAL BENEFITS

Per hour paid:  
First 40 hours \$ 32.30  
Over 40 hours 0.00

#### OVERTIME PAY

See (B, E, Q, X) on OVERTIME PAGE

#### HOLIDAY

Paid: See (5, 13, 15, 16, 20, 22, 25, 26) on HOLIDAY PAGE  
Overtime: See (5, 13, 15, 16, 20, 22, 25, 26) on HOLIDAY PAGE

- Employee must work either the scheduled day of work before or the scheduled day of work after the holiday in the workweek.
- Any employee working one (1) day in the calendar week during which a holiday occurs shall receive a day's pay for each holiday occurring during said week. This provision shall also apply if a holiday falls on a Saturday.
- When any of the recognized holidays occur on Sunday and are celebrated any day before or after the holiday Sunday, such days shall be considered as the holiday and paid for as such.

11-445 B/HH Delivery

#### Welder

08/01/2023

#### 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

☐ 10 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**



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://applications.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    08/01/2023**

**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<br>UNIT PH 13NORWALK CT<br>06850                | 05/12/2021           | 05/12/2026         |
| DOL    | DOL            | *****4018 | ADIRONDACK BUILDING<br>RESTORATION INC.       |                   | 4156 WILSON ROAD EAST<br>TABERG NY 13471                     | 03/26/2019           | 03/26/2024         |
| DOL    | AG             | *****1812 | ADVANCED BUILDERS & LAND<br>DEVELOPMENT, INC. |                   | 400 OSER AVE<br>#2300HAUPPAUGE NY 11788                      | 09/11/2019           | 09/11/2024         |
| DOL    | DOL            | *****1687 | ADVANCED SAFETY<br>SPRINKLER INC              |                   | 261 MILL ROAD<br>P.O BOX 296EAST AURORA<br>NY 14052          | 05/29/2019           | 05/29/2024         |
| DOL    | NYC            |           | ALL COUNTY SEWER & DRAIN,<br>INC.             |                   | 7 GREENFIELD DR<br>WARWICK NY 10990                          | 03/25/2022           | 03/25/2027         |
| DOL    | NYC            |           | AMJED PARVEZ                                  |                   | 401 HANOVER AVENUE<br>STATEN ISLAND NY 10304                 | 01/11/2021           | 01/11/2026         |
| DOL    | DOL            |           | ANGELO F COKER                                |                   | 2610 SOUTH SALINA STREET<br>SUITE 14SYRACUSE NY 13205        | 09/17/2020           | 09/17/2025         |
| DOL    | DOL            |           | ANGELO F COKER                                |                   | 2610 SOUTH SALINA STREET<br>SUITE 14SYRACUSE NY 13205        | 12/04/2018           | 12/04/2023         |
| DOL    | DOL            |           | ANGELO GARCIA                                 |                   | 515 WEST AVE<br>UNIT PH 13NORWALK CT<br>06850                | 05/12/2021           | 05/12/2026         |
| DOL    | DOL            |           | ANGELO TONDO                                  |                   | 449 WEST MOMBSHA ROAD<br>MONROE NY 10950                     | 06/06/2022           | 06/06/2027         |
| DOL    | DOL            |           | ANITA SALERNO                                 |                   | 158 SOLAR ST<br>SYRACUSE NY 13204                            | 01/07/2019           | 01/07/2024         |
| DOL    | DOL            | *****4231 | ANKER'S ELECTRIC SERVICE,<br>INC.             |                   | 10 SOUTH 5TH ST<br>LOCUST VALLEY NY 11560                    | 09/26/2022           | 09/26/2027         |
| DOL    | NYC            |           | ARADCO CONSTRUCTION<br>CORP                   |                   | 115-46 132RD ST<br>SOUTH OZONE PARK NY<br>11420              | 09/17/2020           | 09/17/2025         |
| DOL    | DOL            |           | ARNOLD A. PAOLINI                             |                   | 1250 BROADWAY ST<br>BUFFALO NY 14212                         | 02/03/2020           | 02/03/2025         |
| DOL    | NYC            |           | ARSHAD MEHMOOD                                |                   | 168-42 88TH AVENUE<br>JAMAICA NY 11432                       | 11/20/2019           | 11/20/2024         |
| DOL    | NYC            | *****2591 | AVI 212 INC.                                  |                   | 260 CROPSEY AVENUE<br>APT 11GBROOKLYN NY 11214               | 10/30/2018           | 10/30/2023         |
| DOL    | NYC            |           | AVM CONSTRUCTION CORP                         |                   | 117-72 123RD ST<br>SOUTH OZONE PARK NY<br>11420              | 09/17/2020           | 09/17/2025         |
| DOL    | NYC            |           | AZIDABEGUM                                    |                   | 524 MCDONALD AVENUE<br>BROOKLYN NY 11218                     | 09/17/2020           | 09/17/2025         |
| DOL    | DOL            | *****8421 | B & B DRYWALL, INC                            |                   | 206 WARREN AVE<br>APT 1WHITE PLAINS NY 10603                 | 12/14/2021           | 12/14/2026         |
| DOL    | NYC            |           | BALWINDER SINGH                               |                   | 421 HUDSON ST<br>SUITE C5NEW YORK NY 10014                   | 02/20/2019           | 02/20/2024         |
| DOL    | NYC            | *****8416 | BEAM CONSTRUCTION, INC.                       |                   | 50 MAIN ST<br>WHITE PLAINS NY 10606                          | 01/04/2019           | 01/04/2024         |
| DOL    | DOL            |           | BERNARD BEGLEY                                |                   | 38 LONG RIDGE ROAD<br>BEDFORD NY 10506                       | 12/18/2019           | 12/18/2024         |
| DOL    | NYC            | *****2113 | BHW CONTRACTING, INC.                         |                   | 401 HANOVER AVENUE<br>STATEN ISLAND NY 10304                 | 01/11/2021           | 01/11/2026         |
| DOL    | DOL            | *****3627 | BJB CONSTRUCTION CORP.                        |                   | 38 LONG RIDGE ROAD<br>BEDFORD NY 10506                       | 12/18/2019           | 12/18/2024         |
| DOL    | DOL            | *****4512 | BOB BRUNO EXCAVATING,<br>INC                  |                   | 5 MORNINGSIDE DR<br>AUBURN NY 13021                          | 05/28/2019           | 05/28/2024         |
| DOL    | DOL            |           | BOGDAN MARKOVSKI                              |                   | 370 W. PLEASANTVIEW AVE<br>SUITE 2.329HACKENSACK NJ<br>07601 | 02/11/2019           | 02/11/2024         |
| DOL    | DOL            |           | BRADLEY J SCHUKA                              |                   | 4 BROTHERS ROAD<br>WAPPINGERS FALLS NY 12590                 | 10/20/2020           | 10/20/2025         |
| DOL    | DOL            |           | BRUCE P. NASH JR.                             |                   | 5841 BUTTERNUT ROAD<br>EAST SYRACUSE NY 13057                | 09/12/2018           | 09/12/2023         |
| DOL    | DOL            | *****9383 | C.C. PAVING AND<br>EXCAVATING, INC.           |                   | 2610 SOUTH SALINA ST<br>SUITE 12SYRACUSE NY 13205            | 09/17/2020           | 09/17/2025         |
| DOL    | DOL            | *****9383 | C.C. PAVING AND<br>EXCAVATING, INC.           |                   | 2610 SOUTH SALINA ST<br>SUITE 12SYRACUSE NY 13205            | 12/04/2018           | 12/04/2023         |
| DOL    | DOL            | *****4083 | C.P.D. ENTERPRISES, INC                       |                   | P.O BOX 281<br>WALDEN NY 12586                               | 03/03/2020           | 03/03/2025         |
| DOL    | DOL            | *****5161 | CALADRI DEVELOPMENT<br>CORP.                  |                   | 1223 PARK ST.<br>PEEKSKILL NY 10566                          | 05/17/2021           | 05/17/2026         |
| DOL    | DOL            | *****3391 | CALI ENTERPRISES, INC.                        |                   | 1223 PARK STREET<br>PEEKSKILL NY 10566                       | 05/17/2021           | 05/17/2026         |
| DOL    | NYC            |           | CALVIN WALTERS                                |                   | 465 EAST THIRD ST<br>MT. VERNON NY 10550                     | 09/09/2019           | 09/09/2024         |

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| DOL | AG  | *****7247 | CENTURY CONCRETE CORP                                   |                             | 2375 RAYNOR ST<br>RONKONKOMA NY 11779                  | 08/04/2021 | 08/04/2026 |
| DOL | DOL | *****0026 | CHANTICLEER<br>CONSTRUCTION LLC                         |                             | 4 BROTHERS ROAD<br>WAPPINGERS FALLS NY 12590           | 10/20/2020 | 10/20/2025 |
| DOL | NYC |           | CHARLES ZAHRAKKA  |                             | 863 WASHINGTON STREET<br>FRANKLIN SQUARE NY 11010      | 03/10/2020 | 03/10/2025 |
| DOL | DOL |           | CHRISTOPHER GRECO                                       |                             | 26 NORTH MYRTLE AVENUE<br>SPRING VALLEY NY 10956       | 02/18/2021 | 02/18/2026 |
| DOL | DOL |           | CHRISTOPHER J MAINI                                     |                             | 19 CAITLIN AVE<br>JAMESTOWN NY 14701                   | 09/17/2018 | 09/17/2023 |
| DOL | DOL |           | CHRISTOPHER<br>PAPASTEFANOU A/K/A CHRIS<br>PAPASTEFANOU |                             | 1445 COMMERCE AVE<br>BRONX NY 10461                    | 05/30/2019 | 05/30/2024 |
| DOL | DOL | *****1927 | CONSTRUCTION PARTS<br>WAREHOUSE, INC.                   | CPW                         | 5841 BUTTERNUT ROAD<br>EAST SYRACUSE NY 13057          | 09/12/2018 | 09/12/2023 |
| DOL | DOL |           | CRAIG JOHANSEN  |                             | 10 SOUTH 5TH ST<br>LOCUST VALLEY NY 11560              | 09/26/2022 | 09/26/2027 |
| DOL | DOL | *****3228 | CROSS-COUNTY<br>LANDSCAPING AND TREE<br>SERVICE, INC.   | ROCKLAND<br>TREE<br>SERVICE | 26 NORTH MYRTLE AVENUE<br>SPRING VALLEY NY 10956       | 02/18/2021 | 02/18/2026 |
| DOL | DOL | *****2524 | CSI ELECTRICAL &<br>MECHANICAL INC                      |                             | 42-32 235TH ST<br>DOUGLSTON NY 11363                   | 01/14/2019 | 01/14/2024 |
| DOL | DOL | *****7619 | DANCO CONSTRUCTION<br>UNLIMITED INC.                    |                             | 485 RAFT AVENUE<br>HOLBROOK NY 11741                   | 10/19/2021 | 10/19/2026 |
| DOL | DOL |           | DANIEL ROBERT MCNALLY                                   |                             | 7 GREENFIELD DRIVE<br>WARWICK NY 10990                 | 03/25/2022 | 03/25/2027 |
| DOL | DOL |           | DARIAN L COKER  |                             | 2610 SOUTH SALINA ST<br>SUITE 2CSYRACUSE NY 13205      | 09/17/2020 | 09/17/2025 |
| DOL | DOL |           | DARIAN L COKER  |                             | 2610 SOUTH SALINA ST<br>SUITE 2CSYRACUSE NY 13205      | 12/04/2018 | 12/04/2023 |
| DOL | NYC |           | DAVID WEINER  |                             | 14 NEW DROP LANE<br>2ND FLOORSTATEN ISLAND<br>NY 10306 | 11/14/2019 | 11/14/2024 |
| DOL | DOL |           | DELPHI PAINTING &<br>DECORATING CO INC                  |                             | 1445 COMMERCE AVE<br>BRONX NY 10461                    | 05/30/2019 | 05/30/2024 |
| DOL | DOL | *****5175 | EAGLE MECHANICAL AND<br>GENERAL CONSTRUCTION<br>LLC     |                             | 11371 RIDGE RD<br>WOLCOTT NY 14590                     | 02/03/2020 | 02/03/2025 |
| DOL | AG  |           | EDWIN HUTZLER   |                             | 23 NORTH HOWELLS RD<br>BELLPORT NY 11713               | 08/04/2021 | 08/04/2026 |
| DOL | DA  |           | EDWIN HUTZLER   |                             | 2375 RAYNOR STREET<br>RONKONKOMA NY 11779              | 08/04/2021 | 08/04/2026 |
| DOL | DOL | *****0780 | EMES HEATING & PLUMBING<br>CONTR                        |                             | 5 EMES LANE<br>MONSEY NY 10952                         | 01/20/2002 | 01/20/3002 |
| DOL | NYC | *****5917 | EPOCH ELECTRICAL, INC                                   |                             | 97-18 50TH AVE<br>CORONA NY 11368                      | 04/19/2018 | 04/19/2024 |
| DOL | DOL |           | FAIGY LOWINGER  |                             | 11 MOUNTAIN RD<br>28 VAN BUREN DRMONROE<br>NY 10950    | 03/20/2019 | 03/20/2024 |
| DOL | DOL |           | FRANK BENEDETTO   |                             | 19 CATLIN AVE<br>JAMESTOWN NY 14701                    | 09/17/2018 | 09/17/2023 |
| DOL | DOL | *****4722 | FRANK BENEDETTO AND<br>CHRISTOPHER J MAINI              | B & M<br>CONCRETE           | 19 CAITLIN AVE<br>JAMESTOWN NY 14701                   | 09/17/2018 | 09/17/2023 |
| DOL | DA  |           | FREDERICK HUTZLER                                       |                             | 2375 RAYNOR STREET<br>RONKONKOMA NY 11779              | 08/04/2021 | 08/04/2026 |
| DOL | NYC | *****6616 | G & G MECHANICAL<br>ENTERPRISES, LLC.                   |                             | 1936 HEMPSTEAD TURNPIKE<br>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<br>VALLEY STREAM NY 11581             | 09/17/2020 | 09/17/2025 |
| DOL | DOL |           | GEOFF CORLETT   |                             | 415 FLAGGER AVE<br>#302STUART FL 34994                 | 10/31/2018 | 10/31/2023 |
| DOL | DA  |           | GEORGE LUCEY  |                             | 150 KINGS STREET<br>BROOKLYN NY 11231                  | 01/19/1998 | 01/19/2998 |
| DOL | DOL |           | GIGI SCHNECKENBURGER                                    |                             | 261 MILL RD<br>EAST AURORA NY 14052                    | 05/29/2019 | 05/29/2024 |
| DOL | DA  |           | GIOVANNA TRAVAJA  |                             | 3735 9TH ST<br>LONG ISLAND CITY NY 11101               | 01/05/2023 | 01/05/2028 |
| DOL | DOL |           | HANS RATH   |                             | 24 ELDOR AVENUE<br>NEW CITY NY 10956                   | 02/03/2020 | 02/03/2025 |
| DOL | DOL |           | HERBERT CLEMEN  |                             | 42 FOWLER AVENUE<br>CORTLAND MANOR NY 10567            | 01/24/2023 | 01/24/2028 |
| DOL | DOL |           | HERBERT CLEMEN  |                             | 42 FOWLER AVENUE<br>CORTLAND MANOR NY 10567            | 10/25/2022 | 10/25/2027 |

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| DOL | DOL |           | IRENE KASELIS   |                 | 32 PENNINGTON AVE<br>WALDWICK NJ 07463            | 05/30/2019 | 05/30/2024 |
| DOL | DOL | *****9211 | J. WASE CONSTRUCTION<br>CORP.                                 |                 | 8545 RT 9W<br>ATHENS NY 12015                     | 03/09/2021 | 03/09/2026 |
| DOL | DOL |           | J.M.J CONSTRUCTION  |                 | 151 OSTRANDER AVENUE<br>SYRACUSE NY 13205         | 11/21/2022 | 11/21/2027 |
| DOL | DOL |           | J.R. NELSON CONSTRUCTION                                      |                 | 531 THIRD STREET<br>ALBANY NY 12206               | 12/22/2022 | 12/22/2027 |
| DOL | DOL |           | J.R. NELSON CONSTRUCTION                                      |                 | 531 THIRD STREET<br>ALBANY NY 12206               | 10/25/2022 | 10/25/2027 |
| DOL | DOL |           | J.R. NELSON, LLC  |                 | 531 THIRD STREET<br>ALBANY NY 12206               | 12/22/2022 | 12/22/2027 |
| DOL | DOL |           | J.R. NELSON, LLC  |                 | 531 THIRD STREET<br>ALBANY NY 12206               | 10/25/2022 | 10/25/2027 |
| DOL | DOL |           | J.R.N COMPANIES, LLC  |                 | 531 THIRD STREET<br>ALBANY NY 12206               | 12/12/2022 | 12/12/2027 |
| DOL | DOL |           | J.R.N COMPANIES, LLC  |                 | 531 THIRD STREET<br>ALBANY NY 12206               | 10/25/2022 | 10/25/2027 |
| DOL | DOL | *****1147 | J.R.N. CONSTRUCTION, LLC                                      |                 | 531 THIRD ST<br>ALBANY NY 12206                   | 12/22/2022 | 12/22/2027 |
| DOL | DOL | *****1147 | J.R.N. CONSTRUCTION, LLC                                      |                 | 531 THIRD ST<br>ALBANY NY 12206                   | 10/25/2022 | 10/25/2027 |
| DOL | DOL |           | JAMES J. BAKER  |                 | 7901 GEE ROAD<br>CANASTOTA NY 13032               | 08/17/2021 | 08/17/2026 |
| DOL | DOL |           | JASON P. RACE   |                 | 3469 STATE RT. 69<br>PERISH NY 13131              | 09/29/2021 | 09/29/2026 |
| DOL | DOL |           | JASON P. RACE   |                 | 3469 STATE RT. 69<br>PERISH NY 13131              | 02/09/2022 | 02/09/2027 |
| DOL | DOL |           | JASON P. RACE   |                 | 3469 STATE RT. 69<br>PERISH NY 13131              | 11/15/2022 | 11/15/2027 |
| DOL | DOL |           | JASON P. RACE   |                 | 3469 STATE RT. 69<br>PERISH NY 13131              | 03/01/2022 | 03/01/2027 |
| DOL | DOL | *****7993 | JBS DIRT, INC.  |                 | 7901 GEE ROAD<br>CANASTOTA NY 13032               | 08/17/2021 | 08/17/2026 |
| DOL | DOL | *****5368 | JCH MASONRY &<br>LANDSCAPING INC.                             |                 | 35 CLINTON AVE<br>OSSINING NY 10562               | 09/12/2018 | 09/12/2023 |
| DOL | DOL | *****2435 | JEFFEL D. JOHNSON   | JMJ7 AND<br>SON | 5553 CAIRNSTRAIL<br>CLAY NY 13041                 | 11/21/2022 | 11/21/2027 |
| DOL | DOL |           | JEFFEL JOHNSON ELITE<br>CARPENTER REMODEL AND<br>CONSTRUCTION |                 | C2 EVERGREEN CIRCLE<br>LIVERPOOL NY 13090         | 11/21/2022 | 11/21/2027 |
| DOL | DOL | *****2435 | JEFFREY M. JOHNSON  | JMJ7 AND<br>SON | 5553 CAIRNS TRAIL<br>CLAY NY 13041                | 11/21/2022 | 11/21/2027 |
| DOL | NYC |           | JENNIFER GUERRERO   |                 | 1936 HEMPSTEAD TURNPIKE<br>EAST MEADOW NY 11554   | 11/29/2019 | 11/29/2024 |
| DOL | DOL |           | JIM PLAUGHER  |                 | 17613 SANTE FE LINE ROAD<br>WAYNEFIELD OH 45896   | 07/16/2021 | 07/16/2026 |
| DOL | DOL |           | JMJ7 & SON CONSTRUCTION,<br>LLC                               |                 | 5553 CAIRNS TRAIL<br>LIVERPOOL NY 13041           | 11/21/2022 | 11/21/2027 |
| DOL | DOL |           | JMJ7 AND SONS<br>CONTRACTORS                                  |                 | 5553 CAIRNS TRAIL<br>CLAY NY 13041                | 11/21/2022 | 11/21/2027 |
| DOL | DOL |           | JMJ7 CONTRACTORS  |                 | 7014 13TH AVENUE<br>BROOKLYN NY 11228             | 11/21/2022 | 11/21/2027 |
| DOL | DOL |           | JMJ7 CONTRACTORS AND<br>SONS                                  |                 | 5553 CAIRNS TRAIL<br>CLAY NY 13041                | 11/21/2022 | 11/21/2027 |
| DOL | DOL |           | JMJ7 CONTRACTORS, LLC   |                 | 5553 CAIRNS TRAIL<br>CLAY NY 13041                | 11/21/2022 | 11/21/2027 |
| DOL | DOL |           | JOHN GOCEK  |                 | 14B COMMERCIAL AVE<br>ALBANY NY 12065             | 11/14/2019 | 11/14/2024 |
| DOL | DOL |           | JOHN MARKOVIC   |                 | 47 MANDON TERRACE<br>HAWTHORN NJ 07506            | 03/29/2021 | 03/29/2026 |
| DOL | DOL |           | JOHN WASE   |                 | 8545 RT 9W<br>ATHENS NY 12015                     | 03/09/2021 | 03/09/2026 |
| DOL | DOL |           | JON E DEYOUNG   |                 | 261 MILL RD<br>P.O BOX 296EAST AURORA<br>NY 14052 | 05/29/2019 | 05/29/2024 |
| DOL | DOL |           | JORGE RAMOS   |                 | 8970 MIKE GARCIA DR<br>MANASSAS VA 20109          | 07/16/2021 | 07/16/2026 |
| DOL | DOL |           | JORI PEDERSEN   |                 | 415 FLAGER AVE<br>#302STUART FL 34994             | 10/31/2018 | 10/31/2023 |
| DOL | DOL |           | JOSE CHUCHUCA   |                 | 35 CLINTON AVE<br>OSSINING NY 10562               | 09/12/2018 | 09/12/2023 |
| DOL | DOL |           | JOSEPH K. SALERNO   |                 | 1010 TILDEN AVE<br>UTICA NY 13501                 | 07/24/2023 | 07/24/2028 |

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| DOL | DOL |           | JOSEPH K. SALERNO II                                |  | 1010 TILDEN AVE<br>UTICA NY 13501                     | 07/24/2023 | 07/24/2028 |
| DOL | DOL |           | JOY MARTIN  |  | 2404 DELAWARE AVE<br>NIGARA FALLS NY 14305            | 09/12/2018 | 09/12/2023 |
| DOL | DOL | *****5116 | JP RACE PAINTING, INC. T/A<br>RACE PAINTING         |  | 3469 STATE RT. 69<br>PERISH NY 13131                  | 02/09/2022 | 02/09/2027 |
| DOL | DOL | *****5116 | JP RACE PAINTING, INC. T/A<br>RACE PAINTING         |  | 3469 STATE RT. 69<br>PERISH NY 13131                  | 11/15/2022 | 11/15/2027 |
| DOL | DOL | *****5116 | JP RACE PAINTING, INC. T/A<br>RACE PAINTING         |  | 3469 STATE RT. 69<br>PERISH NY 13131                  | 09/29/2021 | 09/29/2026 |
| DOL | DOL | *****5116 | JP RACE PAINTING, INC. T/A<br>RACE PAINTING         |  | 3469 STATE RT. 69<br>PERISH NY 13131                  | 03/01/2022 | 03/01/2027 |
| DOL | DOL | *****5116 | JP RACE PAINTING, INC. T/A<br>RACE PAINTING         |  | 3469 STATE RT. 69<br>PERISH NY 13131                  | 03/01/2022 | 03/01/2027 |
| DOL | DOL | *****1147 | JRN CONSTRUCTION, LLC                               |  | 531 THIRD STREET<br>ALBANY NY 12206                   | 10/25/2022 | 10/25/2027 |
| DOL | DOL | *****1147 | JRN CONSTRUCTION, LLC                               |  | 531 THIRD STREET<br>ALBANY NY 12206                   | 12/22/2022 | 12/22/2027 |
| DOL | DOL |           | JRN PAVING, LLC                                     |  | 531 THIRD STREET<br>ALBANY NY 12206                   | 10/25/2022 | 10/25/2027 |
| DOL | DOL |           | JRN PAVING, LLC                                     |  | 531 THIRD STREET<br>ALBANY NY 12206                   | 12/22/2022 | 12/22/2027 |
| DOL | DOL |           | JULIUS AND GITA BEHREND                             |  | 5 EMES LANE<br>MONSEY NY 10952                        | 11/20/2002 | 11/20/3002 |
| DOL | DOL |           | KARIN MANGIN  |  | 796 PHELPS ROAD<br>FRANKLIN LAKES NJ 07417            | 12/01/2020 | 12/01/2025 |
| DOL | DOL |           | KATE E. CONNOR                                      |  | 7088 INTERSTATE ISLAND RD<br>SYRACUSE NY 13209        | 03/31/2021 | 03/31/2026 |
| DOL | DOL | *****2959 | KELC DEVELOPMENT, INC                               |  | 7088 INTERSTATE ISLAND RD<br>SYRACUSE NY 13209        | 03/31/2021 | 03/31/2026 |
| DOL | DOL |           | KIMBERLY F. BAKER                                   |  | 7901 GEE ROAD<br>CANASTOTA NY 13032                   | 08/17/2021 | 08/17/2026 |
| DOL | DOL | *****3490 | L & M<br>CONSTRUCTION/DRYWALL<br>INC.               |  | 1079 YONKERS AVE<br>YONKERS NY 10704                  | 08/07/2018 | 08/07/2023 |
| DOL | DA  | *****8816 | LAKE CONSTRUCTION AND<br>DEVELOPMENT<br>CORPORATION |  | 150 KINGS STREET<br>BROOKLYN NY 11231                 | 08/19/1998 | 08/19/2998 |
| DOL | DOL |           | LEROY E. NELSON JR                                  |  | 531 THIRD ST<br>ALBANY NY 12206                       | 10/25/2022 | 10/25/2027 |
| DOL | DOL |           | LEROY E. NELSON JR                                  |  | 531 THIRD ST<br>ALBANY NY 12206                       | 12/22/2022 | 12/22/2027 |
| DOL | AG  | *****3291 | LINTECH ELECTRIC, INC.                              |  | 3006 TILDEN AVE<br>BROOKLYN NY 11226                  | 02/16/2022 | 02/16/2027 |
| DOL | DA  | *****4460 | LONG ISLAND GLASS &<br>STOREFRONTS, LLC             |  | 4 MANHASSET TRL<br>RIDGE NY 11961                     | 09/06/2018 | 09/06/2023 |
| DOL | DOL |           | LOUIS A. CALICCHIA                                  |  | 1223 PARK ST.<br>PEEKSKILL NY 10566                   | 05/17/2021 | 05/17/2026 |
| DOL | NYC |           | LUBOMIR PETER SVOBODA                               |  | 27 HOUSMAN AVE<br>STATEN ISLAND NY 10303              | 12/26/2019 | 12/26/2024 |
| DOL | NYC |           | M & L STEEL & ORNAMENTAL<br>IRON CORP.              |  | 27 HOUSMAN AVE<br>STATEN ISLAND NY 10303              | 12/26/2019 | 12/26/2024 |
| DOL | DOL | *****2196 | MAINSTREAM SPECIALTIES,<br>INC.                     |  | 11 OLD TOWN RD<br>SELKIRK NY 12158                    | 02/02/2021 | 02/02/2026 |
| DOL | DA  |           | MANUEL P TOBIO                                      |  | 150 KINGS STREET<br>BROOKLYN NY 14444                 | 08/19/1998 | 08/19/2998 |
| DOL | DA  |           | MANUEL TOBIO  |  | 150 KINGS STREET<br>BROOKLYN NY 11231                 | 08/19/1998 | 08/19/2998 |
| DOL | NYC |           | MAREK FABIJANOWSKI                                  |  | 50 MAIN ST<br>WHITE PLAINS NY 10606                   | 01/04/2019 | 01/04/2024 |
| DOL | NYC |           | MARIA NUBILE  |  | 84-22 GRAND AVENUE<br>ELMHURST NY 11373               | 03/10/2020 | 03/10/2025 |
| DOL | DOL |           | MATTHEW P. KILGORE                                  |  | 4156 WILSON ROAD EAST<br>TABERG NY 13471              | 03/26/2019 | 03/26/2024 |
| DOL | DOL |           | MICHAEL LENIHAN                                     |  | 1079 YONKERS AVE<br>UNIT 4YONKERS NY 10704            | 08/07/2018 | 08/07/2023 |
| DOL | DOL | *****4829 | MILESTONE ENVIRONMENTAL<br>CORPORATION              |  | 704 GINESI DRIVE<br>SUITE 29MORGANVILLE NJ<br>07751   | 04/10/2019 | 04/10/2024 |
| DOL | NYC | *****9926 | MILLENNIUM FIRE<br>PROTECTION, LLC                  |  | 325 W. 38TH STREET<br>SUITE 204NEW YORK NY<br>10018   | 11/14/2019 | 11/14/2024 |
| DOL | NYC | *****0627 | MILLENNIUM FIRE SERVICES,<br>LLC                    |  | 14 NEW DROP LNE<br>2ND FLOORSTATEN ISLAND<br>NY 10306 | 11/14/2019 | 11/14/2024 |

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| DOL | DOL | *****1320 | MJC MASON CONTRACTING, INC.          |                             | 42 FOWLER AVENUE<br>CORTLAND MANOR NY 10567        | 10/25/2022 | 10/25/2027 |
| DOL | DOL | *****1320 | MJC MASON CONTRACTING, INC.          |                             | 42 FOWLER AVENUE<br>CORTLAND MANOR NY 10567        | 01/24/2023 | 01/24/2028 |
| DOL | NYC |           | MUHAMMED A. HASHEM                   |                             | 524 MCDONALD AVENUE<br>BROOKLYN NY 11218           | 09/17/2020 | 09/17/2025 |
| DOL | NYC |           | NAMOW, INC.                          |                             | 84-22 GRAND AVENUE<br>ELMHURST NY 11373            | 03/10/2020 | 03/10/2025 |
| DOL | DOL | *****7790 | NATIONAL BUILDING & RESTORATION CORP |                             | 1010 TILDEN AVE<br>UTICA NY 13501                  | 07/24/2023 | 07/24/2028 |
| DOL | DOL | *****1797 | NATIONAL CONSTRUCTION SERVICES, INC  |                             | 1010 TILDEN AVE<br>UTICA NY 13501                  | 07/24/2023 | 07/24/2028 |
| DOL | DA  | *****9786 | NATIONAL INSULATION & GC CORP        |                             | 180 MILLER PLACE<br>HICKSVILLE NY 11801            | 12/12/2018 | 12/12/2023 |
| DOL | NYC |           | NAVIT SINGH                          |                             | 402 JERICO TURNPIKE<br>NEW HYDE PARK NY 11040      | 08/10/2022 | 08/10/2027 |
| DOL | DOL |           | NICHOLE E. FRASER A/K/A NICHOLE RACE |                             | 3469 STATE RT. 69<br>PERISH NY 13131               | 03/01/2022 | 03/01/2027 |
| DOL | DOL |           | NICHOLE E. FRASER A/K/A NICHOLE RACE |                             | 3469 STATE RT. 69<br>PERISH NY 13131               | 11/15/2022 | 11/15/2027 |
| DOL | DOL |           | NICHOLE E. FRASER A/K/A NICHOLE RACE |                             | 3469 STATE RT. 69<br>PERISH NY 13131               | 09/29/2021 | 09/29/2026 |
| DOL | DOL |           | NICHOLE E. FRASER A/K/A NICHOLE RACE |                             | 3469 STATE RT. 69<br>PERISH NY 13131               | 02/09/2022 | 02/09/2027 |
| DOL | DOL | *****7429 | NICOLAE I. BARBIR                    | BESTUCCO CONSTRUCTION, INC. | 444 SCHANTZ ROAD<br>ALLEN TOWN PA 18104            | 09/17/2020 | 09/17/2025 |
| DOL | NYC | *****5643 | NYC LINE CONTRACTORS, INC.           |                             | 402 JERICO TURNPIKE<br>NEW HYDE PARK NY 11040      | 08/10/2022 | 08/10/2027 |
| DOL | DOL |           | PAULINE CHAHALES                     |                             | 935 S LAKE BLVD<br>MAHOPAC NY 10541                | 03/02/2021 | 03/02/2026 |
| DOL | DOL |           | PETER STEVENS                        |                             | 11 OLD TOWN ROAD<br>SELKIRK NY 12158               | 02/02/2021 | 02/02/2026 |
| DOL | DOL |           | PETER STEVENS                        |                             | 8269 21ST ST<br>BELLEROSE NY 11426                 | 12/22/2022 | 12/22/2027 |
| DOL | DOL | *****0466 | PRECISION BUILT FENCES, INC.         |                             | 1617 MAIN ST<br>PEEKSKILL NY 10566                 | 03/03/2020 | 03/03/2025 |
| DOL | NYC |           | RASHEL CONSTRUCTION CORP             |                             | 524 MCDONALD AVENUE<br>BROOKLYN NY 11218           | 09/17/2020 | 09/17/2025 |
| DOL | DOL | *****1068 | RATH MECHANICAL CONTRACTORS, INC.    |                             | 24 ELDOR AVENUE<br>NEW CITY NY 10956               | 02/03/2020 | 02/03/2025 |
| DOL | DOL | *****2633 | RAW POWER ELECTRIC CORP.             |                             | 3 PARK CIRCLE<br>MIDDLETOWN NY 10940               | 07/11/2022 | 07/11/2027 |
| DOL | DA  | *****7559 | REGAL CONTRACTING INC.               |                             | 24 WOODBINE AVE<br>NORTHPORT NY 11768              | 10/01/2020 | 10/01/2025 |
| DOL | DOL | *****9148 | RICH T CONSTRUCTION                  |                             | 107 WILLOW WOOD LANE<br>CAMILLUS NY 13031          | 11/13/2018 | 11/13/2023 |
| DOL | DOL |           | RICHARD MACONE                       |                             | 8617 THIRD AVE<br>BROOKLYN NY 11209                | 09/17/2018 | 09/17/2023 |
| DOL | DOL |           | RICHARD REGGIO                       |                             | 1617 MAIN ST<br>PEEKSKILL NY 10566                 | 03/03/2020 | 03/03/2025 |
| DOL | DOL | *****9148 | RICHARD TIMIAN                       | RICH T CONSTRUCTION         | 108 LAMONT AVE<br>SYRACUSE NY 13209                | 10/16/2018 | 10/16/2023 |
| DOL | DOL |           | RICHARD TIMIAN JR.                   |                             | 108 LAMONT AVE<br>SYRACUSE NY 13209                | 10/16/2018 | 10/16/2023 |
| DOL | DOL |           | RICHARD TIMIAN JR.                   |                             | 108 LAMONT AVE<br>SYRACUSE NY 13209                | 11/13/2018 | 11/13/2023 |
| DOL | DOL |           | ROBBYE BISSEAR                       |                             | 89-51 SPRINGFIELD BLVD<br>QUEENS VILLAGE NY 11427  | 01/11/2003 | 01/11/3003 |
| DOL | DOL |           | ROBERT A. VALERINO                   |                             | 3841 LANYARD COURT<br>NEW PORT RICHEY FL 34652     | 07/09/2019 | 07/09/2024 |
| DOL | DOL |           | ROBERT BRUNO                         |                             | 5 MORNINGSIDE DRIVE<br>AUBURN NY 13021             | 05/28/2019 | 05/28/2024 |
| DOL | DOL |           | ROMEO WARREN                         |                             | 161 ROBYN RD<br>MONROE NY 10950                    | 07/11/2022 | 07/11/2027 |
| DOL | DOL |           | RONALD MESSEN                        |                             | 14B COMMERCIAL AVE<br>ALBANY NY 12065              | 11/14/2019 | 11/14/2024 |
| DOL | DOL | *****7172 | RZ & AL INC.                         |                             | 198 RIDGE AVENUE<br>VALLEY STREAM NY 11581         | 06/06/2022 | 06/06/2027 |
| DOL | DOL | *****1365 | S & L PAINTING, INC.                 |                             | 11 MOUNTAIN ROAD<br>P.O BOX 408<br>MONROE NY 10950 | 03/20/2019 | 03/20/2024 |
| DOL | DOL | *****7730 | S C MARTIN GROUP INC.                |                             | 2404 DELAWARE AVE<br>NIAGARA FALLS NY 14305        | 09/12/2018 | 09/12/2023 |

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| DOL | DOL |           | SAL FRESINA MASONRY CONTRACTORS, INC.                    |                         | 1935 TEALL AVENUE<br>SYRACUSE NY 13206                    | 07/16/2021 | 07/16/2026 |
| DOL | DOL |           | SAL MASONRY CONTRACTORS, INC.                            |                         | (SEE COMMENTS)<br>SYRACUSE NY 13202                       | 07/16/2021 | 07/16/2026 |
| DOL | DOL | *****9874 | SALFREE ENTERPRISES INC                                  |                         | P.O BOX 14<br>2821 GARDNER RDPOMPEI NY 13138              | 07/16/2021 | 07/16/2026 |
| DOL | DOL |           | SALVATORE A FRESINA A/K/A SAM FRESINA                    |                         | 107 FACTORY AVE<br>P.O BOX 11070SYRACUSE NY 13218         | 07/16/2021 | 07/16/2026 |
| DOL | DOL |           | SAM FRESINA  |                         | 107 FACTORY AVE<br>P.O BOX 11070SYRACUSE NY 13218         | 07/16/2021 | 07/16/2026 |
| DOL | NYC | *****0349 | SAM WATERPROOFING INC                                    |                         | 168-42 88TH AVENUE<br>APT.1 AJAMAICA NY 11432             | 11/20/2019 | 11/20/2024 |
| DOL | DA  | *****0476 | SAMCO ELECTRIC CORP.                                     |                         | 3735 9TH ST<br>LONG ISLAND CITY NY 11101                  | 01/05/2023 | 01/05/2028 |
| DOL | NYC | *****1130 | SCANA CONSTRUCTION CORP.                                 |                         | 863 WASHINGTON STREET<br>FRANKLIN SQUARE NY 11010         | 03/10/2020 | 03/10/2025 |
| DOL | DOL | *****2045 | SCOTT DUFFIE   | DUFFIE'S ELECTRIC, INC. | P.O BOX 111<br>CORNWALL NY 12518                          | 03/03/2020 | 03/03/2025 |
| DOL | DOL |           | SCOTT DUFFIE   |                         | P.O BOX 111<br>CORNWALL NY 12518                          | 03/03/2020 | 03/03/2025 |
| DOL | NYC | *****6597 | SHAIRA CONSTRUCTION CORP.                                |                         | 421 HUDSON STREET<br>SUITE C5NEW YORK NY 10014            | 02/20/2019 | 02/20/2024 |
| DOL | DOL |           | SHULEM LOWINGER  |                         | 11 MOUNTAIN ROAD<br>28 VAN BUREN DRMONROE NY 10950        | 03/20/2019 | 03/20/2024 |
| DOL | DA  |           | SILVANO TRAVAJA  |                         | 3735 9TH ST<br>LONG ISLAND CITY NY 11101                  | 01/05/2023 | 01/05/2028 |
| DOL | DOL | *****0440 | SOLAR GUYS INC.  |                         | 8970 MIKE GARCIA DR<br>MANASSAS VA 20109                  | 07/16/2021 | 07/16/2026 |
| DOL | NYC |           | SOMATIE RAMSUNAHAI                                       |                         | 115-46 132ND ST<br>SOUTH OZONE PARK NY 11420              | 09/17/2020 | 09/17/2025 |
| DOL | DOL | *****2221 | SOUTH BUFFALO ELECTRIC, INC.                             |                         | 1250 BROADWAY ST<br>BUFFALO NY 14212                      | 02/03/2020 | 02/03/2025 |
| DOL | NYC | *****3661 | SPANIER BUILDING MAINTENANCE CORP                        |                         | 200 OAK DRIVE<br>SYOSSET NY 11791                         | 03/14/2022 | 03/14/2027 |
| DOL | DOL |           | STANADOS KALOGELAS                                       |                         | 485 RAFT AVENUE<br>HOLBROOK NY 11741                      | 10/19/2021 | 10/19/2026 |
| DOL | DOL | *****3496 | STAR INTERNATIONAL INC                                   |                         | 89-51 SPRINGFIELD BLVD<br>QUEENS VILLAGE NY 11427         | 08/11/2003 | 08/11/3003 |
| DOL | DOL | *****6844 | STEAM PLANT AND CHX SYSTEMS INC.                         |                         | 14B COMMERCIAL AVENUE<br>ALBANY NY 12065                  | 11/14/2019 | 11/14/2024 |
| DOL | DOL | *****9933 | STEED GENERAL CONTRACTORS, INC.                          |                         | 1445 COMMERCE AVE<br>BRONX NY 10461                       | 05/30/2019 | 05/30/2024 |
| DOL | DOL | *****9528 | STEEL-IT, LLC.   |                         | 17613 SANTE FE LINE ROAD<br>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<br>UPPER SADDLE RIVER NJ 07458   | 05/30/2019 | 05/30/2024 |
| DOL | DOL |           | STEVE TATE   |                         | 415 FLAGER AVE<br>#302STUART FL 34994                     | 10/31/2018 | 10/31/2023 |
| DOL | DOL |           | STEVEN MARTIN  |                         | 2404 DELWARE AVE<br>NIAGARA FALLS NY 14305                | 09/12/2018 | 09/12/2023 |
| DOL | DOL | *****3800 | SUBURBAN RESTORATION CO. INC.                            |                         | 5-10 BANTA PLACE<br>FAIR LAWN PLACE NJ 07410              | 03/29/2021 | 03/29/2026 |
| DOL | DOL | *****1060 | SUNN ENTERPRISES GROUP, LLC                              |                         | 370 W. PLEASANTVIEW AVE<br>SUITE 2.329HACKENSACK NJ 07601 | 02/11/2019 | 02/11/2024 |
| DOL | DOL | *****9150 | SURGE INC.   |                         | 8269 21ST STREET<br>BELLEROSSE NY 11426                   | 12/22/2022 | 12/22/2027 |
| DOL | DOL |           | SYED RAZA  |                         | 198 RIDGE AVENUE<br>NY 11581                              | 06/06/2022 | 06/06/2027 |
| DOL | DOL | *****8209 | SYRACUSE SCALES, INC.                                    |                         | 158 SOLAR ST<br>SYRACUSE NY 13204                         | 01/07/2019 | 01/07/2024 |
| DOL | DOL |           | TERRY THOMPSON   |                         | 11371 RIDGE RD<br>WOLCOTT NY 14590                        | 02/03/2020 | 02/03/2025 |
| DOL | DOL | *****9733 | TERSAL CONSTRUCTION SERVICES INC                         |                         | 107 FACTORY AVE<br>P.O BOX 11070SYRACUSE NY 13208         | 07/16/2021 | 07/16/2026 |
| DOL | DOL |           | TERSAL CONTRACTORS, INC.                                 |                         | 221 GARDNER RD<br>P.O BOX 14POMPEI NY 13138               | 07/16/2021 | 07/16/2026 |

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| DOL | DOL |           | TERSAL DEVELOPMENT CORP.                      |                          | 1935 TEALL AVENUE<br>SYRACUSE NY 13206            | 07/16/2021 | 07/16/2026 |
| DOL | DOL |           | TEST  |                          | P.O BOX 123<br>ALBANY NY 12204                    | 05/20/2020 | 05/20/2025 |
| DOL | DOL | *****6789 | TEST1000                                      |                          | P.O BOX 123<br>ALBANY NY 12044                    | 03/01/2021 | 03/01/2026 |
| DOL | DOL | *****5766 | THE COKER CORPORATION                         | COKER CORPORATION        | 2610 SOUTH SALINA ST<br>SUITE 14SYRACUSE NY 13205 | 12/04/2018 | 12/04/2023 |
| DOL | DOL | *****5766 | THE COKER CORPORATION                         | COKER CORPORATION        | 2610 SOUTH SALINA ST<br>SUITE 14SYRACUSE NY 13205 | 09/17/2020 | 09/17/2025 |
| DOL | DA  | *****1050 | TRI STATE CONSTRUCTION OF NY CORP.            |                          | 50-39 175TH PLACE<br>FRESH MEADOWS NY 11365       | 03/28/2022 | 03/28/2027 |
| DOL | DA  | *****4106 | TRIPLE H CONCRETE CORP                        |                          | 2375 MAYNOR STREET<br>RONKONKOMA NY 11779         | 08/04/2021 | 08/04/2026 |
| DOL | DOL | *****8210 | UPSTATE CONCRETE & MASONRY CONTRACTING CO INC |                          | 449 WEST MOMBSHA ROAD<br>MONROE NY 10950          | 06/06/2022 | 06/06/2027 |
| DOL | DOL | *****6392 | V.M.K CORP.                                   |                          | 8617 THIRD AVE<br>BROOKLYN NY 11209               | 09/17/2018 | 09/17/2023 |
| DOL | DOL | *****6418 | VALHALLA CONSTRUCTION, LLC.                   |                          | 796 PHLEPS ROAD<br>FRANKLIN LAKES NJ 07417        | 12/01/2020 | 12/01/2025 |
| DOL | NYC | *****2426 | VICKRAM MANGRU                                | VICK CONSTRUCTION        | 21 DAREWOOD LANE<br>VALLEY STREAM NY 11581        | 09/17/2020 | 09/17/2025 |
| DOL | NYC |           | VICKRAM MANGRU                                |                          | 21 DAREWOOD LANE<br>VALLEY STREAM NY 11581        | 09/17/2020 | 09/17/2025 |
| DOL | DOL |           | VICTOR ALICANTI                               |                          | 42-32 235TH ST<br>DOUGLASTON NY 11363             | 01/14/2019 | 01/14/2024 |
| DOL | NYC |           | VIKTAR PATONICH                               |                          | 2630 CROSEY AVE<br>BROOKLYN NY 11214              | 10/30/2018 | 10/30/2023 |
| DOL | DOL |           | VIKTORIA RATH                                 |                          | 24 ELDOR AVENUE<br>NEW CITY NY 10956              | 02/03/2020 | 02/03/2025 |
| DOL | NYC | *****3673 | WALTERS AND WALTERS, INC.                     |                          | 465 EAST AND THIRD ST<br>MT. VERNON NY 10550      | 09/09/2019 | 09/09/2024 |
| DOL | DOL | *****3296 | WESTERN NEW YORK CONTRACTORS, INC.            |                          | 3841 LAYNARD COURT<br>NEW PORT RICHEY FL 34652    | 07/09/2019 | 07/09/2024 |
| DOL | DOL | *****8266 | WILLIAM CHRIS MCCLENDON                       | MCCLENDON ASPHALT PAVING | 1646 FALLS STREET<br>NIAGARA FALLS NY 14303       | 05/01/2023 | 05/01/2028 |
| DOL | DOL |           | WILLIAM CHRIS MCCLENDON                       |                          | 1646 FALLS STREET<br>NIAGARA FALLS NY 14303       | 05/01/2023 | 05/01/2028 |
| DOL | DOL |           | WILLIAM G. PROERFRIEDT                        |                          | 85 SPRUCEWOOD ROAD<br>WEST BABYLON NY 11704       | 01/19/2021 | 01/19/2026 |
| DOL | DOL | *****5924 | WILLIAM G. PROPHY, LLC                        | WGP CONTRACTING, INC.    | 54 PENTAQUIT AVE<br>BAYSHORE NY 11706             | 01/19/2021 | 01/19/2026 |
| DOL | DOL | *****4730 | XGD SYSTEMS, LLC                              | TDI GOLF                 | 415 GLAGE AVE<br>#302STUART FL 34994              | 10/31/2018 | 10/31/2023 |

**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.

**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. Commissioning Authority: An entity engaged by Owner, and identified in Section 011000 "Summary," to evaluate Commissioning-Process Work.
- C. Commissioning Plan: A document, prepared by Commissioning Authority, that outlines the organization, schedule, allocation of resources, and documentation requirements of commissioning.
- D. 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."
- E. 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 01 79 00 "Demonstration and Training."
    - d. Completion and acceptance of submittals and reports.
- F. 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.
- G. "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.
- H. Test: Performance tests, performance test demonstrations, commissioning tests, and commissioning test demonstrations.
- I. Sampling Procedures and Tables for Inspection by Attributes: As defined in ASQ Z1.4.

#### 1.4 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.
4. Construction Manager, plus employees and consultants that Construction Manager may deem appropriate for a particular portion of the commissioning.

#### 1.5 SUBMITTALS

##### A. Comply with requirements in Section 01 33 00 "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 01 32 00 "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: 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. Data Trend Logs: Submit data trend logs at the end of the trend log period.
5. 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.

1.6 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.

1.7 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.

## 1.8 COMMISSIONING AUTHORITY'S RESPONSIBILITIES

- A. Commissioning Authority Responsibilities: Comply with requirements in Section 01 12 00 "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.

### 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. Notify Owner's witness at least seven days in advance of each test demonstration.
2. Perform and complete each step of the approved test procedures in the order listed.
3. Record data observed during performance of test demonstrations on approved data forms at the time of demonstration and when the results are observed.

4. 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.
5. 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 01 31 00 "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: JV Forrestal ES, South Ave ES, Sargent ES, Rombout MS, and Beacon HS; Addition and Alterations to Glenham ES.
  - 1. Project Locations:
    - a. JV Forrestal ES: 125 Liberty Street, Beacon, NY 12508.
    - b. Glenham ES: 20 Chase Drive, Fishkill, NY 12524.
    - c. South Ave ES: 60 South Ave., Beacon, NY 12508.
    - d. Sargent ES: 29 Education Drive, Beacon, NY 12508.

- e. Rombout MS: 84 Matteawan Road, Beacon, NY 12508.
  - f. Beacon High School: 99 Matteawan Road, Beacon, NY 12508.
- B. Owner: Board of Education Beacon City School District.
  - 1. Address: 10 Education Drive, Beacon, NY 12508.
- C. Architect: Tetra Tech Engineers, Architects & Landscape Architects, P.C., d/b/a Tetra Tech Architects & Engineers.
  - 1. Address: 500 Bi-County Boulevard, Suite 104, Farmingdale, New York 11735.
- D. Other Owner Consultants: The Owner has retained the following who have prepared designated portions of the Contract Documents:
  - 1. Environmental Abatement Survey, Testing, and Professional Design Services: Quality Environmental Solutions & Technologies, Inc.
    - a. Address: 1376 Route 9, Wappingers Falls, NY 12590
  - 2. Construction Manager: Jeff West at UW Marx, Inc.
    - a. Address: 20 Gurley Ave., Troy, NY 12182.
    - b. 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.
  - 3. Commissioning Authority (CxA): To Be Determined.
    - a. Commissioning Authority will be engaged for this Project to provide commissioning services, according to provisions of Division 01 Section "General Commissioning Requirements."
    - b. Address: TBD
- 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 alterations at 6 buildings.
- B. Type of Contracts:
  - 1. Project will be constructed under coordinated, generally concurrent multiple contracts. Contracts for this Project include the following:
    - a. General Contract GC-D1
    - b. General Contract GC-D2
    - c. Mechanical Contract MC-D1
    - d. Mechanical Contract MC-D2
    - e. Electrical Contract EC-D1
    - f. Plumbing Contract PC-D1
    - g. Site Contract SC-D4
- 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 GC-D1:
    - a. Commencement of Construction (Off-Site Activities): Immediately following Contract Award.
    - b. Commencement of Construction (On-Site Activities): July 1, 2024.
    - c. Submittals: Provide all submittals within 30 days after award of contract.
    - d. Substantial Completion date: September 3, 2024
    - e. Final completion date: 30 days after Substantial Completion.
    - f. The Work shall be conducted simultaneously at both schools, with each phase substantially complete as indicated above.
  - 2. General Contract GC-D2:
    - a. Commencement of Construction (Off-Site Activities): Immediately following Contract Award.
    - b. Commencement of Construction (On-Site Activities): July 1, 2024.
    - c. Submittals: Provide all submittals within 30 days after award of contract.
    - d. Substantial Completion date: September 3, 2024
    - e. Final completion date: 30 days after Substantial Completion
    - f. The Work shall be conducted in both schools simultaneously, with each school substantially complete as indicated.

3. Mechanical Contract MC-D1:

- a. Commencement of Construction (Off-Site Activities): Immediately following Contract Award.
- b. Commencement of Construction (On-Site Activities): June 26, 2024 for pre-con balancing report, other work to start July 1, 2024.
- c. Submittals: Provide all submittals within 30 days after award of contract.
- d. Substantial Completion date: September 3, 2024
- e. Final completion date: 30 days after Substantial Completion.
- f. The Work shall be conducted in all 3 schools simultaneously, with each school substantially complete as indicated.
- g. Key mechanical dates:
  - 1) Preconstruction balance report: July 8, 2024
  - 2) Complete balance requirements for ventilation code compliance: October 3, 2024.
- h. Final balance reports approval: October 3, 2024.

4. Mechanical Contract MC-D2:

- a. Commencement of Construction (Off-Site Activities): Immediately following Contract Award.
- b. Commencement of Construction (On-Site Activities): June 26, 2024 for pre-con balancing report, other work to start July 1, 2024.
- c. Submittals: Provide all submittals within 30 days after award of contract.
- d. Substantial Completion date: September 4, 2024
- e. Final completion date: 30 days after Substantial Completion.
- f. The Work shall be conducted at both schools simultaneously, with each school substantially complete as indicated:
- g. Key mechanical dates:
  - 1) Preconstruction balance report: July 8, 2024.
  - 2) Complete balance requirements for ventilation code compliance: September 2, 2024.
  - 3) Final balance reports approval: October 3, 2024



5. Electrical Contract EC-D1:

- a. Commencement of Construction (Off-Site Activities): Immediately following Contract Award.
- b. Commencement of Construction (On-Site Activities): July 1, 2024
- c. Submittals: Provide all submittals within 30 days after award of contract.
- d. Substantial Completion date: September 4, 2024.
- e. Functional Completion date: 30 days after Substantial Completion, unless otherwise agreed to at Commissioning Meetings.
- f. Final completion date: 30 days after Substantial Completion.

6. Plumbing Contract PC-D1:

- a. Commencement of Construction (Off-Site Activities): Immediately following Contract Award.
- b. Commencement of Construction (On-Site Activities): July 1, 2024.
- c. Submittals: Provide all submittals within 30 days after award of contract.
- d. Substantial Completion date: September 4, 2024.
- e. Final completion date: 30 days after Substantial Completion.

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, unless required solely for the Work of another contract.
  - a. 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 Contract.

- 1) Excavation for natural-gas service shall be the work of the Plumbing Contract.
  - b. Excavation for mechanical work shall be the work of the Mechanical Contract.
  - c. Excavation for electrical work shall be the work of the Electrical Contract.
2. 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.
3. 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 each contract for its own work unless noted otherwise.
  - 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.
4. Furnishing of access panels for the work of each contract shall be the work of each contract for its own work.
  - a. In new surfaces: Installing access panels shall be the work of the General Contract.
  - b. In existing surfaces: Installing access panels shall be the work of each contract for its own work.
5. 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.
6. Furnishing vandal-resistant roof vent caps and roof drain clamping ring, adjustable extensions and dome strainers, shall be the work of the Plumbing Contract.
  - a. Installing vandal-resistant roof vent caps and roof drain clamping ring, adjustable extensions and dome strainers shall be the work of the General Contract.

7. 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.
8. 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 for its Work.
  - a. Providing radon mitigation piping and equipment shall be the work of the Plumbing Contract.
9. 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 for its Work.
10. 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.
11. Providing automatic door operators shall be the work of the General Contract, including installing control wiring from activation device (push-plate switch) to operator and/or power supplies (low voltage).
  - a. Providing power (120 volt and above) to operator and/or power supplies shall be the work of the Electrical Contract.
12. 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 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.

13. Contractors' Construction Schedules: At intervals provided in Division 01 Section "Construction Progress Documentation", each contract 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.
  14. Provide work specified in Sections other than Contractor's own designated Specification Sections for above-listed items, as applicable.
  - B. Field Engineering and Surveying: The General Contract is responsible for field engineering and surveying.
  - C. Temporary HVAC: The General Contract is responsible for temporary HVAC before permanent enclosure of building is complete and all associated costs. The General 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 General Contract is responsible for temporary ventilation before permanent enclosure of building is complete and all associated costs. The General 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 the General Contract.
    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. Equipment Coordination: Refer to "Connection Schedule" at the end of this Section for each contract's responsibilities.
- 1.9 GENERAL CONTRACT GC-D1 REQUIREMENTS  
SARGENT ES AND ROMBOUT MS
- A. Unless noted otherwise, Work in GC-D1 includes, but is not limited to, that shown on the following Drawings:
    1. Title Sheets (G) Drawings.
    2. Symbols and Abbreviations (G) Drawings.

3. Code Compliance (CG and EG) Drawings.
4. Hazardous Materials (EH) Drawings.
5. Structural (ES) Drawings.
6. Architectural (CA and EA) Drawings.

B. Unless noted otherwise, Work in GC-D1 includes, but is not limited to, that covered by the following Specifications:

1. Division 01 (General Requirements) Specification sections.
2. Division 02 (Existing Conditions) Specification sections.
3. Division 03 (Concrete) Specification sections.
4. Division 04 (Masonry) Specification sections.
5. Division 05 (Metals) Specification sections.
6. Division 06 (Wood, Plastics, and Composites) Specification sections.
7. Division 07 (Thermal and Moisture Protection) Specification sections.
8. Division 08 (Openings) Specification sections.
9. Division 09 (Finishes) Specification sections.
10. Division 10 (Specialties) Specification sections.
11. Division 11 (Equipment) Specification sections.
12. Division 12 (Furnishings) Specification sections.
13. Division 13 (Special Construction) Specification sections.
14. Division 14 (Conveying Equipment) Specifications sections.

C. Temporary facilities and controls in GC-D1 includes, but are not limited to, the following:

1. Temporary utilities, as follows:
  - a. Sanitary facilities.
2. Security and protection facilities, as follows:
  - a. Environmental protection.
  - b. Security enclosure and lockup.
  - c. Barricades, warning signs, and lights.
  - d. Temporary railings.
  - e. Temporary egress.
  - f. Covered walkways.
  - g. Temporary partitions.
  - h. Temporary fire-protection facilities.
3. Restoration of Owner's existing facilities used as temporary facilities.

#### 1.10 GENERAL CONTRACT GC-D2 REQUIREMENTS JV FORRESTAL ES, GLENHAM ES, SOUTH AVE ES AND BEACON HS

A. Unless noted otherwise, Work in GC-D2 includes, but is not limited to, that shown on the following Drawings:

1. Title Sheets (G) Drawings.
2. Symbols and Abbreviations (G) Drawings.

3. Code Compliance (AG, BG, DG and FG) Drawings.
4. Hazardous Materials (AH, BH, and DH) Drawings.
5. Structural (BS and FS) Drawings.
6. Architectural (AA, BA, DA and FA) Drawings.

B. Unless noted otherwise, Work in GC-D2 includes, but is not limited to, that covered by the following Specifications:

1. Division 01 (General Requirements) Specification sections.
2. Division 02 (Existing Conditions) Specification sections.
3. Division 03 (Concrete) Specification sections.
4. Division 04 (Masonry) Specification sections.
5. Division 05 (Metals) Specification sections.
6. Division 06 (Wood, Plastics, and Composites) Specification sections.
7. Division 07 (Thermal and Moisture Protection) Specification sections.
8. Division 08 (Openings) Specification sections.
9. Division 09 (Finishes) Specification sections.
10. Division 10 (Specialties) Specification sections.
11. Division 11 (Equipment) Specification sections.
12. Division 12 (Furnishings) Specification sections.
13. Division 13 (Special Construction) Specification sections.
14. Division 14 (Conveying Equipment) Specifications sections.

C. Temporary facilities and controls in GC-D2 include, but are not limited to, the following:

1. Temporary utilities, as follows:
  - a. Sanitary facilities.
2. Security and protection facilities, as follows:
  - a. Environmental protection.
  - b. Security enclosure and lockup.
  - c. Barricades, warning signs, and lights.
  - d. Temporary railings.
  - e. Temporary egress.
  - f. Covered walkways.
  - g. Temporary partitions.
  - h. Temporary fire-protection facilities.
3. Restoration of Owner's existing facilities used as temporary facilities.

#### 1.11 MECHANICAL CONTRACT MC-D1 REQUIREMENTS JV FORRESTAL ES, SARGENT ES AND ROMBOUT MS

A. Unless noted otherwise, Work in MC-D1 includes, but is not limited to, that shown on the following Drawings:

1. Title Sheets (G) Drawings.
2. Symbols and Abbreviations (G) Drawings.

3. Code Compliance (AG, CG, and EG) Drawings.
4. Mechanical (AM, CM, and EM) Drawings.

B. Unless noted otherwise, Work in MC-D1 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 06 (Wood, Plastics, and Composites) Specification sections, as follows:
  - a. 06 10 26 Roofing Rough Carpentry, as required for the Work of this Contract.
6. 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 53 23 EPDM Roofing, as required for the Work of this Contract.
  - c. 07 72 00 Roof Accessories, as required for the Work of this Contract.
  - d. 07 84 13 Penetration Firestopping, as required for the Work of this Contract.
  - e. 07 92 00 Joint Sealants, as required for the Work of this Contract.
7. Division 09 (Finishes) Specification sections, as follows:
  - a. 09 91 00 Painting, as required for the Work of this Contract.
  - b. 09 96 00 High-Performance Coatings, as required for the Work of this Contract.
8. Division 23 (Heating, Ventilating and Air Conditioning) Specification sections.

#### 1.12 MECHANICAL CONTRACT MC-D2 REQUIREMENTS GLENHAM ES, SOUTH AVE ES AND BEACON HS

A. Unless noted otherwise, Work in MC-D2 includes, but is not limited to, that shown on the following Drawings:

1. Title Sheets(G) Drawings.
2. Symbols and Abbreviations (G) Drawings.
3. Code Compliance (BG, DG and FG) Drawings.
4. Mechanical (BM, DM and FM) Drawings.

B. Unless noted otherwise, Work in MC-D2 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 06 (Wood, Plastics, and Composites) Specification sections, as follows:
  - a. 06 10 26 Roofing Rough Carpentry, as required for the Work of this Contract.
6. 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 53 23 EPDM Roofing, as required for the Work of this Contract.
  - c. 07 72 00 Roof Accessories, as required for the Work of this Contract.
  - d. 07 84 13 Penetration Firestopping, as required for the Work of this Contract.
  - e. 07 92 00 Joint Sealants, as required for the Work of this Contract.
7. Division 09 (Finishes) Specification sections, as follows:
  - a. 09 91 00 Painting, as required for the Work of this Contract.
  - b. 09 96 00 High-Performance Coatings, as required for the Work of this Contract.
8. Division 23 (Heating, Ventilating and Air Conditioning) Specification sections.

1.13 ELECTRICAL CONTRACT EC-D1 REQUIREMENTS  
 JV FORRESTAL ES, GLENHAM ES, SARGENT ES, SOUTH AVE ES,  
 ROMBOUT MS AND BEACON HS.

- A. Unless noted otherwise, Work in EC-D1 includes, but is not limited to, that shown on the following Drawings:
  1. Title Sheets (G) Drawings.
  2. Symbols and Abbreviations (G) Drawings.
  3. Code Compliance (AG, BG, CG, DG, EG and FG) Drawings.
  4. Electrical (AE, BE, CE, DE, EE and FE) Drawings.
- B. Unless noted otherwise, Work in EC-D1 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 06 (Wood, Plastics, and Composites) Specification sections, as follows:
    - a. 06 10 26 Roofing Rough Carpentry, as required for the Work of this Contract.
  6. 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 53 23 EPDM Roofing, as required for the Work of this Contract.
    - c. 07 72 00 Roof Accessories, as required for the Work of this Contract.
    - d. 07 84 13 Penetration Firestopping, as required for the Work of this Contract.
    - e. 07 92 00 Joint Sealants, as required for the Work of this Contract.
  7. Division 09 (Finishes) Specification sections, as follows:
    - a. 09 91 00 Painting, as required for the Work of this Contract.
    - b. 09 96 00 High-Performance Coatings, as required for the Work of this Contract.
  8. Division 26 (Electrical) Specification sections.
  9. Division 27 (Communications) Specification sections.
  10. Division 28 (Electronic Safety and Security) Specification sections.
- C. Temporary facilities and controls in EC-D1 include, but are not limited to, the following:
1. Temporary utilities, as follows:
    - a. Electric power service and distribution.
    - b. Lighting, including site lighting.
  2. Electric Power Service from Generator: Provide electric power service via a generator, including fuel, for use by all construction entities for construction purposes and construction field offices until permanent system is available for use.
  3. Electric Power Service from Permanent Existing System: Electric power from permanent existing system is available for use.
    - a. Construction Use Charges: Electric power use charges for construction purposes to be billed paid by Owner.
    - b. Field Office Use Charges: By Owner for construction field offices.

- 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 plus Project Representative field office.
4. Restoration of Owner's existing facilities used as temporary facilities.

1.14 PLUMBING CONTRACT PC-D1 REQUIREMENTS  
JV FORRESTAL ES, GLENHAM ES, SARGENT ES, SOUTH AVE ES,  
ROMBOUT MS AND BEACON HS

- A. Unless noted otherwise, Work in PC-D1 includes, but is not limited to, that shown on the following Drawings:
1. Title Sheets (G) Drawings.
  2. Symbols and Abbreviations (G) Drawings.
  3. General Information (G) Drawings.
  4. Code Compliance (AG, BG, CG, DG, EG and FG) Drawings.
  5. Plumbing (AP, BP, CP, DP, EP and FP) Drawings.
- B. Unless noted otherwise, Work in PC-D1 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 84 13 Penetration Firestopping, as required for the Work of this Contract.
    - b. 07 92 00 Joint Sealants, as required for the Work of this Contract.
  6. Division 09 (Finishes) Specification sections, as follows:
    - a. 09 91 00 Painting, as required for the Work of this Contract.
    - b. 09 96 00 High-Performance Coatings, as required for the Work of this Contract.

1.15 SITE CONTRACT SC-D4 REQUIREMENTS  
ROMBOUT MS

- A. Unless noted otherwise, Work in SC-D4 includes, but is not limited to, that shown on the following Drawings:
1. Title Sheets (G) Drawings.
  2. Symbols and Abbreviations (G) Drawings.
  3. Code Compliance (EG) Drawings.
  4. Survey/Landscape/Civil (EV and EC) Drawings.
  5. Common Details (ZC) Drawings.
- B. Unless noted otherwise, Work in SC-D4 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 92 00 Joint Sealants, as required for the Work of this Contract.
  6. Division 09 (Finishes) Specification sections, as follows:
    - a. 09 91 00 Painting, as required for the Work of this Contract.
    - b. 09 96 00 High-Performance Coatings, as required for the Work of this Contract.
  7. Division 31 (Earthwork) Specification sections.
  8. Division 32 (Exterior Improvements) Specification sections.
  9. Division 33 (Utilities) Specification sections

1.16 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 unless otherwise noted.

B. Owner-Furnished Products:

1. Toilet Room Accessories: Toilet tissue, paper towel and soap dispensers, for installation by the General Contractor responsible for the Work.
2. High School Recording Room: Section 13 24 00 Modular Sound-Isolation Practice Rooms, Soundlok Room by Wenger Corporation, per Quote No. 3258699.

C. Owner-Furnished Products Procured under State Contract:

1. Temperature Controls Contractor (TCC), Section 23 09 00 Instrumentation and Control for HVAC – Day Automation Systems, Incorporated, using NYS OGS contract pricing, through NYS OGS Group # 77201, Award # 23150, Contract # PT68783 for Products and Installation.
  - a. Temperature Controls Contractor is responsible for all electrical connections to provide for a complete and operating system.
  - b. Mechanical contractor responsible for the work shall coordinate the work with the owner's Temperature Controls Contractor.
  - c. Temperature Controls Contractor (TCC) shall furnish the following to the Mechanical Contractor for installation.
    - 1) Loose dampers associated with louvers, exhaust fans, and gravity hoods.
    - 2) Control valves.
    - 3) Sensor wells to fit their sensors.
  - d. Exception: actuated devices or sensors that must be an integral part of the equipment (example: factory installed mixing box dampers or internal packaged refrigeration system safety controls) shall be provided by Mechanical Contractor responsible for the Work.
2. Tensile Canopy Structures (TCS), – Skyways, by Landscape Structure, Dallas, Texas for Products and Installation.
3. Unit Ventilators (UV), Section 23 82 00 Terminal Heating and Cooling Units – Trane using OMNI Contract #3341 for Products Only.
  - a. Mechanical contractor responsible for the work will coordinate existing condition requirements and provide for a complete installation.

1.17 ACCESS TO SITE

- A. 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.

#### 1.18 COORDINATION WITH OCCUPANTS

- A. Owner Occupancy: Owner will occupy site and existing and adjacent buildings 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, security cameras, 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 buildings or sites.

- 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.

#### 1.19 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 7:00 a.m. to 4:00 pm 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: When approved by CM and Owner
  2. Weekend Hours: When approved by CM and Owner.
  3. Hours for Noisy Activity (in excess of 60 dB): During non school hours as approved by CM and Owner.

- 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's written permission before proceeding with utility interruptions.

- D. Noise, Vibration, and Odors: Coordinate operations that may result in high levels of noise and vibration, odors, or other disruption to Owner occupancy.

1. Notify Construction Manager not less than 72 hours in advance of proposed disruptive operations.
  2. Obtain Construction Manager's 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



## **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: 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 GC-D1

- A. Allowance No. 1: Contingency Allowance: Include the sum of \$80,000.00 for use according to Owner's instructions.

### 3.3 SCHEDULE OF ALLOWANCES - GENERAL CONTRACT GC-D2

- A. Allowance No. 1: Contingency Allowance: Include the sum of \$95,000.00 for use according to Owner's instructions.

### 3.4 SCHEDULE OF ALLOWANCES - MECHANICAL CONTRACT MC-D1

- A. Allowance No. 1: Contingency Allowance: Include the sum of \$65,000.00 for use according to Owner's instructions.

### 3.5 SCHEDULE OF ALLOWANCES - MECHANICAL CONTRACT MC-D2

- A. Allowance No. 1: Contingency Allowance: Include the sum of \$85,000.00 for use according to Owner's instructions.

### 3.6 SCHEDULE OF ALLOWANCES - ELECTRICAL CONTRACT EC-D1

- A. Allowance No. 1: Contingency Allowance: Include the sum of \$45,000.00 for use according to Owner's instructions.

3.7 **SCHEDULE OF ALLOWANCES - PLUMBING CONTRACT PC-D1**

- A. Allowance No. 1: Contingency Allowance: Include the sum of \$30,000.00 for use according to Owner's instructions.

3.8 **SCHEDULE OF ALLOWANCES - SITE CONTRACT SC-D4**

- A. Allowance No. 1: Contingency Allowance: Include the sum of \$45,000.00 for use according to Owner's instructions.

Attachment: Allowance Access Authorization

END OF SECTION 01 21 00

**ALLOWANCE ACCESS AUTHORIZATION:**

**Project:**            **Project D Reconstruction to Beacon City SD**

**Architect:**       **Tetra Tech Architects & Engineers**

**Project No. 279180-22004**

**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**

**Recommended by:**  
**Construction Manager [if applicable]**

By (Signature): \_\_\_\_\_

By (Signature): \_\_\_\_\_

Date: \_\_\_\_\_

Date: \_\_\_\_\_

**Accepted by:**  
**Contractor**

**Approved by:**  
**Owner**

By (Signature): \_\_\_\_\_

By (Signature): \_\_\_\_\_

Date: \_\_\_\_\_

Date: \_\_\_\_\_

## **SECTION 01 23 00 - ALTERNATES**

### **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 alternates.

#### **1.3 DEFINITIONS**

- A. Alternate: An amount proposed by bidders and stated on the Bid Form for certain work defined in the bidding requirements that may be added to or deducted from the base bid amount if Owner decides to accept a corresponding change either in the amount of construction to be completed or in the products, materials, equipment, systems, or installation methods described in the Contract Documents.
  - 1. Alternates described in this Section are part of the Work only if enumerated in the Agreement.
  - 2. The cost or credit for each alternate is the net addition to or deduction from the Contract Sum to incorporate alternate into the Work. No other adjustments are made to the Contract Sum.

#### **1.4 PROCEDURES**

- A. Coordination: Revise or adjust affected adjacent work as necessary to completely integrate work of the alternate into Project.
  - 1. Include as part of each alternate, miscellaneous devices, accessory objects, and similar items incidental to or required for a complete installation whether or not indicated as part of alternate.
- B. Notification: Immediately following award of the Contract, notify each party involved, in writing, of the status of each alternate. Indicate if alternates have been accepted, rejected, or deferred for later consideration.
- C. Execute accepted alternates under the same conditions as other work of the Contract.
- D. Schedule: A schedule of alternates is included at the end of this Section. Specification Sections referenced in schedule contain requirements for materials necessary to achieve the work described under each alternate.

## PART 2 - PRODUCTS (Not Used)

## PART 3 - EXECUTION

### 3.1 SCHEDULE OF ALTERNATES

#### A. **Alternate No. 1: Reconstruction of Glenham Elementary School Boys' T12b and Girls' T12a Bathrooms**

1. This Alternate affects more than one Contract, as follows:
  - a. Site Contract SC-D4: Not applicable.
  - b. General Contract GC-D1: Not applicable.
  - c. General Contract GC-D2: In addition to work in the Base Bid, provide all contract work shown associated with these spaces on the "G" series drawings, Drawings BA100, BA130, BA160, BA401, BA600 and BA900 and as specified in the Project Manual.
  - d. Plumbing Contract PC-D1: In addition to work in the Base Bid, provide all contract work shown associated with these spaces on the "G" series drawings, Drawing BP130 and as specified in the Project Manual.
  - e. Mechanical Contract MC-D1: Not applicable.
  - f. Mechanical Contract MC-D2: In addition to work in the Base Bid, provide all contract work shown associated with these spaces on the "G" series drawings, Drawings BM051, BM101, BM131, BM500, and BM600 and as specified in the Project Manual.
  - g. Electrical Contract EC-D1: In addition to work in the Base Bid, provide all contract work shown associated with these spaces on the "G" series drawings, Drawings BE100, BE130, BE500, and BE501 and as specified in the Project Manual.

#### B. **Alternate No. 2: Glenham Elementary School Attendance Office E6 Alterations**

1. This Alternate is for alterations of the Glenham Elementary School Attendance Office E6 including associated work in Library 137 and Work 138, and affects more than one Contract, as follows:
  - a. Site Contract SC-D4: Not applicable.
  - b. General Contract GC-D1: Not applicable.
  - c. General Contract GC-D2: In addition to work in the Base Bid, provide all contract work as shown on the "G" series drawings, Drawings BA101, BA131, BA161, BA400, and BA600 and as specified in the Project Manual.

- d. Plumbing Contract PC-D1: Not applicable.
- e. Mechanical Contract MC-D1: Not applicable.
- f. Mechanical Contract MC-D2: In addition to work in the Base Bid, provide all contract work as shown on the “G” series drawings, Drawings BM051, BM100, BM130, BM500, and BM600 and as specified in the Project Manual.
- g. Electrical Contract EC-D1: In addition to work in the Base Bid, provide all contract work as shown on the “G” series drawings, Drawings BE101, BE131, BE500, and BE501 and as specified in the Project Manual.

**C. Alternate No. 3: Glenham Elementary School Corridor Lighting Replacement**

- 1. This Alternate affects Contract, as follows:
  - a. Site Contract SC-D4: Not applicable.
  - b. General Contract GC-D1: Not applicable.
  - c. General Contract GC-D2: In addition to work in the Base Bid, provide removal and reinstallation of Corridor Ceilings in conjunction with lighting replacement. See the “G” series drawings, Drawings BA100 thru BA103, BA130 thru BA132, and as specified in the Project Manual.
  - d. Plumbing Contract PC-D1: Not applicable.
  - e. Mechanical Contract MC-D1: Not applicable.
  - f. Mechanical Contract MC-D2: Not applicable.
  - g. Electrical Contract EC-D1: In addition to work in the Base Bid, provide all contract work associated with building-wide Corridor lighting replacements. See the “G” series drawings, Drawings BE100 thru BE103, BE130 thru BE132, BE500 and BE501 and as specified in the Project Manual.

**D. Alternate No. 4: Glenham Elementary School Student Cubbies Replacement**

- 1. This Alternate affects the following Contract:
  - a. Site Contract SC-D4: Not applicable.
  - b. General Contract GC-D1: Not applicable.
  - c. General Contract GC-D2: In addition to work in the Base Bid, provide Student Cubbies replacements as shown on Drawings BA100 thru BA102, BA130 thru BA132 and as specified in SECTION 12 32 16 Manufactured Plastic Laminated-Faced Casework and the Project Manual.
  - d. Plumbing Contract PC-D1: Not applicable.
  - e. Mechanical Contract MC-D1: Not applicable.

- f. Mechanical Contract MC-D2: Not applicable.
- g. Electrical Contract EC-D1: Not applicable.

**E. Alternate No. 5: South Ave Elementary School Corridor-Stair Ceilings and Lighting Replacement**

- 1. This Alternate affects more than one Contract, as follows:
  - a. Site Contract SC-D4: Not applicable.
  - b. General Contract GC-D1: Not applicable.
  - c. General Contract GC-D2: In addition to work in the Base Bid, provide removal and reinstallation of Area A Corridor Ceilings and removal and replacement of Area B Corridor Ceilings in conjunction with lighting replacement. See the “G” series drawings, Drawings DA100 thru DA102, DA160, and as specified in SECTION 09 51 13 Acoustical Panel Ceiling and in the Project Manual.
  - d. Plumbing Contract PC-D1: Not applicable.
  - e. Mechanical Contract MC-D1: Not applicable.
  - f. Mechanical Contract MC-D2: Not applicable.
  - g. Electrical Contract EC-D1: In addition to work in the Base Bid, provide all contract work associated with building-wide Corridor lighting replacements. See the “G” series drawings, Drawings DE100 thru DE102, DE130 thru DE132, DE500 and as specified in the Project Manual.

**F. Alternate No. 6: Rombout Middle School Courtyard Outdoor Learning Classroom Utilities**

- 1. This Alternate affects the following Contract:
  - a. Site Contract SC-D4: Not applicable.
  - b. General Contract GC-D1: Not applicable.
  - c. General Contract GC-D2: Not applicable.
  - d. Plumbing Contract PC-D1: Not applicable.
  - e. Mechanical Contract MC-D1: Not applicable.
  - f. Mechanical Contract MC-D2: Not applicable.
  - g. Electrical Contract EC-D1: In addition to work in the Base Bid, provide all contract work associated with the Outdoor Learning Classroom. See the “G” series drawings, Drawing EE001, EE500 and EE501 and as specified in the Project Manual.



**G. Alternate No. 7: Rombout Middle School Corridor Ceilings and Lighting Replacement Area D, First and Second Floor**

1. This Alternate affects more than one Contract, as follows:
  - a. Site Contract SC-D4: Not applicable.
  - b. General Contract GC-D1: In addition to work in the Base Bid, provide removal and replacement of Area D Corridor Ceilings. See the “G” series drawings, Drawings EA102, EA104, EA162, EA164 and as specified in SECTION 09 51 13 Acoustical Panel Ceiling and in the Project Manual.
  - c. General Contract GC-D2: Not applicable.
  - d. Plumbing Contract PC-D1: Not applicable.
  - e. Mechanical Contract MC-D1: In addition to work in the Base Bid, provide all contract work associated with Area D Corridor Ceiling and Lighting replacements. See the “G” series drawings, Drawings EM051 and as specified in the Project Manual.
  - f. Mechanical Contract MC-D2: Not applicable.
  - g. Electrical Contract EC-D1: In addition to work in the Base Bid, provide all contract work associated with Area D Corridor Lighting replacements. See the “G” series drawings, Drawings EE102, EE104, EE132, EE134, EE500, EE501 and EE600 and as specified in the Project Manual.

**H. Alternate No. 8: Rombout Middle School Corridor Ceilings and Lighting Replacement Area F**

1. This Alternate affects more than one Contract, as follows:
  - a. Site Contract SC-D4: Not applicable.
  - b. General Contract GC-D1: In addition to work in the Base Bid, provide removal and replacement of Area F Corridor Ceilings as shown on EA103 and EA163. See the “G” series drawings, and as specified in SECTION 09 51 13 Acoustical Panel Ceiling and in the Project Manual.
  - c. General Contract GC-D2: Not applicable.
  - d. Plumbing Contract PC-D1: Not applicable.
  - e. Mechanical Contract MC-D1: Not applicable.
  - f. Mechanical Contract MC-D2: Not applicable.
  - g. Electrical Contract EC-D1: In addition to work in the Base Bid, provide removal and replacement of Area F Corridor Lighting as shown on EE103 and EE133. See the “G” series drawings, and as specified in the Project Manual.

**I. Alternate No. 9: Rombout Middle School Corridor Lighting Replacement Area A**

1. This Alternate affects more than one Contract, as follows:
  - a. Site Contract SC-D4: Not applicable.
  - b. General Contract GC-D1: In addition to work in the Base Bid, provide removal and reinstallation of existing Corridor Ceilings in conjunction with lighting replacement. See the “G” series drawings, Drawings EA100, EA130 and as specified in the Project Manual.
  - c. General Contract GC-D2: Not applicable.
  - d. Plumbing Contract PC-D1: Not applicable.
  - e. Mechanical Contract MC-D1: Not applicable.
  - f. Mechanical Contract MC-D2: Not applicable.
  - g. Electrical Contract EC-D1: In addition to work in the Base Bid, provide all contract work associated with Corridor lighting replacement. See the “G” series drawings, Drawings EE100, EE130 and as specified in the Project Manual.

**J. Alternate No. 10: Rombout Middle School Corridor Ceilings and Lighting Replacement Area B, Second Floor**

1. This Alternate affects more than one Contract, as follows:
  - a. Site Contract SC-D4: Not applicable.
  - b. General Contract GC-D1: In addition to work in the Base Bid, provide removal and replacement of Area B Second Floor Corridor Ceilings. See the “G” series drawings, Drawings EA104 and EA164 and as specified in SECTION 09 51 13 Acoustical Panel Ceiling and in the Project Manual.
  - c. General Contract GC-D2: Not applicable.
  - d. Plumbing Contract PC-D1: Not applicable.
  - e. Mechanical Contract MC-D1: In addition to work in the Base Bid, provide all contract work associated with Area B Corridor Ceiling and Lighting replacements. See the “G” series drawings, Drawings EM051 and as specified in the Project Manual.
  - f. Mechanical Contract MC-D2: Not applicable.
  - g. Electrical Contract EC-D1: In addition to work in the Base Bid, provide all contract work associated with Corridor lighting replacement. See the “G” series drawings, Drawings EE104, EE134 and as specified in the Project Manual.

**K. Alternate No. 11: Beacon High School Fitness Center Alterations**

1. This Alternate affects more than one Contract, as follows:
  - a. Site Contract SC-D4: Not applicable.
  - b. General Contract GC-D1: Not applicable.
  - c. General Contract GC-D2: Provide all associated contract work on the “G” series drawings, Drawings FA101, FA131, FA161, FA401, FA600, FS130 and FS500 and as specified in the Project Manual.
  - d. Plumbing Contract PC-D1: Provide all associated contract work as shown on the “G” series drawings, Drawings FP401 and as specified in the Project Manual
  - e. Mechanical Contract MC-D1: Not applicable.
  - f. Mechanical Contract MC-D2: Provide all associated contract work as shown on the “G” series drawings, Drawings FM100 and FM500 and as specified in the Project Manual.
  - g. Electrical Contract EC-D1: Provide all associated contract work as shown on the “G” series drawings, Drawings FE401, FE500 and FE501 and as specified in the Project Manual.

**L. Alternate No. 12: Beacon High School Science Room C150**

1. This Alternate involves the alteration of Room C150 and Corridor C135A, and affects more than one Contract, as follows:
  - a. Site Contract SC-D4: Not applicable.
  - b. General Contract GC-D1: Not applicable.
  - c. General Contract GC-D2: Provide all associated contract work on the “G” series drawings, Drawings FA100, FA130, FA160, FA400, FA600 and FA920 and as specified in the Project Manual.
  - d. Plumbing Contract PC-D1: Provide all associated contract work on the “G” series drawings, Drawings FP400 and as specified in the Project Manual.
  - e. Mechanical Contract MC-D1: Not applicable.
  - f. Mechanical Contract MC-D2: Not applicable.
  - g. Electrical Contract EC-D1: Provide all associated contract work on the “G” series drawings, Drawings FE400, FE500 and FE501 and as specified in the Project Manual.

**M. Alternate No. 13: Beacon High School Science Room C125**

1. This Alternate involves the alteration of Room C125 and Corridor C135A and affects more than one Contract, as follows:
  - a. Site Contract SC-D4: Not applicable.
  - b. General Contract GC-D1: Not applicable.
  - c. General Contract GC-D2: Provide all associated contract work on the “G” series drawings, Drawings FA100, FA130, FA160, FA400, FA600 and FA920 and as specified in the Project Manual.
  - d. Plumbing Contract PC-D1: Provide all associated contract work on the “G” series drawings, Drawings FP400 and as specified in the Project Manual.
  - e. Mechanical Contract MC-D1: Not applicable.
  - f. Mechanical Contract MC-D2: Not applicable.
  - g. Electrical Contract EC-D1: Provide all associated contract work on the “G” series drawings, Drawings FE400, FE500 and FE501 and as specified in the Project Manual.

**N. Alternate No. 14: Beacon High School TV Studio, Control and Editing Suite Alterations**

1. This Alternate involves the alteration of Rooms A205, A206, A207, A208, B208A, B210 and Corridor A2 and affects more than one Contract, as follows:
  - a. Site Contract SC-D4: Not applicable.
  - b. General Contract GC-D1: Not applicable.
  - c. General Contract GC-D2: Provide all associated contract work on the “G” series drawings, Drawings FA102, FA133, FA162, FA402 and FA600 and as specified in the Project Manual.
  - d. Plumbing Contract PC-D1: Not applicable.
  - e. Mechanical Contract MC-D1: Not applicable.
  - f. Mechanical Contract MC-D2: Provide all associated contract work as shown on the “G” series drawings, Drawings FM101 and FM500 and as specified in the Project Manual.
  - g. Electrical Contract EC-D1: Provide all associated contract work as shown on the “G” series drawings, Drawings FE402, FE500 and FE501 and as specified in the Project Manual.

END OF SECTION 01 23 00

## **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 and 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





## 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.
    - a. Subschedules for Separate Elements of Work: Provide subschedules **for each building**.
      - 1) List allowances on subschedules only where exclusively part of separate element of work.
    - b. Summary Schedule: Provide summary schedule listing each subschedule and its total and each allowance; total of all subschedules and allowances shall equal the Contract Sum.

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. Multiple line items for amounts in excess of five percent of Contract Sum, broken out to subcomponents equaling not greater than five percent each.
  - b. 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.
  - c. Allowances: Provide a separate line item in the summary schedule of values for each allowance.
  - d. Submittals – Include a minimum of **One** percent of contract sum.
  - e. Supervision: Include a minimum of **Three** percent of contract sum.
  - f. 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.
  - g. Punch List – **Three** percent of contract sum.

h. 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.
- 2) The total value of all project closeout line items shall equal to not less than the following:
  - a) General Contract: **One** percent of the Contract Sum.

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 G702/CMa** 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.
  3. Include amounts of fully-executed Change Orders and Construction Change Directives issued before last day of construction period covered by application.
- 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)

END OF SECTION 01 29 00

## **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. Coordination drawings.
  - 4. Owner's Project Representative activities.
  - 5. Electronic form procedures.
  - 6. Requests for Information (RFIs).
  - 7. 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. **Each contractor shall coordinate its construction operations with those of other contractors and entities to ensure efficient and orderly installation of each part of the Work.**
  - 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 with other contractors to ensure maximum performance and accessibility for required maintenance, service, and repair.
  - 3. Make adequate provisions to accommodate items scheduled for later installation.
- B. Administrative Procedures: Coordinate scheduling and timing of required administrative procedures with other construction activities and activities of other contractors to avoid conflicts and to ensure orderly progress of the Work. Such administrative activities include, but are not limited to, the following:
  - 1. Preparation of Contractor's construction schedule.
  - 2. 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) Site base file drawings.
      - 2) Floor plans.
      - 3) Reflected ceiling plans.

#### 1.5 COORDINATION DRAWINGS

- A. Each Contractor:
  - 1. Participate in the Coordination Drawing process as required to ensure work is coordinated with associated Contractors to fulfill the scope and schedule of the project. Contractors with work in areas where more than one Contractor has Contract Work must participate in coordination process for that area of work.
  - 2. Architect will furnish Contractor with digital media copies of architectural, structural, mechanical, plumbing, and electrical base information, not including drawing sheets or details, at no charge, upon providing Architect with a fully-executed indemnification agreement.

3. At an initial coordination meeting scheduled by the Mechanical Contractor and Construction Manager and Owner's Representative in accordance with schedule defined in Division 01 Section Multiple Project Summary – Project Schedule, coordinate the schedule of the creation and revision of Coordination Drawings with the Architect, Construction Manager, Owner, and involved Contractors as required to meet the construction schedule.
4. Revise Coordination Drawings identifying work of applicable Contract that requires coordination with building systems or that presents potential interference with existing construction or construction provided by another Contractor. Examples of these components and work include (but are not limited to):
  - a. Systems located above ceilings or integrated into ceiling system such as ducts, piping, lighting, cable trays, electrical conduits, joist cross bracing, structure, supports, fire protection systems, diffusers, grilles, access doors, etc.
  - b. Components of systems installed on roofs requiring roof penetrations, structural support, lightning protection, etc.
  - c. Components suspended or otherwise inside spaces such as gymnasium backstops, light fixtures, ducts, gymnasium dividers, web spaces of trusses with duct/pipe, etc.
  - d. Clearances required for service access or by codes. Show service access locations including brief note such as "service access to filters".
  - e. Equipment located adjacent to building that may need coordination with landscaping such as dust collectors, transformers, gas metering stations, chillers and condensing units, pads, louvers, etc.
5. Resolution of Conflicts and Interferences:
  - a. Schedule additional coordination meetings through Construction Manager with Architect, Owner, and other Contractors and attend additional coordination meetings as required to fully resolve conflicts and complete process.
  - b. Review draft revisions of respective trades and Owner at subsequent coordination meetings with involved parties. Resolve conflicts and interferences at these meetings.
  - c. Reposition proposed locations of components and equipment in applicable Contracts as required to resolve conflicts and address Owner's serviceability concerns after review of Coordination Drawings. For exposed work, adjust and coordinate configuration of components to achieve aesthetics consistent with the scope of the Project without increase in Contract Sum.

- d. Notify Construction Manager, Architect, Owner's Representative, and affected Contractors in case of unresolved interferences or conflicts prior to installation of construction. Schedule meetings and take other measures to resolve interferences or conflicts and revise applicable Coordination Drawings as required. Re-process revised Coordination Drawings in accordance with "Processing of Coordination Drawings" below to ensure all Contractors are aware of revisions in Coordination Drawings.
  - e. When all conflicts have been resolved on each complete Coordination Drawing, each applicable Contractor shall digitally sign and date the drawings, and deliver to the Mechanical Contractor for additional distribution. A copy of the signed originals will be stored in the Construction Manager's jobsite offices for reference for the duration of the construction.
  - f. Each Contractor will be provided with a copy of each coordination drawing and may transcribe additional information from the copies stored in the Construction Manager's jobsite offices.
6. Do not proceed with work in Contract in each area until agreement is reached with all Contractors and the Construction Manager, Architect and Owner on exact arrangements for each room or area, unless otherwise directed by the Construction Manager, Architect or Owner.
- a. If Contractor proceeds prior to resolving conflicts and receiving above agreement or direction and conflicts ensue as a result, Contractor must modify installed construction as required to permit other Contractors to proceed with coordinated installation at no change in Contract Sum.

**B. Mechanical Contract:**

- 1. In accordance with the Coordination Drawing creation schedule agreed to as described above, prepare and distribute Coordination Drawings as specified in the Division 23 Sections "Common Work Results for HVAC" and "Ductwork", for all areas with any construction work, including indoor areas and rooms, roofs, and near building areas with mechanical equipment. Consider construction of other Contracts as shown in Contract Documents to avoid conflicts. Prepare and revise the Coordination Drawings in the order and within the schedule agreed upon.
- 2. Coordinate the scheduling of coordination meetings with the project schedule Construction Manager, Architect, involved Contractors, and Owner. Schedule the meetings at the agreed upon schedule.
- 3. Deliver two prints and one electronic file in format as required elsewhere and as agreed to at the initial coordination meeting, of each Coordination Drawing simultaneously to Construction Manager, Architect, Owner, and each Contractor listed below and obtain written dated receipts from other contractors. Include additional print copy and electronic copy to Electrical Contractor, to become "Complete Coordination Drawing" for subsequent distribution and complete final coordination documentation as described below. Submit copy of receipts to Architect and Construction Manager.

4. Duplicate and deliver final complete drawings as required by Division 23 Section "Ductwork."

C. Contractors other than Mechanical Contractor:

1. Obtain Coordination Drawings and prepare draft revisions to Coordination Drawings showing applicable work of respective Contract and indicating perceived conflicts, proposed resolution of conflicts with existing conditions and construction of other Contracts as shown in Coordination Drawings.
2. Revise the Coordination Drawings in the order and within the schedule agreed upon.
3. Obtain Complete Coordination Drawing prints and revise showing components and work of applicable Contract including resolution of conflicts with construction of other Contracts as agreed to and as shown on revised draft Coordination Drawings.
4. Processing of Coordination Drawings: Receive, revise, and deliver Complete Coordination Drawings initially prepared by Mechanical Contractor according to the following sequence as applicable to Project.
5. Each Contractor: Obtain written dated receipt from subsequent recipient of Complete Coordination Drawings and submit copy of receipts to Architect and Construction Manager:
  - a. Mechanical Contract.
  - b. Electrical Contract.
  - c. General Contract.
  - d. Plumbing Contract.
  - e. Site Contract.

## 1.6 OWNER'S PROJECT REPRESENTATIVE ACTIVITIES

A. Project Representative shall:

1. Serve as liaison between Architect, Contractors 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.

#### 1.7 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.

#### 1.8 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.

## 1.9 PROJECT MEETINGS

- A. Preconstruction Conference: Construction Manager will schedule and conduct a preconstruction conference before starting construction, at a time convenient to Owner, Construction Manager and Architect, but no later than 15 days after date of Notice of Award.

1. Attendees: Authorized representatives of Owner, Commissioning Authority, Construction Manager, Architect, and their consultants; 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 that could affect progress, including the following:
    - a. Designation of key personnel and their duties.
    - b. Lines of communications.
    - c. Bonds and insurance.
    - d. Subcontract list.
    - e. Schedule of values.
    - f. Payment request estimate.
    - g. Applications for Payment.
    - h. Contractor's construction schedule.
    - i. Submittals.
    - j. Electronic form procedures (RFIs, ASIs, PRs).
    - k. Procedures for processing Change Orders and Construction Change Directives.
    - l. Quality control.
    - m. Adjoining properties.
    - n. Project schedule.
    - o. Contractor review of Contract Documents, including Drawings and Specifications.
    - p. Project meetings.
    - q. Project closeout procedures.
    - r. Electronic drawings.
    - s. AIA and Word documents.
  3. Report: Construction Manager will prepare and distribute meeting report.
- B. 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. Concrete.
  - q. Retaining walls.
  - r. Railings.
  - s. Staging removal.
3. Report: Construction Manager will prepare and distribute meeting report.
- C. Preinstallation Conferences: Conduct a preinstallation conference at Project site before each construction activity that requires coordination with other construction.
- 1. Review each Specification Section for requirements for preinstallation conferences.
    - a. No later than 15 days after date of Notice of Award, submit to Architect complete listing of preinstallation conferences to be held.
  - 2. Attendees: Installer and representatives of manufacturers and fabricators involved in or affected by the installation and its coordination or integration with other materials and installations that have preceded or will follow, shall attend the meeting. Advise Architect, Construction Manager, Commissioning Authority and Project Representative of scheduled meeting dates.
  - 3. Agenda: Review progress of other construction activities and preparations for the particular activity under consideration, including requirements for the following:
    - a. Contract Documents.
    - b. Deliveries.
    - c. Submittals.
    - d. Review of mockups.
    - e. Time schedules.
    - f. Weather limitations.
    - g. Manufacturer's written instructions.
    - h. Warranty requirements.
    - i. Compatibility of materials.
    - j. Acceptability of substrates.
    - k. Temporary facilities and controls.
    - l. Space and access limitations.
    - m. Testing and inspecting requirements.
    - n. Installation procedures.
    - o. Coordination with other work.
    - p. Required performance results.
    - q. Protection of adjacent work.
  - 4. Record significant conference discussions, agreements, and disagreements, including required corrective measures and actions.

5. Reporting: Distribute report of the meeting to each party present and to other parties requiring information.
  6. Do not proceed with installation if the conference cannot be successfully concluded. Initiate whatever actions are necessary to resolve impediments to performance of the Work and reconvene the conference at earliest feasible date.
- D. Progress Meetings: Construction Manager will conduct progress meetings at biweekly intervals, unless otherwise necessitated.
1. Attendees: In addition to representatives of Owner, Commissioning Authority, 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 each 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.
- E. 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.
- F. 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 each final scheduled date of Substantial Completion.
  1. Attendees: Authorized representatives of Owner, Commissioning Authority, 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 \_\_\_\_\_



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 "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, 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 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. Shop Drawings.
  - c. Product Schedules.
  - d. Qualification Data.
  - e. Certificates (Welding, Installer, Manufacturer, Product, and Material, as applicable).
  - f. Test Reports (Material, Product, Preconstruction, Compatibility, and Field, as applicable).
  - g. Research Reports.
  - h. Warranty (sample).
  - i. Design Data, including calculations.
  - j. Coordination Drawings.
  - k. 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](http://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](http://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](http://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 Owner-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)  
                         **QUEST** Cover Sheet to be used **ONLY** for Submittals for Sections 02 82 00, 02 83 00, and 02 84 00.  
                         Delegated Design Submittal Form

END OF SECTION 01 33 00

CONTRACTOR: \_\_\_\_\_  
\_\_\_\_\_

SUBMITTAL DATE \_\_\_\_ / \_\_\_\_ / \_\_\_\_

Check following as applicable:

ARCHITECT: Tetra Tech Architects & Engineers

☐ First Submission

**PROJECT IDENTIFICATION**

☐ Re-Submission No. \_\_\_\_

Architect's  
Project No.: 279180-22004 D

Proj. Name: Reconstruction to Beacon City School District

Location: \_\_\_\_\_

**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: 279180-22004 D

Project Title: Reconstruction to Beacon City School District

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.: 279180-22004 D

Proj. Name: Reconstruction to Beacon City School District

Location: \_\_\_\_\_

**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. \_\_\_\_\_

CONTRACTOR: \_\_\_\_\_  
\_\_\_\_\_

SUBMITTAL DATE \_\_\_\_/\_\_\_\_/\_\_\_\_

Check following as applicable:

CONSULTANT: \_\_\_\_\_

☐ First Submission \_\_\_\_

☐ Re-Submission No. \_\_\_\_

**PROJECT IDENTIFICATION**

Architect's  
Project No.: 279180-22004 D

Proj. Name: Reconstruction to Beacon City School District

Location: \_\_\_\_\_

**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:**

**CONTRACTOR COMMENTS:**

**OWNER'S CONSULTANT 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. \_\_\_\_\_

**QUEST - OWNER'S DIRECT CONSULTANT**

**ACTION SUBMITTAL:**

- ☐ Approved
- ☐ Approved As Noted
- ☐ Rejected
- ☐ Incomplete, Submit Additional Information

**INFORMATIONAL SUBMITTAL:**

- ☐ No Action Taken
- ☐ Returned for Resubmittal

Reviewed By: \_\_\_\_\_

Date: \_\_\_\_\_

## **DELEGATED DESIGN SUBMITTAL**

**CONTRACTOR:** \_\_\_\_\_

**SUBMITTAL DATE** \_\_\_\_ / \_\_\_\_ / \_\_\_\_

**DESIGN PROFESSIONAL:** \_\_\_\_\_

Check following as applicable:

**ARCHITECT:** Tetra Tech Architects & Engineers

☐ First Submission

**PROJECT IDENTIFICATION**

☐ Re-Submission No. \_\_\_\_

Architect's  
Project No.: 279180-22004 D  
Proj. Name: Reconstruction to Beacon City School District  
Location: \_\_\_\_\_

**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:**

**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**

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 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 1060, 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 disturbance of lead and lead-containing materials is not anticipated as part of this Project.
  - 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.

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 inspecting services are required to verify compliance with requirements specified or indicated. These services do not relieve Contractor of responsibility for compliance with the Contract Document requirements.
  - 1. Specific quality-assurance and -control requirements for individual construction activities are specified in the Sections that specify those activities. Requirements in those Sections may also cover production of standard products.
  - 2. Specified tests, inspections, and related actions do not limit Contractor's other quality-assurance and -control procedures that facilitate compliance with the Contract Document requirements.
  - 3. Requirements for Contractor to provide quality-assurance and -control services required by Architect, Owner, Construction Manager, or authorities having jurisdiction are not limited by provisions of this Section.

#### **1.3 DEFINITIONS**

- A. Quality-Assurance Services: Activities, actions, and procedures performed before and during execution of the Work to guard against defects and deficiencies and substantiate that proposed construction will comply with requirements.
- B. Quality-Control Services: Tests, inspections, procedures, and related actions during and after execution of the Work to evaluate that actual products incorporated into the Work and completed construction comply with requirements. Services do not include contract enforcement activities performed by Architect or Construction Manager.
- C. Testing Agency: An entity engaged to perform specific tests, inspections, or both. Testing laboratory shall mean the same as testing agency.
- D. Installer/Applicator/Erector: Contractor or another entity engaged by Contractor as an employee, Subcontractor, or Sub-subcontractor, to perform a particular construction operation, including installation, erection, application, and similar operations.

- E. 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.

#### 1.4 CONFLICTING REQUIREMENTS

- A. Referenced Standards: If compliance with two or more standards is specified and the standards establish different or conflicting requirements for minimum quantities or quality levels, comply with the most stringent requirement. Refer conflicting requirements that are different, but apparently equal, to Architect for a decision before proceeding.
- B. Minimum Quantity or Quality Levels: The quantity or quality level shown or specified shall be the minimum provided or performed. The actual installation may comply exactly with the minimum quantity or quality specified, or it may exceed the minimum within reasonable limits. To comply with these requirements, indicated numeric values are minimum or maximum, as appropriate, for the context of requirements. Refer uncertainties to Architect for a decision before proceeding.

#### 1.5 SUBMITTALS

- A. Informational Submittals:
  - 1. 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.
  - 2. Schedule of Tests and Inspections: Prepare in tabular form and include the following:
    - a. Specification Section number and title.
    - b. Entity responsible for performing tests and inspections.
    - c. Description of test and inspection.
    - d. Identification of applicable standards.
    - e. Identification of test and inspection methods.
    - f. Number of tests and inspections required.
    - g. Time schedule or time span for tests and inspections.

#### 1.6 REPORTS AND DOCUMENTS

- A. Test and Inspection Reports: Prepare and submit certified written reports specified in other Sections. Include the following:
  - 1. Date of issue.
  - 2. Project title and number.
  - 3. Name, address, and telephone number of testing agency.
  - 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 inspecting.
  11. Comments or professional opinion on whether tested or inspected Work complies with the Contract Document requirements.
  12. Name and signature of laboratory inspector.
  13. Recommendations on retesting and reinspecting.
- B. Permits, Licenses, and Certificates: For Owner's records, submit copies of permits, licenses, certifications, inspection reports, releases, jurisdictional settlements, notices, receipts for fee payments, judgments, correspondence, records, and similar documents, established for compliance with standards and regulations bearing on performance of the Work.

## 1.7 QUALITY ASSURANCE

- A. General: Qualifications paragraphs in this article establish the minimum qualification levels required; individual Specification Sections specify additional requirements.
- B. Manufacturer Qualifications: A firm experienced in manufacturing products or systems similar to those indicated for this Project and with a record of successful in-service performance, as well as sufficient production capacity to produce required units.
- C. Fabricator Qualifications: A firm experienced in producing products similar to those indicated for this Project and with a record of successful in-service performance, as well as sufficient production capacity to produce required units.
- D. Installer Qualifications: A firm or individual experienced in installing, erecting, or assembling work similar in material, design, and extent to that indicated for this Project, whose work has resulted in construction with a record of successful in-service performance.
- E. Professional Engineer Qualifications: A professional engineer who is legally qualified to practice in jurisdiction where Project is located and who is experienced in providing engineering services of the kind indicated. Engineering services are defined as those performed for installations of the system, assembly, or product that are similar in material, design, and extent to those indicated for this Project.
- F. Testing Agency Qualifications: An NRTL, an NVLAP, or an independent agency with the experience and capability to conduct testing and inspecting indicated, as documented according to ASTM E 329; and with additional qualifications specified in individual Sections; and, where required by authorities having jurisdiction, that is acceptable to authorities.
1. NRTL: A nationally recognized testing laboratory according to 29 CFR 1910.7.
  2. NVLAP: A testing agency accredited according to NIST's National Voluntary Laboratory Accreditation Program.

- G. **Manufacturer's Technical Representative Qualifications:** An authorized representative of manufacturer who is trained and approved by manufacturer to observe and inspect installation of manufacturer's products that are similar in material, design, and extent to those indicated for this Project.
- H. **Factory-Authorized Service Representative Qualifications:** An authorized representative of manufacturer who is trained and approved by manufacturer to inspect installation of manufacturer's products that are similar in material, design, and extent to those indicated for this Project.

## 1.8 QUALITY CONTROL

- A. **Owner Responsibilities:** Where quality-control services are indicated as Owner's responsibility, Owner will engage a qualified testing agency to perform these services.
  - 1. Owner will furnish Contractor with names, addresses, and telephone numbers of testing agencies engaged and a description of types of testing and inspecting they are engaged to perform.
  - 2. Costs for retesting and reinspecting construction that replaces or is necessitated by work that failed to comply with the Contract Documents will be charged to Contractor, and the Contract Sum will be adjusted by Change Order.
- B. **Contractor Responsibilities:** Tests and inspections not explicitly assigned to Owner are Contractor's responsibility. Perform additional quality-control activities required to verify that the Work complies with requirements, whether specified or not.
  - 1. Unless otherwise indicated, provide quality-control services specified and those required by authorities having jurisdiction. Perform quality-control services required of Contractor by authorities having jurisdiction, whether specified or not.
  - 2. Where services are indicated as Contractor's responsibility, engage a qualified testing agency to perform these quality-control services.
    - a. Contractor shall not employ same entity engaged by Owner, unless agreed to in writing by Owner.
  - 3. Notify testing agencies at least 24 hours in advance of time when Work that requires testing or inspecting will be performed.
  - 4. Where quality-control services are indicated as Contractor's responsibility, submit a certified written report, in duplicate, of each quality-control service.
  - 5. Testing and inspecting 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. **Manufacturer's Field Services:** Where indicated, engage a factory-authorized service representative to inspect field-assembled components and equipment installation, including service connections. Report results in writing as specified in Division 01 Section "Submittal Procedures."
- D. **Manufacturer's Technical Services:** Where indicated, engage a manufacturer's technical representative to observe and inspect the Work. Manufacturer's technical representative's services include participation in 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.
- E. **Retesting/Reinspecting:** Regardless of whether original tests or inspections were Contractor's responsibility, provide quality-control services, including retesting and reinspecting, for construction that replaced Work that failed to comply with the Contract Documents.
- F. **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 location 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 any duties of Contractor.
- G. **Associated Services:** Cooperate with agencies performing required tests, inspections, and similar quality-control services, and provide reasonable auxiliary services as requested. Notify agency sufficiently in advance of operations to permit assignment of personnel. Provide the following:
1. Access to the Work.
  2. Incidental labor and facilities necessary to facilitate tests and inspections.
  3. Adequate quantities of representative samples of materials that require testing and inspecting. Assist 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 inspecting equipment at Project site.
- H. **Coordination:** Coordinate sequence of activities to accommodate required quality-assurance and -control services with a minimum of delay and to avoid necessity of removing and replacing construction to accommodate testing and inspecting.
1. Schedule times for tests, inspections, obtaining samples, and similar activities.

- 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. 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.

## 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 conducting test.
- 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 REPAIR AND PROTECTION

- A. General: On completion of testing, inspecting, sample taking, and similar services, repair damaged construction and restore substrates and finishes.
  1. Provide materials and comply with installation requirements specified in other Specification Sections or matching existing substrates and finishes. Restore patched areas and extend restoration into adjoining areas with durable seams that are as invisible as possible. Comply with the Contract Document requirements for cutting and patching in Division 01 Section "Execution."
- B. Protect construction exposed by or for quality-control service activities.
- C. Repair and protection are Contractor's responsibility, regardless of the assignment of responsibility for quality-control services.

END OF SECTION 01 40 00



**TETRA TECH**  
ARCHITECTS & ENGINEERS

## STATEMENT OF SPECIAL INSPECTIONS

Project: *Addition, Alterations & Reconstruction to Beacon City School District*

Location: *Beacon, New York*

Owner: *Beacon City 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**

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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<br><br><i>("Continuous" &amp; "Periodic" defined by the Code; refer to applicable Technical Specification Section for specific frequency requirements)</i> | REQUIRED<br><i>(Required if checked; Not Applicable if not checked)</i> | TECHNICAL SPECIFICATION SECTION<br><i>(Refer to for additional information)</i> | CONTINUOUS                          | PERIODIC                            |
|---|---|---|-------------------------------------|-------------------------------------|
| <b>Cast-in-Place Concrete (1705.3)</b>  |   |   |                                     |                                     |
| 1. Inspection of reinforcing steel and verify placement   | <input checked="" type="checkbox"/>                                     | 03 30 00  | <input type="checkbox"/>            | <input checked="" type="checkbox"/> |
| 2. Inspection of reinforcing steel welding:   |   |   |                                     |                                     |
| a. Verification of ASTM A706 material   | <input type="checkbox"/>  | 03 30 00  | <input type="checkbox"/>            | <input checked="" type="checkbox"/> |
| b. Inspect single-pass fillet welds, maximum 5/16"  | <input type="checkbox"/>  | 03 30 00  | <input type="checkbox"/>            | <input checked="" type="checkbox"/> |
| c. Inspect all other welds  | <input type="checkbox"/>  | 03 30 00  | <input checked="" type="checkbox"/> | <input type="checkbox"/>            |
| 3. Inspection of anchors to be installed in concrete prior to and during placement  | <input checked="" type="checkbox"/>                                     | 03 30 00  | <input checked="" type="checkbox"/> | <input type="checkbox"/>            |
| 4. Inspect anchors post-installed in hardened concrete  |   |   |                                     |                                     |
| a. Adhesive anchors installed in horizontally or upwardly inclined orientations to resist sustained tension loads.  | <input type="checkbox"/>  | 03 30 00  | <input checked="" type="checkbox"/> | <input type="checkbox"/>            |
| b. Mechanical anchors and adhesive anchors not defined in 4a.   | <input checked="" type="checkbox"/>                                     | 03 30 00  | <input type="checkbox"/>            | <input checked="" type="checkbox"/> |
| 5. Verify use of required design mix  | <input checked="" type="checkbox"/>                                     | 03 30 00  | <input type="checkbox"/>            | <input checked="" type="checkbox"/> |
| 6. Sampling fresh concrete for fabricating specimens for strength testing, perform slump and air content tests, and measure temperature of concrete                               | <input checked="" type="checkbox"/>                                     | 03 30 00  | <input checked="" type="checkbox"/> | <input type="checkbox"/>            |
| 7. Inspection of concrete and shotcrete placement for proper application techniques   | <input checked="" type="checkbox"/>                                     | 03 30 00  | <input checked="" type="checkbox"/> | <input type="checkbox"/>            |
| 8. Verify maintenance of specified curing temperature and techniques  | <input checked="" type="checkbox"/>                                     | 03 30 00  | <input type="checkbox"/>            | <input checked="" type="checkbox"/> |
| 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  | <input checked="" type="checkbox"/>                                     | 03 30 00  | <input type="checkbox"/>            | <input checked="" type="checkbox"/> |
| 10. Inspection of formwork for shape, location and dimensions of the concrete member being formed   | <input checked="" type="checkbox"/>                                     | 03 30 00  | <input type="checkbox"/>            | <input checked="" type="checkbox"/> |
| 11. Inspection of post-tensioning operations  | <input type="checkbox"/>  | 03 38 16  | <input checked="" type="checkbox"/> | <input type="checkbox"/>            |

|  |                          |                    |                                     |                                     |
|--|--------------------------|--------------------|-------------------------------------|-------------------------------------|
| <b>Precast Concrete (1705.3)</b>   |                          |                    |                                     |                                     |
| 1. Inspection of reinforcing steel   | <input type="checkbox"/> | 03 41 00           | <input type="checkbox"/>            | <input checked="" type="checkbox"/> |
| 2. Verify use of required design mix   | <input type="checkbox"/> | 03 41 00           | <input type="checkbox"/>            | <input checked="" type="checkbox"/> |
| 3. Inspection of prestressed operations  |                          |                    |                                     |                                     |
| a. Application of prestressing forces  | <input type="checkbox"/> | 03 41 00           | <input checked="" type="checkbox"/> | <input type="checkbox"/>            |
| b. Grouting of bonded prestressing tendons in the seismic-force-resisting system                 | <input type="checkbox"/> | 03 41 00           | <input checked="" type="checkbox"/> | <input type="checkbox"/>            |
| 4. Sampling fresh concrete; slump, air content, temperature, strength test specimens             | <input type="checkbox"/> | 03 41 00           | <input checked="" type="checkbox"/> | <input type="checkbox"/>            |
| 5. Inspection of formwork for shape, location and dimensions of the concrete member being formed | <input type="checkbox"/> | 03 41 00           | <input type="checkbox"/>            | <input checked="" type="checkbox"/> |
| 6. Inspection of concrete placement for proper application techniques                            | <input type="checkbox"/> | 03 41 00           | <input checked="" type="checkbox"/> | <input type="checkbox"/>            |
| 7. Inspection for maintenance of specified curing temperature and techniques                     | <input type="checkbox"/> | 03 41 00           | <input type="checkbox"/>            | <input checked="" type="checkbox"/> |
| 8. Erection of precast concrete members  | <input type="checkbox"/> | 03 41 00, 03 48 10 | <input type="checkbox"/>            | <input checked="" type="checkbox"/> |

|   |                          |          |                          |                          |
|---|--------------------------|----------|--------------------------|--------------------------|
| <b>Fabricated Items (1704.2.5 and 1705.10)</b>  |                          |          |                          |                          |
| 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 | <input type="checkbox"/> | ?? ?? ?? | <input type="checkbox"/> | <input type="checkbox"/> |
| 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.  |                          |          |                          |                          |

|  |   |          |                                     |                                     |
|--|---|----------|-------------------------------------|-------------------------------------|
| <b>Masonry (1705.4)</b>  |   |          |                                     |                                     |
| <b>Level 1</b>   | <input type="checkbox"/>  | 04 20 00 |                                     |                                     |
| 1. Prior to construction, verify certificates of compliance used in masonry construction   | <input type="checkbox"/>  | 04 20 00 | <input type="checkbox"/>            | <input type="checkbox"/>            |
| <b>Level 2 Level 3</b>   | <input checked="" type="checkbox"/> Level 2<br><input type="checkbox"/> Level 3 | 04 20 00 |                                     |                                     |
| 1. Prior to construction, verify compliance with the approved submittals.  | <input checked="" type="checkbox"/>   | 04 20 00 | <input type="checkbox"/>            | <input type="checkbox"/>            |
| 2. Prior to construction, verify $f'm$ , except where specifically exempted by the Code  | <input checked="" type="checkbox"/>   | 04 20 00 | <input type="checkbox"/>            | <input type="checkbox"/>            |
| 3. During construction, verify Slump flow and Visual Stability Index (VSI) when self-consolidating grout is delivered to the project site                                  | <input checked="" type="checkbox"/>   | 04 20 00 | <input type="checkbox"/>            | <input type="checkbox"/>            |
| 4. During construction, verify $f'm$ for every 5,000 sqft  | <input type="checkbox"/>  | 04 20 00 | <input type="checkbox"/>            | <input type="checkbox"/>            |
| 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. | <input type="checkbox"/>  | 04 20 00 | <input type="checkbox"/>            | <input type="checkbox"/>            |
| 6. At start of masonry construction, verify to ensure compliance:  |   |          |                                     |                                     |
| a. Proportions of site prepared mortar.  | <input checked="" type="checkbox"/>   | 04 20 00 | <input type="checkbox"/>            | <input checked="" type="checkbox"/> |
| b. Grade, type and size of reinforcement, connectors, and anchor bolts.  | <input checked="" type="checkbox"/>   | 04 20 00 | <input type="checkbox"/>            | <input checked="" type="checkbox"/> |
| c. Sample panel construction.  | <input checked="" type="checkbox"/>   | 04 20 00 | <input type="checkbox"/>            | <input checked="" type="checkbox"/> |
| 7. Prior to grouting, verify that the following are in compliance:   |   |          |                                     |                                     |
| a. Grout space   | <input checked="" type="checkbox"/>   | 04 20 00 | <input type="checkbox"/>            | <input checked="" type="checkbox"/> |
| b. Placement of reinforcement, connectors, and anchor bolts  | <input checked="" type="checkbox"/>   | 04 20 00 | <input type="checkbox"/>            | <input checked="" type="checkbox"/> |
| c. Proportions of site-prepared grout  | <input checked="" type="checkbox"/>   | 04 20 00 | <input type="checkbox"/>            | <input checked="" type="checkbox"/> |
| 8. During construction, verify compliance of the following:  |   |          |                                     |                                     |
| a. Materials and procedures with the approved submittals.  | <input checked="" type="checkbox"/>   | 04 20 00 | <input type="checkbox"/>            | <input checked="" type="checkbox"/> |
| b. Placement of masonry units and mortar joint construction.   | <input checked="" type="checkbox"/>   | 04 20 00 | <input type="checkbox"/>            | <input checked="" type="checkbox"/> |
| c. Size and location of structural members.  | <input checked="" type="checkbox"/>   | 04 20 00 | <input type="checkbox"/>            | <input checked="" type="checkbox"/> |
| d. Type, size and location of anchors including anchorage of masonry to structural members, frames or other construction   | <input checked="" type="checkbox"/>   | 04 20 00 | <input type="checkbox"/>            | <input checked="" type="checkbox"/> |
| e. Welding of reinforcing bars   | <input type="checkbox"/>  | 04 20 00 | <input checked="" type="checkbox"/> | <input type="checkbox"/>            |
| f. Preparation, construction and protection of masonry during cold or hot weather  | <input checked="" type="checkbox"/>   | 04 20 00 | <input type="checkbox"/>            | <input checked="" type="checkbox"/> |
| g. Placement of grout.   | <input checked="" type="checkbox"/>   | 04 20 00 | <input checked="" type="checkbox"/> | <input type="checkbox"/>            |
| 9. Observe preparation of grout specimens, mortar specimens and/or prisms  | <input checked="" type="checkbox"/>   | 04 20 00 | <input type="checkbox"/>            | <input checked="" type="checkbox"/> |

|  |                                     |          |                                     |                                     |
|--|-------------------------------------|----------|-------------------------------------|-------------------------------------|
| <b>Structural Steel (1705.2.1)</b>   |                                     |          |                                     |                                     |
| 1. Minimum inspections prior to welding per AISC 360 (including but not limited to material verification, welder qualification and fit-up of joints).  | <input checked="" type="checkbox"/> | 05 12 00 | <input checked="" type="checkbox"/> | <input type="checkbox"/>            |
| 2. Minimum inspections during welding per AISC 360   | <input checked="" type="checkbox"/> | 05 12 00 | <input checked="" type="checkbox"/> | <input type="checkbox"/>            |
| a. Placement and installation of steel headed stud anchors   | <input checked="" type="checkbox"/> | 05 12 00 | <input checked="" type="checkbox"/> | <input type="checkbox"/>            |
| b. Verification of ASTM A 706 material   | <input type="checkbox"/>            | 05 12 00 | <input type="checkbox"/>            | <input checked="" type="checkbox"/> |
| 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.                                   | <input type="checkbox"/>            | 05 12 00 | <input checked="" type="checkbox"/> | <input type="checkbox"/>            |
| 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)  | <input checked="" type="checkbox"/> | 05 12 00 | <input checked="" type="checkbox"/> | <input type="checkbox"/>            |
| 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  | <input checked="" type="checkbox"/> | 05 12 00 | <input checked="" type="checkbox"/> | <input type="checkbox"/>            |
| b. Risk Category II structures   | <input checked="" type="checkbox"/> | 05 12 00 | <input type="checkbox"/>            | <input checked="" type="checkbox"/> |
| 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) | <input checked="" type="checkbox"/> | 05 12 00 | <input checked="" type="checkbox"/> | <input type="checkbox"/>            |
| 6. Minimum inspections during high-strength bolting (except for snug-tight joints) per AISC 360 (included but not limited to assemblies and positioning)   | <input checked="" type="checkbox"/> | 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.   | <input checked="" type="checkbox"/> | 05 12 00 | <input type="checkbox"/>            | <input checked="" type="checkbox"/> |
| b. For pretension/slip-critical connections using calibrated wrench method or turn-of-nut method without matchmarking  | <input checked="" type="checkbox"/> | 05 12 00 | <input checked="" type="checkbox"/> | <input type="checkbox"/>            |
| 7. Minimum inspections after high-strength bolting per AISC 360  | <input checked="" type="checkbox"/> | 05 12 00 | <input type="checkbox"/>            | <input checked="" type="checkbox"/> |
| 8. Inspection of fabricated and/or erected steel to verify compliance with the construction drawings.  | <input checked="" type="checkbox"/> | 05 12 00 | <input type="checkbox"/>            | <input checked="" type="checkbox"/> |
| a. Details such as bracing and stiffeners  | <input checked="" type="checkbox"/> | 05 12 00 | <input type="checkbox"/>            | <input checked="" type="checkbox"/> |
| b. Member locations  | <input checked="" type="checkbox"/> | 05 12 00 | <input type="checkbox"/>            | <input checked="" type="checkbox"/> |
| c. Joint details   | <input checked="" type="checkbox"/> | 05 12 00 | <input type="checkbox"/>            | <input checked="" type="checkbox"/> |
| 9. Inspection during placement of anchor rods and other embedded items supporting structural steel for compliance with construction drawings.  | <input checked="" type="checkbox"/> | 05 12 00 | <input checked="" type="checkbox"/> | <input type="checkbox"/>            |
| 8. Material verification of structural steel: Identification markings to conform to ASTM standards specified in the approved construction documents  | <input type="checkbox"/>            | 05 12 00 | <input type="checkbox"/>            | <input type="checkbox"/>            |

|  |                                     |          |                          |                                     |
|--|-------------------------------------|----------|--------------------------|-------------------------------------|
| <b>Open-Web Steel Joists and Joist Girders (1705.2.3)</b>  |                                     |          |                          |                                     |
| 1. Installation of open-web steel joists and joist girders |                                     |          |                          |                                     |
| a. End connections – welded or bolted per SJI              | <input checked="" type="checkbox"/> | 05 21 00 | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
| b. Bridging – horizontal or diagonal                       |                                     |          |                          |                                     |
| 1. Standard bridging per SJI                               | <input checked="" type="checkbox"/> | 05 21 00 | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
| 2. Bridging that differs from SJI specification            | <input checked="" type="checkbox"/> | 05 21 00 | <input type="checkbox"/> | <input checked="" type="checkbox"/> |

|  |                                     |          |                                     |                                     |
|--|-------------------------------------|----------|-------------------------------------|-------------------------------------|
| <b>Cold-Formed Steel Deck (1705.2.2)</b>   |                                     |          |                                     |                                     |
| 1. Inspection or Execution Tasks Prior to Deck Placement per SDI QA/QC (including but not limited to compliance of materials with construction documents)                                    | <input checked="" type="checkbox"/> | 05 31 00 | <input type="checkbox"/>            | <input checked="" type="checkbox"/> |
| 2. Inspection or Execution Tasks After to Deck Placement per SDI QA/QC (including but not limited to compliance of installation with construction documents)                                 | <input checked="" type="checkbox"/> | 05 31 00 | <input type="checkbox"/>            | <input checked="" type="checkbox"/> |
| 3. Inspection or Execution Tasks Prior to Welding per SDI QA/QC (including but not limited to verification of procedures and certifications)   | <input checked="" type="checkbox"/> | 05 31 00 | <input type="checkbox"/>            | <input checked="" type="checkbox"/> |
| 4. Inspection or Execution Tasks During Welding per SDI QA/QC  | <input checked="" type="checkbox"/> | 05 31 00 | <input checked="" type="checkbox"/> | <input type="checkbox"/>            |
| 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) | <input checked="" type="checkbox"/> | 05 31 00 | <input type="checkbox"/>            | <input checked="" type="checkbox"/> |
| 6. Inspection or Execution Tasks Prior to Mechanical Fastening per SDI QA/QC (including but not limited to material verification)  | <input checked="" type="checkbox"/> | 05 31 00 | <input type="checkbox"/>            | <input checked="" type="checkbox"/> |
| 7. Inspection or Execution Tasks During Mechanical Fastening per SDI QA/QC (including but not limited to verification of positioning and installation)                                       | <input checked="" type="checkbox"/> | 05 31 00 | <input checked="" type="checkbox"/> | <input type="checkbox"/>            |
| 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)                       | <input checked="" type="checkbox"/> | 05 31 00 | <input type="checkbox"/>            | <input checked="" type="checkbox"/> |

|  |                          |          |                          |                                     |
|--|--------------------------|----------|--------------------------|-------------------------------------|
| <b>Cold-Formed Steel Trusses (1705.2.4)</b>  |                          |          |                          |                                     |
| 1. For trusses spanning 60 feet or greater:  |                          |          |                          |                                     |
| a. Verify the temporary installation restraint/bracing is installed per the approved truss submittal package.            | <input type="checkbox"/> | 05 40 00 | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
| b. Verify the permanent individual truss member restraint/bracing is installed per the approved truss submittal package. | <input type="checkbox"/> | 05 40 00 | <input type="checkbox"/> | <input checked="" type="checkbox"/> |

|   |                          |                              |                          |                                     |
|---|--------------------------|------------------------------|--------------------------|-------------------------------------|
| <b>Wood Construction (170505)</b>   |                          |                              |                          |                                     |
| 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.   | <input type="checkbox"/> | 06 10 00, 06 16 00, 06 17 53 | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
| b. Verify the permanent individual truss member restraint/bracing is installed per the approved truss submittal package.  | <input type="checkbox"/> | 06 10 00, 06 16 00, 06 17 53 | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
| 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 | <input type="checkbox"/> | 06 10 00                     | <input type="checkbox"/> | <input checked="" type="checkbox"/> |

|   |                          |          |                          |                          |
|---|--------------------------|----------|--------------------------|--------------------------|
| <b>Exterior Insulation and Finish Systems (EIFS) (1705.16)</b>  |                          |          |                          |                          |
| 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. | <input type="checkbox"/> | 07 24 13 | <input type="checkbox"/> | <input type="checkbox"/> |
| 1. Inspection of water-resistive batter coating when installed over a sheathing substrate.  |                          |          |                          |                          |

|  |                          |          |                          |                          |
|--|--------------------------|----------|--------------------------|--------------------------|
| <b>Sprayed Fire-resistant Materials (1705.14)</b>  |                          |          |                          |                          |
| 1. Verify surface preparation in accordance with manufacturer's written instructions.  | <input type="checkbox"/> | 07 81 00 | <input type="checkbox"/> | <input type="checkbox"/> |
| 2. Verify temperature and area ventilation before and after application in accordance with manufacturer's written instructions.  | <input type="checkbox"/> | 07 81 00 | <input type="checkbox"/> | <input type="checkbox"/> |
| 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.  | <input type="checkbox"/> | 07 81 00 | <input type="checkbox"/> | <input type="checkbox"/> |
| b. Minimum of 25% of structural members at each story.   | <input type="checkbox"/> | 07 81 00 | <input type="checkbox"/> | <input type="checkbox"/> |
| 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.  | <input type="checkbox"/> | 07 81 00 | <input type="checkbox"/> | <input type="checkbox"/> |
| 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.   | <input type="checkbox"/> | 07 81 00 | <input type="checkbox"/> | <input type="checkbox"/> |
| 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   | <input type="checkbox"/> | 07 81 00 | <input type="checkbox"/> | <input type="checkbox"/> |
| 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. | <input type="checkbox"/> | 07 81 00 | <input type="checkbox"/> | <input type="checkbox"/> |

|  |                          |          |                          |                          |
|--|--------------------------|----------|--------------------------|--------------------------|
| <b>Mastic and Intumescent Fire-resistant Coatings (1705.15)</b>  |                          |          |                          |                          |
| 1. Verify surface preparation, application, and thickness when applied to structural elements and decks in accordance with AWCI 12-B | <input type="checkbox"/> | 07 81 23 | <input type="checkbox"/> | <input type="checkbox"/> |

|  |                          |                       |                          |                          |
|--|--------------------------|-----------------------|--------------------------|--------------------------|
| <b>Fire-Resistant Penetrations and Joints (1705.17)</b>  |                          |                       |                          |                          |
| 1. Inspection of through-penetrations and membrane penetration firestops in buildings in Risk Category III or IV per ASTM E2174          | <input type="checkbox"/> | 07 84 13              | <input type="checkbox"/> | <input type="checkbox"/> |
| 2. Inspections of fire-resistant joint systems and perimeter fire barrier systems in buildings in Risk Category III or IV per ASTM E2393 | <input type="checkbox"/> | 07 84 43, 07 95 13.13 | <input type="checkbox"/> | <input type="checkbox"/> |

|   |                                     |          |                                     |                                     |
|---|-------------------------------------|----------|-------------------------------------|-------------------------------------|
| <b>Soils (1705.6)</b>   |                                     |          |                                     |                                     |
| 1. Verify materials below shallow foundations are adequate to achieve the design bearing capacity                   | <input checked="" type="checkbox"/> | 31 20 00 | <input type="checkbox"/>            | <input checked="" type="checkbox"/> |
| 2. Verify excavations are extended to proper depth and have reached proper material                                 | <input checked="" type="checkbox"/> | 31 20 00 | <input type="checkbox"/>            | <input checked="" type="checkbox"/> |
| 3. Perform classification and testing of compacted fill materials   | <input checked="" type="checkbox"/> | 31 20 00 | <input type="checkbox"/>            | <input checked="" type="checkbox"/> |
| 4. Verify use of proper materials, densities and lift thicknesses during placement and compaction of compacted fill | <input checked="" type="checkbox"/> | 31 20 00 | <input checked="" type="checkbox"/> | <input type="checkbox"/>            |
| 5. Prior to placement of compacted fill, inspect subgrade and verify that site has been prepared properly           | <input checked="" type="checkbox"/> | 31 20 00 | <input type="checkbox"/>            | <input checked="" type="checkbox"/> |

|  |                          |  |                                     |                          |
|--|--------------------------|--|-------------------------------------|--------------------------|
| <b>Driven Deep Foundations (1705.7)</b>  |                          |  |                                     |                          |
| 1. Verify element materials, sizes and lengths comply with the requirements  | <input type="checkbox"/> | 31 62 13, 31 62 16, 31 62 19, 31 22 23 | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| 2. Determine capacities of test elements and conduct additional load tests, as required  | <input type="checkbox"/> | 31 62 13, 31 62 16, 31 62 19, 31 22 23 | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| 3. Inspect driving operations and maintain complete and accurate records for each element  | <input type="checkbox"/> | 31 62 13, 31 62 16, 31 62 19, 31 22 23 | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| 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 | <input type="checkbox"/> | 31 62 13, 31 62 16, 31 62 19, 31 22 23 | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| 5. For steel elements, perform additional special inspections in accordance with 1705.2  | <input type="checkbox"/> | 31 62 13, 31 62 16, 31 62 19, 31 22 23 | <input type="checkbox"/>            | <input type="checkbox"/> |
| 6. For concrete elements and concrete-filled elements, perform additional special inspections in accordance with Section 1705.3  | <input type="checkbox"/> | 31 62 13, 31 62 16, 31 62 19, 31 22 23 | <input type="checkbox"/>            | <input type="checkbox"/> |
| 7. For specialty elements, perform additional inspections  | <input type="checkbox"/> | 31 62 13, 31 62 16, 31 62 19, 31 22 23 | <input type="checkbox"/>            | <input type="checkbox"/> |



|  |                          |                    |                                     |                          |
|--|--------------------------|--------------------|-------------------------------------|--------------------------|
| <b>Cast-In-Place Deep Foundations (1705.8)</b>   |                          |                    |                                     |                          |
| 1. Inspect drilling operations and maintain complete and accurate records for each element   | <input type="checkbox"/> | 31 63 16, 31 63 29 | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| 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. | <input type="checkbox"/> | 31 63 16, 31 63 29 | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| 3. For concrete elements, perform tests and additional special inspections in accordance with Section 1705.3   | <input type="checkbox"/> | 31 63 16, 31 63 29 | <input type="checkbox"/>            | <input type="checkbox"/> |

|  |                          |    |                                     |                          |
|--|--------------------------|----|-------------------------------------|--------------------------|
| <b>Helical Pile Foundations (1705.9)</b>   |                          |    |                                     |                          |
| 1. Inspect installation operations and maintain complete and accurate records for each pier  | <input type="checkbox"/> | ?? | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| 2. Verify and record installation equipment used, pile dimensions, tip elevations, final depth, final installation torque other data as required | <input type="checkbox"/> | ?? | <input checked="" type="checkbox"/> | <input type="checkbox"/> |

| <b>Wind Resistance Inspections (1705.11)</b>  |                          |  |                                     |                                     |
|---|--------------------------|--|-------------------------------------|-------------------------------------|
| 1. Structural wood – of elements in main windforce-resisting system                                   |                          |  |                                     |                                     |
| a. Inspection of gluing operations.   | <input type="checkbox"/> | 06 10 00, 06 16 00, 06 17 53           | <input checked="" type="checkbox"/> | <input type="checkbox"/>            |
| b. Inspection of nailing, bolting, anchoring and other fastening                                      | <input type="checkbox"/> | 06 10 00, 06 16 00, 06 17 53           | <input type="checkbox"/>            | <input checked="" type="checkbox"/> |
| 2. Cold-formed steel light-frame construction – of elements in main windforce-resisting systems.      |                          |  |                                     |                                     |
| a. Inspection of welding operations   | <input type="checkbox"/> | 05 40 00                               | <input type="checkbox"/>            | <input checked="" type="checkbox"/> |
| b. Inspection of screw attachment, bolting, anchoring and other fastening                             | <input type="checkbox"/> | 05 40 00                               | <input type="checkbox"/>            | <input checked="" type="checkbox"/> |
| 3. Wind-resisting components:   |                          |  |                                     |                                     |
| a. Inspection of roof covering, roof deck and roof framing connections                                | <input type="checkbox"/> | 05 12 00, 05 21 00, 05 31 00, 07 53 23 | <input type="checkbox"/>            | <input checked="" type="checkbox"/> |
| b. Inspection of exterior wall covering and wall connections to roof and floor diaphragms and framing | <input type="checkbox"/> | 04 20 00, 07 24 13, 08 41 13, 08 44 13 | <input type="checkbox"/>            | <input checked="" type="checkbox"/> |

| <b>Seismic Resistance Inspections (1705.12)</b>   |                          |                              |                                     |                                     |
|---|--------------------------|------------------------------|-------------------------------------|-------------------------------------|
| 1. Structural steel:  |                          |                              |                                     |                                     |
| <a href="#">SDC B, C, D, E, or F – refer to 1705.12.1.1 for exceptions</a>  | <input type="checkbox"/> | 05 12 00                     | <input checked="" type="checkbox"/> | <input type="checkbox"/>            |
| a. Seismic force-resisting systems – inspection in accordance with AISC 341   |                          |                              |                                     |                                     |
| <a href="#">SDC B (R&gt;3), C (R&gt;3), D, E, or F</a>  | <input type="checkbox"/> | 05 12 00                     | <input checked="" type="checkbox"/> | <input type="checkbox"/>            |
| b. Structural steel elements - inspection in accordance with AISC 341   |                          |                              |                                     |                                     |
| <a href="#">SDC C, D, E, or F, refer to 1705.12.2 for exceptions</a>  |                          |                              |                                     |                                     |
| 2. Structural wood, seismic-force-resisting systems:  |                          |                              |                                     |                                     |
| a. Inspection of field gluing operations.   | <input type="checkbox"/> | 06 10 00, 06 17 00, 06 17 53 | <input checked="" type="checkbox"/> | <input type="checkbox"/>            |
| b. Inspection of nailing, bolting, anchoring and other fastening  | <input type="checkbox"/> | 06 10 00, 06 17 00, 06 17 53 | <input type="checkbox"/>            | <input checked="" type="checkbox"/> |
| <a href="#">SDC C, D, E, or F, refer to 1705.12.3 for exceptions</a>  |                          |                              |                                     |                                     |
| 3. Cold-formed steel framing - of elements in seismic-force-resisting systems   |                          |                              |                                     |                                     |
| a. Inspection of welding operations of seismic-force-resisting systems  | <input type="checkbox"/> | 05 40 00                     | <input type="checkbox"/>            | <input checked="" type="checkbox"/> |
| b. Inspection of screw attachment, bolting, anchoring and other fastening   | <input type="checkbox"/> | 05 40 00                     | <input type="checkbox"/>            | <input checked="" type="checkbox"/> |
| <a href="#">SDC C, D, E or F; coord with 13.2.2 of ASCE 7</a>   | <input type="checkbox"/> | ??                           | <input type="checkbox"/>            | <input checked="" type="checkbox"/> |
| 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   | <input type="checkbox"/> |  | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
| b. Inspection of erection and fastening of interior and exterior nonbearing walls  | <input type="checkbox"/> |  | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
| c. Inspection of erection and fastening of interior and exterior veneer  | <input type="checkbox"/> |  | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
| d. Access floors – inspection of anchorage   | <input type="checkbox"/> |  | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
| 6. Mechanical and electrical components:   |                          |  |                          |                                     |
| SDC C, D, E or F   |                          |  |                          |                                     |
| a. Inspection of anchorage of electrical equipment for emergency power systems   | <input type="checkbox"/> |  | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
| SDC E or F   |                          |  |                          |                                     |
| b. Inspection of anchorage installation or other electrical equipment  | <input type="checkbox"/> |  | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
| SDC C, D, E or F   |                          |  |                          |                                     |
| c. Inspection of installation and anchorage of piping systems and associated mechanical units designed to carry hazardous materials  | <input type="checkbox"/> |  | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
| SDC C, D, E, or F  |                          |  |                          |                                     |
| d. Inspection of installation and anchorage of ductwork designed to carry hazardous materials  | <input type="checkbox"/> |  | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
| SDC, C, D, E, or F   |                          |  |                          |                                     |
| e. Inspection of installation and anchorage of vibration isolation systems   | <input type="checkbox"/> |  | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
| 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                             | <input type="checkbox"/> |  | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
| 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 | <input type="checkbox"/> |  | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
| SDC D, E or F  |                          |  |                          |                                     |
| 8. Cold-formed steel special bolted moment frames: Inspection during installation of frames part of the seismic isolation system   | <input type="checkbox"/> |  | <input type="checkbox"/> | <input checked="" type="checkbox"/> |

| <b>Seismic Resistance Structural Testing</b>  |                          |          |                          |                          |
|---|--------------------------|----------|--------------------------|--------------------------|
| 1. Structural steel:  |                          |          |                          |                          |
| SDC B, C, D, E, or F  |                          | 05 12 00 | <input type="checkbox"/> | <input type="checkbox"/> |
| a. Seismic force-resisting systems: Non-destructive testing in accordance with quality assurance requirements of AISC 341   | <input type="checkbox"/> |          |                          |                          |
| b. Structural steel elements: nondestructive testing in accordance with the quality assurance requirements of AISC 341  | <input type="checkbox"/> | 05 12 00 | <input type="checkbox"/> | <input type="checkbox"/> |
| SDC B, C, D, E, or F  |                          |          | <input type="checkbox"/> | <input type="checkbox"/> |
| 2. Nonstructural Components: Confirm certification of compliance of seismic qualification for supports and attachments has been submitted by manufacturer for specified systems | <input type="checkbox"/> |          |                          |                          |
| SDC C, D, E or F  |                          | ??       | <input type="checkbox"/> | <input type="checkbox"/> |
| 3. Designated seismic systems: Confirm certification of compliance of seismic qualification has been submitted for designated seismic systems                                   | <input type="checkbox"/> |          |                          |                          |
| SDC B, C, D, E, or F  |                          |          | <input type="checkbox"/> | <input type="checkbox"/> |
| 4. Seismic isolation systems: Testing per ASCE 7, Section 17.8  | <input type="checkbox"/> |          |                          |                          |

| <b>Structural Observations</b>  |                          |  |  |  |
|---|--------------------------|--|--|--|
| One or more of: RC IV; high-rise building; special structures as determined by RDP; required by building official | <input type="checkbox"/> |  |  |  |
| 1. Structural observations for structures   |                          |  |  |  |
| SDC D, E, or F where RC III or IV or<br>SDC E where RC I or II and > 2 stories above grade plane                  | <input type="checkbox"/> |  |  |  |
| 2. Structural observations for seismic resistance   |                          |  |  |  |
| V = 130 mph or greater and RC III or IV   | <input type="checkbox"/> |  |  |  |
| 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](http://www.aluminum.org).
2. AABC - Associated Air Balance Council; [www.aabc.com](http://www.aabc.com).
3. AAMA - American Architectural Manufacturers Association; [www.aamanet.org](http://www.aamanet.org).
4. AAPFCO - Association of American Plant Food Control Officials; [www.aapfco.org](http://www.aapfco.org).
5. AASHTO - American Association of State Highway and Transportation Officials; [www.transportation.org](http://www.transportation.org).
6. AATCC - American Association of Textile Chemists and Colorists; [www.aatcc.org](http://www.aatcc.org).
7. ABBA - Air Barrier Association of America; [www.airbarrier.org](http://www.airbarrier.org).
8. ABMA - American Bearing Manufacturers Association; [www.americanbearings.org](http://www.americanbearings.org).
9. ACI - American Concrete Institute; (Formerly: ACI International); [www.concrete.org](http://www.concrete.org).
10. ACPA - American Concrete Pipe Association; [www.concrete-pipe.org](http://www.concrete-pipe.org).
11. AEIC - Association of Edison Illuminating Companies, Inc. (The); [www.aeic.org](http://www.aeic.org).
12. AF&PA - American Forest & Paper Association; [www.afandpa.org](http://www.afandpa.org).
13. AGA - American Gas Association; [www.aga.org](http://www.aga.org).
14. AHAM - Association of Home Appliance Manufacturers; [www.aham.org](http://www.aham.org).
15. AHRI - Air-Conditioning, Heating, and Refrigeration Institute (The); [www.ahrinet.org](http://www.ahrinet.org).
16. AI - Asphalt Institute; [www.asphaltinstitute.org](http://www.asphaltinstitute.org).
17. AIA - American Institute of Architects (The); [www.aia.org](http://www.aia.org).
18. AISC - American Institute of Steel Construction; [www.aisc.org](http://www.aisc.org).
19. AISI - American Iron and Steel Institute; [www.steel.org](http://www.steel.org).
20. AITC - American Institute of Timber Construction; [www.aitc-glulam.org](http://www.aitc-glulam.org).
21. ALSC - American Lumber Standard Committee, Incorporated; [www.alsc.org](http://www.alsc.org).
22. AMCA - Air Movement and Control Association International, Inc.; [www.amca.org](http://www.amca.org).
23. ANSI - American National Standards Institute; [www.ansi.org](http://www.ansi.org).
24. AOSA - Association of Official Seed Analysts, Inc.; [www.aosaseed.com](http://www.aosaseed.com).
25. APA - APA - The Engineered Wood Association; [www.apawood.org](http://www.apawood.org).
26. APA - Architectural Precast Association; [www.archprecast.org](http://www.archprecast.org).
27. API - American Petroleum Institute; [www.api.org](http://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](http://www.asphaltroofing.org).
31. ASCE - American Society of Civil Engineers; [www.asce.org](http://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](http://www.ashrae.org).
34. ASME - ASME International; (American Society of Mechanical Engineers); [www.asme.org](http://www.asme.org).
35. ASNT - American Society for Nondestructive Testing (The); [www.asnt.org](http://www.asnt.org).
36. ASSE - American Society of Safety Engineers (The); [www.asse.org](http://www.asse.org).

37. ASSE - American Society of Sanitary Engineering; [www.asse-plumbing.org](http://www.asse-plumbing.org).
38. ASTM - ASTM International; [www.astm.org](http://www.astm.org).
39. ATIS - Alliance for Telecommunications Industry Solutions; [www.atis.org](http://www.atis.org).
40. AWCI - Association of the Wall and Ceiling Industry; [www.awci.org](http://www.awci.org).
41. AWEA - American Wind Energy Association; [www.awea.org](http://www.awea.org).
42. AWI - Architectural Woodwork Institute; [www.awinet.org](http://www.awinet.org).
43. AWMAC - Architectural Woodwork Manufacturers Association of Canada; [www.awmac.com](http://www.awmac.com).
44. AWWPA - American Wood Protection Association; [www.awpa.com](http://www.awpa.com).
45. AWS - American Welding Society; [www.aws.org](http://www.aws.org).
46. AWWA - American Water Works Association; [www.awwa.org](http://www.awwa.org).
47. BHMA - Builders Hardware Manufacturers Association; [www.buildershardware.com](http://www.buildershardware.com).
48. BIA - Brick Industry Association (The); [www.gobrick.com](http://www.gobrick.com).
49. BICSI - BICSI, Inc.; [www.bicsi.org](http://www.bicsi.org).
50. BIFMA - BIFMA International; (Business and Institutional Furniture Manufacturer's Association); [www.bifma.com](http://www.bifma.com).
51. BISSC - Baking Industry Sanitation Standards Committee; [www.bissc.org](http://www.bissc.org).
52. BWF - Badminton World Federation; (Formerly: International Badminton Federation); [www.bwfbadminton.org](http://www.bwfbadminton.org).
53. CDA - Copper Development Association; [www.copper.org](http://www.copper.org).
54. CE – Conformite Europeenne; <http://ec.europa.eu/growth/single-market/ce-marking/>.
55. CEA - Canadian Electricity Association; [www.electricity.ca](http://www.electricity.ca).
56. CEA - Consumer Electronics Association; [www.ce.org](http://www.ce.org).
57. CFFA - Chemical Fabrics & Film Association, Inc.; [www.chemicalfabricsandfilm.com](http://www.chemicalfabricsandfilm.com).
58. CFSEI - Cold-Formed Steel Engineers Institute; [www.cfsei.org](http://www.cfsei.org).
59. CGA - Compressed Gas Association; [www.cganet.com](http://www.cganet.com).
60. CIMA - Cellulose Insulation Manufacturers Association; [www.cellulose.org](http://www.cellulose.org).
61. CISCA - Ceilings & Interior Systems Construction Association; [www.cisca.org](http://www.cisca.org).
62. CISPI - Cast Iron Soil Pipe Institute; [www.cispi.org](http://www.cispi.org).
63. CLFMI - Chain Link Fence Manufacturers Institute; [www.chainlinkinfo.org](http://www.chainlinkinfo.org).
64. CPA - Composite Panel Association; [www.pbmdf.com](http://www.pbmdf.com).
65. CPPA – (Formerly: Corrugated Polyethylene Pipe Association; a Division of the Plastic Pipe Institute); [www.plasticpipe.org/drainage/](http://www.plasticpipe.org/drainage/).
66. CRI - Carpet and Rug Institute (The); [www.carpet-rug.org](http://www.carpet-rug.org).
67. CRRC - Cool Roof Rating Council; [www.coolroofs.org](http://www.coolroofs.org).
68. CRSI - Concrete Reinforcing Steel Institute; [www.crsi.org](http://www.crsi.org).
69. CSA - Canadian Standards Association; [www.csa.ca](http://www.csa.ca).
70. CSA - CSA International; (Formerly: IAS - International Approval Services); [www.csa-international.org](http://www.csa-international.org).
71. CSI - Construction Specifications Institute (The); [www.csinet.org](http://www.csinet.org).
72. CSSB - Cedar Shake & Shingle Bureau; [www.cedarbureau.org](http://www.cedarbureau.org).
73. CTI - Cooling Technology Institute; (Formerly: Cooling Tower Institute); [www.cti.org](http://www.cti.org).
74. CWC - Composite Wood Council; (See CPA).
75. DASMA - Door and Access Systems Manufacturers Association; [www.dasma.com](http://www.dasma.com).
76. DHI - Door and Hardware Institute; [www.dhi.org](http://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](http://www.eciaonline.org).
80. EIA - Electronic Industries Alliance; (See TIA).
81. EIMA - EIFS Industry Members Association; [www.eima.com](http://www.eima.com).
82. EJMA - Expansion Joint Manufacturers Association, Inc.; [www.ejma.org](http://www.ejma.org).

83. ESD - ESD Association; (Electrostatic Discharge Association); [www.esda.org](http://www.esda.org).
84. ESTA - Entertainment Services and Technology Association; (See PLASA).
85. ETL - Intertek (See Intertek); [www.intertek.com](http://www.intertek.com).
86. EVO - Efficiency Valuation Organization; [www.evo-world.org](http://www.evo-world.org).
87. FIBA - Federation Internationale de Basketball; (The International Basketball Federation); [www.fiba.com](http://www.fiba.com).
88. FIVB - Federation Internationale de Volleyball; (The International Volleyball Federation); [www.fivb.org](http://www.fivb.org).
89. FM Approvals - FM Approvals LLC; [www.fmglobal.com](http://www.fmglobal.com).
90. FM Global - FM Global; (Formerly: FMG - FM Global); [www.fmglobal.com](http://www.fmglobal.com).
91. FRSA - Florida Roofing, Sheet Metal & Air Conditioning Contractors Association, Inc.; [www.floridarroof.com](http://www.floridarroof.com).
92. FSA - Fluid Sealing Association; [www.fluidsealing.com](http://www.fluidsealing.com).
93. FSC - Forest Stewardship Council U.S.; [www.fscus.org](http://www.fscus.org).
94. FSEC - Florida Solar Energy Center; [www.fsec.ucf.edu](http://www.fsec.ucf.edu).
95. GA - Gypsum Association; [www.gypsum.org](http://www.gypsum.org).
96. GANA - Glass Association of North America; [www.glasswebsite.com](http://www.glasswebsite.com).
97. GS - Green Seal; [www.greenseal.org](http://www.greenseal.org).
98. HI - Hydraulic Institute; [www.pumps.org](http://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](http://www.hpva.org).
102. HPW - H. P. White Laboratory, Inc.; [www.hpwhite.com](http://www.hpwhite.com).
103. IAPSC - International Association of Professional Security Consultants; [www.iapsc.org](http://www.iapsc.org).
104. IAS – International Accreditation Service; [www.iasonline.org](http://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](http://www.iccsafe.org).
108. ICEA - Insulated Cable Engineers Association, Inc.; [www.icea.net](http://www.icea.net).
109. ICPA - International Cast Polymer Alliance; [www.icpa-hq.org](http://www.icpa-hq.org).
110. ICRI - International Concrete Repair Institute, Inc.; [www.icri.org](http://www.icri.org).
111. IEC - International Electrotechnical Commission; [www.iec.ch](http://www.iec.ch).
112. IEEE - Institute of Electrical and Electronics Engineers, Inc. (The); [www.ieee.org](http://www.ieee.org).
113. IES - Illuminating Engineering Society; (Formerly: Illuminating Engineering Society of North America); [www.ies.org](http://www.ies.org).
114. IESNA - Illuminating Engineering Society of North America; (See IES).
115. IEST - Institute of Environmental Sciences and Technology; [www.iest.org](http://www.iest.org).
116. IGCC - Insulating Glass Certification Council; [www.igcc.org](http://www.igcc.org).
117. IGMA - Insulating Glass Manufacturers Alliance; [www.igmaonline.org](http://www.igmaonline.org).
118. IGSHPA - International Ground Source Heat Pump Association; [www.igshpa.okstate.edu](http://www.igshpa.okstate.edu).
119. ILI - Indiana Limestone Institute of America, Inc.; [www.iliai.com](http://www.iliai.com).
120. Intertek - Intertek Group; (Formerly: ETL SEMCO; Intertek Testing Service NA); [www.intertek.com](http://www.intertek.com).
121. ISA - International Society of Automation (The); (Formerly: Instrumentation, Systems, and Automation Society); [www.isa.org](http://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](http://www.isfanow.org).
124. ISO - International Organization for Standardization; [www.iso.org](http://www.iso.org).
125. ISSFA - International Solid Surface Fabricators Association; (See ISFA).



126. ITU - International Telecommunication Union; [www.itu.int/home](http://www.itu.int/home).
127. KCMA - Kitchen Cabinet Manufacturers Association; [www.kcma.org](http://www.kcma.org).
128. LMA - Laminating Materials Association; (See CPA).
129. LPI - Lightning Protection Institute; [www.lightning.org](http://www.lightning.org).
130. MBMA - Metal Building Manufacturers Association; [www.mbma.com](http://www.mbma.com).
131. MCA - Metal Construction Association; [www.metalconstruction.org](http://www.metalconstruction.org).
132. MFMA - Maple Flooring Manufacturers Association, Inc.; [www.maplefloor.org](http://www.maplefloor.org).
133. MFMA - Metal Framing Manufacturers Association, Inc.; [www.metalframingmfg.org](http://www.metalframingmfg.org).
134. MHIA - Material Handling Industry of America; [www.mhia.org](http://www.mhia.org).
135. MIA - Marble Institute of America; [www.marble-institute.com](http://www.marble-institute.com).
136. MMPA - Moulding & Millwork Producers Association; (Formerly: Wood Moulding & Millwork Producers Association); [www.wmmpa.com](http://www.wmmpa.com).
137. MPI - Master Painters Institute; [www.paintinfo.com](http://www.paintinfo.com).
138. MSS - Manufacturers Standardization Society of The Valve and Fittings Industry Inc.; [www.mss-hq.org](http://www.mss-hq.org).
139. NAAMM - National Association of Architectural Metal Manufacturers; [www.naamm.org](http://www.naamm.org).
140. NACE - NACE International; (National Association of Corrosion Engineers International); [www.nace.org](http://www.nace.org).
141. NADCA - National Air Duct Cleaners Association; [www.nadca.com](http://www.nadca.com).
142. NAIMA - North American Insulation Manufacturers Association; [www.naima.org](http://www.naima.org).
143. NALP – National Association of Landscape Professionals (Formerly Professional Landcare Network); [www.landscapeprofessionals.org](http://www.landscapeprofessionals.org).
144. NBGQA - National Building Granite Quarries Association, Inc.; [www.nbgqa.com](http://www.nbgqa.com).
145. NBI – New Buildings Institute; [www.newbuildings.org](http://www.newbuildings.org).
146. NCAA - National Collegiate Athletic Association (The); [www.ncaa.org](http://www.ncaa.org).
147. NCMA - National Concrete Masonry Association; [www.ncma.org](http://www.ncma.org).
148. NEBB - National Environmental Balancing Bureau; [www.nebb.org](http://www.nebb.org).
149. NECA - National Electrical Contractors Association; [www.necanet.org](http://www.necanet.org).
150. NeLMA - Northeastern Lumber Manufacturers Association; [www.nelma.org](http://www.nelma.org).
151. NEMA - National Electrical Manufacturers Association; [www.nema.org](http://www.nema.org).
152. NETA - InterNational Electrical Testing Association; [www.netaworld.org](http://www.netaworld.org).
153. NFHS - National Federation of State High School Associations; [www.nfhs.org](http://www.nfhs.org).
154. NFPA - National Fire Protection Association; [www.nfpa.org](http://www.nfpa.org).
155. NFPA - NFPA International; (See NFPA).
156. NFRC - National Fenestration Rating Council; [www.nfrc.org](http://www.nfrc.org).
157. NHLA - National Hardwood Lumber Association; [www.nhla.com](http://www.nhla.com).
158. NICET - National Institute for Certification in Engineering Technologies; [www.nicet.org](http://www.nicet.org).
159. NLGA - National Lumber Grades Authority; [www.nlga.org](http://www.nlga.org).
160. NOFMA - National Oak Flooring Manufacturers Association; (See NWFA).
161. NOMMA - National Ornamental & Miscellaneous Metals Association; [www.nomma.org](http://www.nomma.org).
162. NRCA - National Roofing Contractors Association; [www.nrca.net](http://www.nrca.net).
163. NRMCA - National Ready Mixed Concrete Association; [www.nrmca.org](http://www.nrmca.org).
164. NSF - NSF International; [www.nsf.org](http://www.nsf.org).
165. NSPE - National Society of Professional Engineers; [www.nspe.org](http://www.nspe.org).
166. NSSGA - National Stone, Sand & Gravel Association; [www.nssga.org](http://www.nssga.org).
167. NTMA - National Terrazzo & Mosaic Association, Inc. (The); [www.ntma.com](http://www.ntma.com).
168. NWFA - National Wood Flooring Association; [www.nwfa.org](http://www.nwfa.org).
169. PCI - Precast/Prestressed Concrete Institute; [www.pci.org](http://www.pci.org).
170. PDI - Plumbing & Drainage Institute; [www.pdionline.org](http://www.pdionline.org).
171. PLANET - Professional Landcare Network; (See NALP).

172. PLASA - PLASA; (Formerly: ESTA - Entertainment Services and Technology Association); [www.plasa.org](http://www.plasa.org).
173. PTI - Post-Tensioning Institute; [www.post-tensioning.org](http://www.post-tensioning.org).
174. RCSC - Research Council on Structural Connections; [www.boltcouncil.org](http://www.boltcouncil.org).
175. RFCI - Resilient Floor Covering Institute; [www.rfci.com](http://www.rfci.com).
176. RIS - Redwood Inspection Service; [www.redwoodinspection.com](http://www.redwoodinspection.com).
177. SAE - SAE International; [www.sae.org](http://www.sae.org).
178. SCTE - Society of Cable Telecommunications Engineers; [www.scte.org](http://www.scte.org).
179. SDI - Steel Deck Institute; [www.sdi.org](http://www.sdi.org).
180. SDI - Steel Door Institute; [www.steeldoor.org](http://www.steeldoor.org).
181. SEFA - Scientific Equipment and Furniture Association; [www.sefalabs.com](http://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](http://www.sgcc.org).
184. SIA - Security Industry Association; [www.siaonline.org](http://www.siaonline.org).
185. SJI - Steel Joist Institute; [www.steeljoist.org](http://www.steeljoist.org).
186. SMA - Screen Manufacturers Association; [www.smainfo.org](http://www.smainfo.org).
187. SMACNA - Sheet Metal and Air Conditioning Contractors' National Association; [www.smacna.org](http://www.smacna.org).
188. SMPTE - Society of Motion Picture and Television Engineers; [www.smpte.org](http://www.smpte.org).
189. SPFA - Spray Polyurethane Foam Alliance; [www.sprayfoam.org](http://www.sprayfoam.org).
190. SPIB - Southern Pine Inspection Bureau; [www.spib.org](http://www.spib.org).
191. SPRI - Single Ply Roofing Industry; [www.spri.org](http://www.spri.org).
192. SRCC - Solar Rating and Certification Corporation; [www.solar-rating.org](http://www.solar-rating.org).
193. SSINA - Specialty Steel Industry of North America; [www.ssina.com](http://www.ssina.com).
194. SSPC - SSPC: The Society for Protective Coatings; [www.sspc.org](http://www.sspc.org).
195. STI - Steel Tank Institute; [www.steeltank.com](http://www.steeltank.com).
196. SWI - Steel Window Institute; [www.steelwindows.com](http://www.steelwindows.com).
197. SWPA - Submersible Wastewater Pump Association; [www.swpa.org](http://www.swpa.org).
198. TABB - Testing, Adjusting and Balancing Bureau; [www.tabbcertified.org](http://www.tabbcertified.org).
199. TCA - Tilt-Up Concrete Association; [www.tilt-up.org](http://www.tilt-up.org).
200. TCNA - Tile Council of North America, Inc.; [www.tileusa.com](http://www.tileusa.com).
201. TEMA - Tubular Exchanger Manufacturers Association, Inc.; [www.tema.org](http://www.tema.org).
202. TIA - Telecommunications Industry Association; (Formerly: TIA/EIA - Telecommunications Industry Association/Electronic Industries Alliance); [www.tiaonline.org](http://www.tiaonline.org).
203. TIA/EIA - Telecommunications Industry Association/Electronic Industries Alliance; (See TIA).
204. TMS - The Masonry Society; [www.masonrysociety.org](http://www.masonrysociety.org).
205. TPI - Truss Plate Institute; [www.tpinst.org](http://www.tpinst.org).
206. TPI - Turfgrass Producers International; [www.turfgrasssod.org](http://www.turfgrasssod.org).
207. TRI - Tile Roofing Institute; [www.tilerroofing.org](http://www.tilerroofing.org).
208. UFAC - Upholstered Furniture Action Council; [www.ufac.org](http://www.ufac.org).
209. UL - Underwriters Laboratories Inc.; [www.ul.com](http://www.ul.com).
210. ULC - Underwriters Laboratories of Canada; [www.ulc.ca](http://www.ulc.ca).
211. UNI - Uni-Bell PVC Pipe Association; [www.uni-bell.org](http://www.uni-bell.org).
212. USAV - USA Volleyball; [www.usavolleyball.org](http://www.usavolleyball.org).
213. USBA - United States Badminton Association; [www.usabadminton.org](http://www.usabadminton.org).
214. USGBC - U.S. Green Building Council; [www.usgbc.org](http://www.usgbc.org).
215. USITT - United States Institute for Theatre Technology, Inc.; [www.usitt.org](http://www.usitt.org).
216. WA - Wallcoverings Association; [www.wallcoverings.org](http://www.wallcoverings.org).

217. WASTEC - Waste Equipment Technology Association; [www.wastec.org](http://www.wastec.org).
218. WCLIB - West Coast Lumber Inspection Bureau; [www.wclib.org](http://www.wclib.org).
219. WCMA - Window Covering Manufacturers Association; [www.wcmanet.org](http://www.wcmanet.org).
220. WDMA - Window & Door Manufacturers Association; [www.wdma.com](http://www.wdma.com).
221. WI - Woodwork Institute; (Formerly: WIC - Woodwork Institute of California); [www.wicnet.org](http://www.wicnet.org).
222. WMMPA - Wood Moulding & Millwork Producers Association; (See MMPA).
223. WSRCA - Western States Roofing Contractors Association; [www.wsrca.com](http://www.wsrca.com).
224. WWPA - Western Wood Products Association; [www.wwpa.org](http://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](http://www.iapmo.org).
2. ICC - International Code Council; [www.iccsafe.org](http://www.iccsafe.org).
3. ICC-ES - ICC Evaluation Service, LLC; [www.icc-es.org](http://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](http://www.usace.army.mil).
2. CPSC - Consumer Product Safety Commission; [www.cpsc.gov](http://www.cpsc.gov).
3. DOC - Department of Commerce; National Institute of Standards and Technology; [www.nist.gov](http://www.nist.gov).
4. DOD - Department of Defense; <http://quicksearch.dla.mil>.
5. DOE - Department of Energy; [www.energy.gov](http://www.energy.gov).
6. EPA - Environmental Protection Agency; [www.epa.gov](http://www.epa.gov).
7. FAA - Federal Aviation Administration; [www.faa.gov](http://www.faa.gov).
8. FCC - Federal Communications Commission; [www.fcc.gov](http://www.fcc.gov).
9. FG - Federal Government Publications; [www.gpo.gov](http://www.gpo.gov).
10. GSA - General Services Administration; [www.gsa.gov](http://www.gsa.gov).
11. HUD - Department of Housing and Urban Development; [www.hud.gov](http://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](http://www.nist.gov).
14. OSHA - Occupational Safety & Health Administration; [www.osha.gov](http://www.osha.gov).
15. SD - Department of State; [www.state.gov](http://www.state.gov).
16. TRB - Transportation Research Board; National Cooperative Highway Research Program; [www.trb.org](http://www.trb.org).
17. USDA - Department of Agriculture; Agriculture Research Service; U.S. Salinity Laboratory; [www.ars.usda.gov](http://www.ars.usda.gov).
18. USDA - Department of Agriculture; Rural Utilities Service; [www.usda.gov](http://www.usda.gov).
19. USDJ - Department of Justice; Office of Justice Programs; National Institute of Justice; [www.ojp.usdoj.gov](http://www.ojp.usdoj.gov).
20. USP - U.S. Pharmacopeia; [www.usp.org](http://www.usp.org).
21. USPS - United States Postal Service; [www.usps.com](http://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](http://www.access-board.gov).
  2. AHERA - Asbestos Hazard Emergency Response Act, Available from US Environmental Protection Agency; [www.epa.gov](http://www.epa.gov).
  3. BCNYS - Building Code of New York State, Available from New York State Department of State; [www.dos.ny.gov/DCEA/](http://www.dos.ny.gov/DCEA/).
  4. CFR - Code of Federal Regulations; Available from Government Printing Office; [www.gpo.gov/fdsys](http://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](http://www.quicksearch.dla.mil).
    - a. Available from Defense Standardization Program; [www.dsp.dla.mil](http://www.dsp.dla.mil).
    - b. Available from General Services Administration; [www.gsa.gov](http://www.gsa.gov).
    - c. Available from National Institute of Building Sciences/Whole Building Design Guide; [www.wbdg.org/ccb](http://www.wbdg.org/ccb).
  9. IBC - International Building Code, Available from International Code Council; [www.iccsafe.org](http://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](http://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](http://www.nfpa.org).
  13. NSPC - National Standard Plumbing Code, Available from Plumbing-Heating-Cooling Contractors Association; [www.phccweb.org](http://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](http://www.p12.nysed.gov/facplan/forms.html).
  15. USAB - United States Access Board; [www.access-board.gov](http://www.access-board.gov).

16. UFAS - Uniform Federal Accessibility Standards Available from Access Board;  
[www.access-board.gov](http://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](http://www.bearhfti.ca.gov).
  2. NYSDEC - New York State Department of Environmental Conservation;  
[www.dec.ny.gov](http://www.dec.ny.gov).
  3. NYSDOH - New York State Department of Health; [www.health.ny.gov](http://www.health.ny.gov).
  4. NYSDOT - New York State Department of Transportation; [www.dot.ny.gov](http://www.dot.ny.gov).
  5. NYSED - New York State Education Department (Facilities Planning);  
[www.p12.nysed.gov/facplan/](http://www.p12.nysed.gov/facplan/).
  6. NYSERDA - New York State Energy Research and Development Authority;  
[www.nyserda.ny.gov](http://www.nyserda.ny.gov).
  7. OSHPD - Office of Statewide Health Planning and Development (State of California);  
[www.oshpd.ca.gov](http://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.

#### **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.

#### **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 or fuel-oil heaters 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. 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.
- C. 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.
- D. 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.
- E. 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. Perform daily construction cleanup and final cleanup using approved, HEPA-filter-equipped vacuum equipment.
- F. 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.
- G. 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.
- H. Telephone Service: Provide temporary telephone service in Contractor's field office.
1. Provide Contractor's superintendent with cellular telephone or portable two-way radio for use when away from field office.

### 3.4 SUPPORT FACILITIES INSTALLATION

- A. 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 **within construction limits indicated** on Drawings.
1. Provide dust-control treatment that is nonpolluting and nontracking. Reapply treatment as required to minimize dust.
- C. 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.
- D. Parking: **Provide temporary** parking areas for construction personnel.
- E. 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.
- F. 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.
- G. 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.
- H. 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.
- I. Staging and Scaffolding: Provide facilities necessary for supporting materials and personnel in accordance with requirements of authorities having jurisdiction.
- J. Lifts and Hoists: Provide facilities necessary for hoisting materials and personnel.
- K. Temporary Elevator Use: Use of elevators is not permitted.
- L. 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.

### 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.

2. General Soil Erosion and Sediment Control Measures:
- a. 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.
  - b. 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) Provide temporary measures and erosion control devices or methods appropriate to conditions at site.
    - 2) Construct fills and waste areas by selective placement to avoid erosive surface silts or clays.
- 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. **Furnish one set of keys to Owner.**
- 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.
- K. Covered Walkway: Erect protective, covered walkway for passage of individuals through or adjacent to Project site. Coordinate with entrance gates, other facilities, and obstructions. Comply with regulations of authorities having jurisdiction and requirements indicated on Drawings.
  - 1. Provide overhead decking, protective enclosure walls, handrails, barricades, warning signs, exit signs, lights, safe and well-drained walkways, and similar provisions for protection and safe passage.
  - 2. Paint and maintain appearance of walkway for duration of the Work.
- L. 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.
- 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.
- 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 QUALITY ASSURANCE**

- A. 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.
- B. 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 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.

### 3.4 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. 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.

### 3.5 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.
- 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.

### 3.6 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.

### 3.7 PROTECTION OF INSTALLED CONSTRUCTION

- A. Provide final protection and maintain conditions that ensure installed Work is without damage or deterioration at time of Substantial Completion.
- B. Comply with manufacturer's written instructions for temperature and relative humidity.

### 3.8 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, 22, 23, and 26 (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. 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. Sweep paved areas broom clean. Remove petrochemical spills, stains, and other foreign deposits.
    - c. Rake grounds that are neither planted nor paved to a smooth, even-textured surface.
    - d. Remove tools, construction equipment, machinery, and surplus material from Project site.

- e. 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.
  - f. Remove debris and surface dust from limited access spaces, including roofs, plenums, shafts, trenches, equipment vaults, manholes, attics, and similar spaces.
  - g. Sweep concrete floors broom clean in unoccupied spaces using sweeping compound that is compatible with new finishes.
  - h. Vacuum carpet and similar soft surfaces, removing debris and excess nap; clean according to manufacturer's recommendations if visible soil or stains remain.
  - i. Clean transparent materials, including mirrors and glass in doors and windows. Remove glazing compounds and other noticeable, vision-obscuring materials. Polish mirrors and glass, taking care not to scratch surfaces.
  - j. Remove labels that are not permanent.
  - k. Wipe surfaces of mechanical and electrical equipment and similar equipment. Remove excess lubrication, paint and mortar droppings, and other foreign substances.
  - l. Clean plumbing fixtures to a sanitary condition, free of stains, including stains resulting from water exposure.
  - m. Replace disposable air filters and clean permanent air filters. Clean exposed surfaces of diffusers, registers, and grills.
  - n. Clean ducts, blowers, and coils if units were operated without filters during construction or that display contamination with particulate matter on inspection.
  - o. Clean light fixtures, lamps, globes, and reflectors to function with full efficiency.
  - p. 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. Remove and replace chipped, scratched, and broken glass, reflective surfaces, and other damaged transparent materials.
  2. Touch up and otherwise repair and restore marred or exposed finishes and surfaces. Replace finishes and surfaces that already show evidence of repair or restoration.
    - a. Do not paint over "UL" and other required labels and identification, including mechanical and electrical nameplates. Remove paint applied to required labels and identification.
  3. Replace parts subject to operating conditions during construction that may impede operation or reduce longevity.
  4. Replace burned-out bulbs, bulbs noticeably dimmed by hours of use, and defective and noisy starters in fluorescent fixtures to comply with requirements for new fixtures.

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. Qualification Data: For refrigerant recovery technician.
- B. Schedule of Selective Demolition Activities: Indicate the following:
  1. Detailed sequence of selective demolition and removal work, with starting and ending dates for each activity. Ensure Owner's on-site operations are uninterrupted.
  2. Interruption of utility services. Indicate how long utility services will be interrupted.
  3. Coordination for shutoff, capping, and continuation of utility services.
- C. Predemolition Inventory:
  1. Submit list of items to be removed and salvaged as part of selective demolition work.
  2. Submit list of items to be removed and reinstalled as part of selective demolition work.
- D. 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. Inventory:

1. Submit a list of items that have been removed and salvaged.
2. Submit a list of items that have been removed and reinstalled.

### B. Statement of Refrigerant Recovery: Signed by refrigerant recovery technician responsible for recovering refrigerant, stating that all refrigerant that was present was recovered and that recovery was performed according to EPA regulations. Include name and address of technician and date refrigerant was recovered.

### C. 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 028213 – ASBESTOS ABATEMENT

|                                    |                                       |
|------------------------------------|---------------------------------------|
| AT: JV Forrestal Elementary School | SED Control No. 13-02-00-01-0-002-021 |
| Sargent Elementary School          | SED Control No. 13-02-00-01-0-008-020 |
| South Ave Elementary School        | SED Control No. 13-02-00-01-0-003-016 |
| Rombout Middle School              | SED Control No. 13-02-00-01-0-004-023 |
| Beacon High School                 | SED Control No. 13-02-00-01-0-020-012 |
| Bus Maintenance Facility           | SED Control No. 13-02-00-01-5-018-005 |
| Glenham Elementary School          | SED Control No. 13-02-00-01-0-006-022 |

OWNER: BEACON CITY SCHOOL DISTRICT  
10 EDUCATION DRIVE  
BEACON, NEW YORK 12508  
845-577-6000

CONSULTANT: QUALITY ENVIRONMENTAL SOLUTIONS & TECHNOLOGIES, INC. (QUES&T)  
1376 ROUTE 9  
WAPPINGERS FALLS, NEW YORK 12590  
PH. (845) 298-6031  
FX. (845) 298-6251



SPECIFICATION DATED: September 13, 2022

PART I – GENERAL

1.01 DESCRIPTION

- A. All work under this contract shall be performed in strict accordance with the specifications and all applicable laws for asbestos removal projects. The Abatement Contractor shall furnish all labor, materials, supervision, services, insurance, and equipment necessary for the complete and total removal of Asbestos-containing Materials (ACM) as described herein, in attachments to the specification, Job Specific Variance(s) and/or as directed by Beacon City School District (here-in-after the "Owner") and/or the Owners Representative(s) to support the to the following Beacon City School Districts projects:

2021 Capital Project  
Project D  
Beacon City School District  
10 Education Drive  
Beacon, New York 12508

|                                |                                       |
|--------------------------------|---------------------------------------|
| JV Forrestal Elementary School | SED Control No. 13-02-00-01-0-002-021 |
| Sargent Elementary School      | SED Control No. 13-02-00-01-0-008-020 |
| South Ave Elementary School    | SED Control No. 13-02-00-01-0-003-016 |
| Rombout Middle School          | SED Control No. 13-02-00-01-0-004-023 |
| Beacon High School             | SED Control No. 13-02-00-01-0-020-012 |
| Bus Maintenance Facility       | SED Control No. 13-02-00-01-5-018-005 |
| Glenham Elementary School      | SED Control No. 13-02-00-01-0-006-022 |

- B. Abatement Contractor shall provide for personnel air monitoring to satisfy OSHA regulation 29 CFR Parts 1926.1101(f). All work performed shall be in strict accordance with applicable provisions and regulations promulgated under New York State Department of Labor, Industrial Code 56 (ICR-56).
- C. The Abatement Contractor shall satisfy the requirements for asbestos projects issued by the New York State Department of Labor concerning licensing and certification; notification; equipment; removal and disposal procedures; engineering controls; work area preparation; decontamination and clean-up procedures; and personnel air monitoring.
- D. The Abatement Contractor shall be responsible for submittal of asbestos project notification(s) and applicable fees to EPA and NYSDOL concerning this project. Project



notification(s) shall be made for the cumulative total of ACM to be removed as required by ICR-56-3.4. Work practices for each individual work area established shall be consistent with the quantity of ACM contained within that work area as defined in ICR-56-2.

E. The scope of work under this contract shall include the following:

1. All asbestos-containing materials (ACM) shall be removed in accordance with these specifications. The Abatement Contractor is responsible for field verification of estimated quantities, locations and other site conditions that may affect work.
2. All fixed objects remaining within the work area(s) shall be protected as required by Title 12 NYCRR Section 56-7.10(b) and as described in these specifications.
3. The containerization, labeling and disposal of all asbestos waste in accordance with applicable city, state and federal regulations and these specifications.
4. The Abatement Contractor will be responsible for repairing all building components damaged during abatement including, but not limited to, ceiling tiles, ceiling finishes, wall finishes and/or floor finishes, etc.
5. The Abatement Contractor shall be responsible for any and all demolition required to access materials identified in scope of work and on associated drawings.
6. Concealed conditions that are exposed and may require additional work shall be brought to the attention of the Owner(s) immediately. The Abatement Contractor shall not abate these areas without a written notice to proceed. If the Abatement Contractor removes additional asbestos prior to the order to proceed the additional work will not be acknowledged.
7. Permissible working hours shall be Monday through Friday 7:00 A.M. to 4:00 P.M. with one (1) hour for lunch and/or as defined by the Owner. Holidays shall be considered weekends and not included for working days. Upon written approval from the Owner, the Abatement Contractor may work past these hours. The Abatement Contractor will incur any and all costs associated for work performed beyond the defined schedule including, but not limited to: abatement activities, project/air monitoring, custodial/staffing labor, overtime, mobilizations, etc.
8. Buildings will be turned over to the Abatement Contractor as is. At that time, all electrical services and HVAC systems in the proposed work areas will be shut down. Electricity and water supply will be maintained in the building for use by the Abatement Contractor. The Abatement Contractor is responsible for securing all power in the work area(s) and establishing all temporary GFCI hookups necessary to complete his work.

9. The Abatement Contractor shall remove identified asbestos-containing floor coverings to the building substrate beneath; in areas indicted. Subsequent to final air clearances, the substrate(s) shall be washed with a neutralizing agent to prepare the substrate to accept new floor covering and eliminate residual odors.
10. The Abatement Contractor must coordinate location of waste containers with the Facility and the Owner. Deliveries and storage of equipment must be coordinated with the Facility and the Owner.
11. All "Large" and "Small" asbestos abatement projects, as defined by 12 NYCRR56 shall not be performed while the building is occupied. The term "building" means a wing or major section of a building that can be completely isolated from the rest of the building with sealed non-combustible construction. The isolated portion of the building must contain exists that do not pass through the occupied portion(s) and ventilation systems must be physically separated and sealed at the isolation barriers.

#### 1.02 PRE-CONTRACT SUBMITTALS

Within three (3) days after bids are opened, the three (3) apparent low bidders shall be required to submit the following documentation:

A. Resume': Shall include the following:

1. Provide a list of projects of similar nature performed within the past two (2) years and include the dollar value of all projects. Provide project references to include owner, consultant, and air monitoring firms' name, contact person, address, and phone number, include location of project and date of completion.
2. Abatement Contractor license issued by New York State Department of Labor for asbestos work in accordance with ICR-56-3.
3. A list of owned equipment available to be used in the performance of the project.
4. The number of years engaged in asbestos removal.
5. An outline of the worker training courses and medical surveillance program conducted by the Abatement Contractor.
6. A standard operating procedures manual describing work practices and procedures, equipment, type of decontamination facilities, respirator program, special removal techniques, etc.
7. Documentation to the satisfaction of the Owner pertaining to the Abatement

Contractor's financial resources available to perform the project. Such data shall include, but not be limited to, the firm's balance sheet for the last fiscal year.

B. Citations/Violations/Legal Proceedings

1. Submit a notarized statement describing any citations, violations, criminal charges, or legal proceedings undertaken or issued by any law enforcement, regulatory agency, or consultant concerning performance on previous asbestos abatement contracts. Briefly describe the circumstances citing the project and involved persons and agencies as well as the outcome of any actions.
2. Answer the question: "Has your firm or its agents been issued a Stop Work order on any project within the last two years?" If "Yes" provide details as discussed above.
3. Answer the question: "Are you now, or have you been in the past, a party to any litigation or arbitrations arising out of your performance on Asbestos Abatement Contracts?" If "Yes" provide details as discussed in 1. above.
4. Describe any liquidated damages assessed within the last two years.

C. Preliminary Schedule

1. Provide a detailed schedule including work dates, work shift times, estimate of manpower to be utilized and the start and completion date for completion of each major work area.

1.03 DOCUMENTATION

A. The Abatement Contractor shall be required to submit the following and receive the Consultant's approval prior to commencing work on this project:

1. Provide documentation of worker training for each person assigned to the project. Documentation shall include copies of each workers valid New York State asbestos handler certificates (for those employees who may perform asbestos removal), documentation of current respirator fit test and current OSHA required training and medical examination.
2. The attached "Asbestos Employee Medical Examination Statement" and "Asbestos Employee Training Statement" forms shall be completed, signed and submitted for each worker assigned to the project. Records of all employee training and medical surveillance shall be maintained for at least forty (40) years. Copies of the records shall be submitted to the Consultant prior to commencement.
3. The Abatement Contractor shall submit proof of a current, valid license issued by the

New York State Department of Labor pursuant to the authority vested in the Commissioner by section 906 of the Labor Laws, and that the employees performing asbestos related work on this project are certified by the State of New York as required in Part 56 of Title 12 of the Official Compilation of Codes, Rules and Regulations of the State of New York latest edition. Copies of all licenses shall be submitted prior to the commencement of the project.

4. The Abatement Contractor shall submit a written respiratory protection program meeting the requirements of 29 CFR 1910.134 to the Consultant.
5. The name, address, social security number and NYS DOL certificate number of the person(s) who will supervise the asbestos project.
6. The name and address of the deposit or waste disposal site or sites where the asbestos materials are to be deposited or disposed of. This site must be approved by the Owner. The manifesting procedure must also be specified.
7. The name, address and New York State Dept. of Environmental Conservation ID Number of any transporters that are to be used to transport waste.
8. A written Standard Operation Procedure (SOP) that is designed and implemented to maximize protection against human exposure to asbestos dust. The SOP shall take into consideration the workers, visitors, building employees, general public and environment. As a minimum the procedures must include the following:
  - a. Security for all work areas on an around-the-clock basis against unauthorized access.
  - b. Project organization chart including the phone numbers of at least two responsible persons who shall be authorized to dispatch men and equipment to the project in the event of an emergency; including weekends.
  - c. Description of protective clothing and NIOSH approved respirators to be used.
  - d. Description of all removal methods to be used, including HEPA air filtration and decontamination sequence with special emphasis on any procedure that may deviate from these specifications.
  - e. A list of manufacturers' certificates stating that all vacuums, negative air filtration equipment, respirators and air supply equipment meet OSHA and EPA requirements.
  - f. A list of all materials proposed to be furnished and used under this contract.
  - g. Emergency evacuation procedures in the event of fire, smoke, or accidents such as injury from falling, heat exposure, electrical shock, etc.
  - h. The name, address and ELAP number of the New York State Department of Health

Certified Analytical Testing Laboratory the Contractor proposes to use for the OSHA monitoring.

9. A detailed plan, in triplicate, for the phasing of the project, division of work areas and location of decontamination facilities, waste containers and temporary office.
  10. Work schedule, identifying firm dates and completion for actual areas. Bar chart or critical path chart indicating phases is required.
- B. The Abatement Contractor shall post their NYS DOL contractor's license and maintain a daily log documenting the dates and time of the following items within each personal decontamination unit:
1. Meetings; purpose, attendants, discussion (brief)
  2. Sign-in and sign-out of all persons entering the work area including name, date, time, social security number, position or function and general description of daily activity.
  3. Testing of barriers and enclosure systems using smoke tubes prior to the beginning of abatement activities and at least once a day thereafter until satisfactory clearance air monitoring results have been achieved.
  4. Inspection of all plastic barriers, twice daily, by the asbestos supervisor.
  5. Loss of enclosure integrity; special or unusual events, barrier breaches, equipment failures, etc.
  6. Daily cleaning of enclosures.
  7. Personnel air monitoring test results for OSHA Compliance. Results shall be posted at the work site within 24 hours of testing and copies supplied to the Owner within five (5) days of testing. Abnormalities shall be supplied to the Owner immediately.
- C. Documentation with confirmation signature of Consultant's representative of the following shall be provided by the Abatement Contractor at the final closeout of the project.
1. Testing of barriers and enclosure systems using smoke tubes shall be performed prior to the beginning of abatement activities and at least once a day thereafter until satisfactory clearance air monitoring results have been achieved.
  2. Inspection of all plastic barriers.
  3. Removal of all polyethylene barriers.

4. Consultant's inspections prior to encapsulation.
  5. Removal of waste materials.
  6. Decontamination of equipment (list items).
  7. Consultant's final inspection/final air tests.
- D. The Abatement Contractor shall provide records of all project information, to include the following which shall be submitted upon completion of the project and prior to approval of the Abatement Contractor's payment application:
1. The location and description of the abatement project.
  2. The name, address, and social security number of the person(s) who supervised the asbestos project.
  3. Certified payroll documentation Pursuant to Article 8, Section 220 of the NYS Labor Law
  4. Copies of EPA/NYSDOL Asbestos Certificates for all Workers and Supervisors employed on the Project.
  5. Copies of Medical Approval and Respirator Fit-testing for all Asbestos Workers and Supervisors employed on the Project.
  6. Copies of Abatement Contractors Daily Sign-In Sheets & Logs for persons entering and leaving the work area. – Title 12 NYCRR Part 56-7.3.
  7. Copies of Abatement Contractor's personal air sampling laboratory results.
  8. The amounts and type of asbestos materials that was removed, enclosed, encapsulated, or disturbed.
  9. The name and address of the deposit or waste disposal site or sites where the asbestos waste materials were deposited or disposed of and all related manifests, receipts and other documentation associated with the disposal of asbestos waste.
  10. The name and address of any transporters used to transport waste and all related manifests, receipts and other documentation associated with the transport of asbestos waste.
  11. All other information that may be required by state, federal or local regulations.
  12. Copy of the Supervisor's Daily Project Log of events as described in 1.03 B, above.

1.04 NOTIFICATIONS AND PERMITS

A. The Abatement Contractor shall be required to prepare and submit notifications to the following agencies at least ten (10) days prior to the commencement of the project:

1. Asbestos NESHAPS Contact  
U.S. Environmental Protection Agency  
NESHAPS Coordinator, Air Facilities Branch  
26 Federal Plaza  
New York, New York 10007  
(212) 264-7307
2. State of New York Department of Labor  
Division of Safety and Health  
Asbestos Control Bureau  
State Office Building Campus, Building 12, Room 454  
Albany, New York 12240
3. Owner(s): Beacon City School District  
10 Education Drive  
Beacon, New York 12508  
ATTN: Jesse Morrill  
Ph. (845) 838-6900  
E-mail. [Morrill.j@beaconk.org](mailto:Morrill.j@beaconk.org)
4. Owner's Representative(s): Tetra Tech Architects & Engineers  
500 Bi-County Blvd, Suite 104  
Farmingdale, New York 11735  
ATTN: Bill Wisbauer  
Ph. (631) 847-7762  
E-mail. [bill.wisbauer@tetrattech.com](mailto:bill.wisbauer@tetrattech.com)
5. Environmental Consultant(s): Quality Environmental Solutions & Technologies, Inc.  
(QuES&T)  
1376 Route 9  
Wappingers Falls, New York 12590  
ATTN: Gregory Dean  
Ph. (845) 298-6031  
Fx. (845) 298-6251  
E-mail. [GDean@qualityenv.com](mailto:GDean@qualityenv.com)

B. The notification shall include but not be limited to the following information:

1. Name and address of Owner.
2. Name, address, and asbestos handling license number of the Abatement Contractor.
3. Address and description of the building, including size, age, and prior use of the building or area; the amount, in square feet or linear feet of asbestos material to be removed; room designation numbers or other local information where asbestos material is found, including the type of asbestos material (friable or non-friable).
4. Scheduled starting and completion dates for removal.
5. Methods to be employed in abating asbestos containing materials.
6. Procedures and equipment, including ventilating/exhaust systems, that will be employed to comply with the Code of Federal Regulation (CFR) Title 40, Part 61 of the U.S. Environmental Protection Agency.
7. The name and address of the carting company and of the waste disposal site where the asbestos waste will be deposited.

NOTE: Notifications shall be submitted using standard forms as may be used by the respective agency.

For DOL (NYS) include "Asbestos Project Notification" form (DOSH-483) with proper fee, if required. For EPA include "Notification of Demolition and Renovation"; 40 CFR Part 61.

- C. The Abatement Contractor shall secure any permits required by the city, town, county, or state that may be required and the cost for obtaining the permit shall be included in his base bid.
- D. The Abatement Contractor shall erect warning signs around the work space at every point of potential entry into the work area in accordance with OSHA 1926.58k (2), (i). These signs shall bear the following information:

DANGER

CANCER AND LUNG DISEASE HAZARD  
AUTHORIZED PERSONNEL ONLY  
RESPIRATORS AND PROTECTIVE



CLOTHING  
ARE REQUIRED IN THIS AREA

- E. The Abatement Contractor shall post at entrances to the work place and immediate adjacent areas, notifications to building occupants, which include the name and license number of the contractor, project location and size, amount and type of ACM, abatement procedures, dates of expected occurrence and name and address of the air monitor and laboratory in compliance with ICR 56-3.6.
- F. The Abatement Contractor shall post a list of emergency telephone numbers at the job site which shall include the Owner's Representative, police, emergency squad, local hospital, Environmental Protection Agency, N.Y. State Department of Labor, Occupational Safety and Health Administration and the local Department of Health.

#### 1.05 APPLICABLE STANDARDS

Except to the extent that more explicit or more stringent requirements are written directly into the contract documents, applicable standards of the construction industry have the same force and effects (and are made a part of contract documents by reference) as if copied directly into contract documents, or as if published copies were bound herewith. Resolution of overlapping and conflicting requirements, which result from the application of several different industry standards to the same unit of work, shall be by adherence to the most stringent requirement.

- A. Applicable standards listed in these Specifications form a part of this Specification and include, but are not necessarily limited to, standards promulgated by the following agencies and organizations:
  - 1. ANSI:  
American National Standards Institute  
1430 Broadway  
New York, New York 10018
  - 2. ASHRAE:  
American Society for Heating, Refrigerating  
and Air Conditioning Engineers  
1791 Tullie Circle NE  
Atlanta, Georgia 30329
  - 3. ASTM:  
American Society for Testing and Materials  
1916 Race Street  
Philadelphia, Pennsylvania 19103

4. CFR  
Code of Federal Regulations Available  
from Government Printing Office  
Washington, District of Columbia 20402
5. CGA  
Compressed Gas Association  
1235 Jefferson Davis Highway  
Arlington, Virginia 22202
6. CS  
Commercial Standard of NBS  
(US Dept. of Commerce)  
Government Printing Office
7. EPA  
Environmental Protection Agency, Region II  
26 Federal Plaza  
New York, New York 10007  
Asbestos Coordinator - Room 802  
(212) 264-9538  
Part 61, Sub-Parts A & B  
National Emission Standard for Asbestos
8. FEDERAL SPECS  
Federal Specification (General Services Administration)  
7th and D Street, SW  
Washington, District of Columbia 20406
9. NBS  
National Bureau of Standards  
(US Department of Commerce)  
Gaithersburg, Maryland 20234
10. NEC  
National Electrical Code (by NFPA)
11. NFPA  
National Fire Protection Association  
Batterymarch Park  
Quincy, Massachusetts 02269
12. NIOSH

National Institute for Occupational Safety and Health  
26 Federal Plaza  
New York, New York 10007

13. NYSDOH

New York State Department of Health  
Bureau of Toxic Substance Assessment  
Room 359 - 3rd Floor  
Tower Building Empire State Plaza  
Albany, New York 12237

14. NYSDEC

New York State Department of Environmental Conservation  
Room 136  
50 Wolf Road  
Albany, New York 12233-3245

15. NYSDOL

State of New York Department of Labor  
Division of Safety and Health  
Asbestos Control Program  
State Campus, Building 12  
Albany, New York 12240

16. OSHA

Occupational Safety and Health Administration  
(US Department of Labor)  
New York Regional Office - room 3445  
1515 Broadway  
New York, New York 10036

17. UL

Underwriters Laboratories  
333 Pfingsten Road  
Northbrook, Illinois 60062

B.Federal Regulations: Those which govern asbestos abatement work or hauling and disposal of asbestos waste materials:

1. U.S. Department of Labor, Occupational Safety and Health Administration, (OSHA):

- a. Asbestos Regulations  
Title 29, Part 1910, of the Code of Federal Regulations.
- b. Respiratory Protection

Title 29, Part 1910, Section 134 of the Code of Federal Regulations.

- c. Construction Industry  
Title 29, Part 1926, of the Code of Federal Regulations.
- d. Access to Employee Exposure & Medical Records  
Title 29, Part 1910, Section 20 of the Code of Federal Regulations.
- e. Hazard Communication  
Title 29, Part 1910, Section 1200 of the Code of Federal Regulations.
- f. Specifications for Accident Prevention Signs and Tags  
Title 29, Part 1910, section 145 of the Code of Federal Regulations.

2. U.S. Environmental Protection Agency (EPA):

- a. Asbestos Hazard Emergency Response Act (AHERA) Regulation Asbestos Containing Materials in Schools Final Rule & Notice Title 40, Part 763, Subpart E of the Code of Federal Regulations.
- b. Worker Protection Rule  
40 CFR Part 763, Subpart G, CPTS 62044, FLR 2843-9  
Federal Register, Vol. 50, No. 134, 7/12/85, P28530-28540
- c. Regulation for Asbestos  
Title 40, Part 61, Subpart A of the Code of Federal Regulations
- d. National Emission Standard for Asbestos  
Title 40, Part 61, Subpart M (Revised Subpart B) of the Code of Federal Regulations
- e. Resource Conservation and Recovery Act (RCRA) 1976, 1980  
Hazardous and Solid Waste Amendments (HSWA) 1984  
Subtitle D, Subtitle C

3. U.S. Department of Transportation (DOT):

- a. Hazardous Substances: Final Rule Regulation 49 CFR, Part 171 and 172.

C. State Regulations: Those which govern asbestos abatement work or hauling and disposal of asbestos waste materials:

- 1. New York State Department of Environmental Conservation (DEC) Regulations regarding waste collection registration. Title 6, Part 364 of the New York State Official Compilation of Codes, Rules and Regulations - 6NYCRR 364.

2. New York State Right-To-Know Law
  3. New York State Department of Labor Asbestos Regulations Industrial Code Rule 56.
  4. NYSDOH Title 10 Part 73 – Asbestos Safety Program and Environmental Laboratory Approval Program.
- D. Standards: Those which govern asbestos abatement work or hauling and disposal of asbestos waste materials:
1. American National Standards Institute (ANSI)
    - a. Fundamentals Governing the Design and Operation of Local Exhaust Systems  
Publication Z9.2-79
    - b. Practices for Respiratory Protection  
Publication Z88.2-80
- E. Guidance Documents: Those that discuss asbestos abatement work or hauling, and disposal of asbestos waste materials are listed below only for the Abatement Contractor's information. These documents do not describe the work and are not a part of the work of this contract.
- EPA:
1. Guidance for Controlling Asbestos Containing Materials in Buildings (Purple Book)  
EPA560/5-85-024.
  2. Asbestos Waste Management Guidance EPA 530-SW-85-007.
- F. Patents and Royalties: The Abatement Contractor shall pay all royalties and/or license fees. The Abatement Contractor shall defend all suits and claims for infringement of any patent rights and save the Owner and Consultant harmless from loss including attorney fees on account thereof.

#### 1.06 DEFINITIONS

As used in or in connection with these specifications the following are terms and definitions.

Abatement - Procedure to control release from asbestos material. This includes removal, encapsulation, and enclosure.

**Aggressive sampling** - A method of sampling in which the person collecting the air sample creates activity by the use of mechanical equipment during the sampling period to stir up settled dust and simulate activity in that area of the building.

**AIHA** - The American Industrial Hygiene Association, 475 Wolf Ledges Parkway, Akron, Ohio 44311.

**Airlock** - A system for permitting entrance and exit while restricting air movement between a containment area and an uncontaminated area. It consists of two curtained doorways separated by a distance of at least three feet such that one passes through one doorway into the airlock, allowing the doorway sheeting to overlap and close off the opening before proceeding through the second doorway, thereby preventing flow-through contamination.

**Air sampling** - The process of measuring the content of a known volume of air collected during a specific period of time.

**Amended water** - Water to which a surfactant has been added.

**Approved asbestos safety program** - A program approved by the Commissioner of Health providing training in the various disciplines that may be involved in an asbestos project.

**Area air sampling** - Any form of air sampling or monitoring where the sampling device is placed at some stationary location.

**Asbestos** - Any naturally occurring hydrated mineral silicate separable into commercially usable fibers, including chrysotile (serpentine), amosite (cummingtonite-gunerite), crocidolite (riebeckite), tremolite, anthophyllite and actinolite.

**Asbestos contract** - An oral or written agreement contained in one or more documents for the performance of work on an asbestos project and includes all labor, goods and service.

**Asbestos handler** - An individual who installs, removes, applies, encapsulates, or encloses asbestos or asbestos material, or who disturbs friable asbestos. Only individuals certified by NYS Department of Labor shall be acceptable for work under this specification.

**Asbestos handling certificate** - A certificate issued by the Commissioner of Labor of the State of New York, to a person who has satisfactorily completed an approved asbestos safety program.

Asbestos project - Work undertaken by a contractor which involves the installation, removal, encapsulation, application or enclosure of any ACM or the disturbance of friable ACM.

Asbestos Safety Technician (AST) - Individual designated to represent the Consultant, perform third party monitoring and perform compliance monitoring at the job site during the asbestos project.

Asbestos waste material - Asbestos material or asbestos contaminated objects requiring disposal.

Authorized visitor - The building owner, his or her representative or any representative of a regulatory or other agency having jurisdiction over the project.

Background level monitoring - A method used to determine ambient airborne concentrations inside and outside of a building or structure prior to starting an abatement project.

Building owner - The person in whom legal title to the premises is vested unless the premises are held in land trust, in which instance Building Owner means the person in whom beneficial title is vested.

Clean room - An uncontaminated area or room that is a part of the personal decontamination enclosure with provisions for storage of persons' street clothes and protective equipment.

Cleanup - The utilization of HEPA vacuuming to control and eliminate accumulations of asbestos material and asbestos waste material.

Clearance air monitoring - The employment of aggressive sampling techniques with a volume of air collected to determine the airborne concentration of residual fibers upon conclusion of an asbestos abatement project.

Commissioner - Commissioner of the New York State Department of Labor.

Contractor - A company, unincorporated association, firm, partnership or corporation and any owner or operator thereof, which engages in an asbestos project or employs persons engaged in an asbestos project.

Curtained doorway - A device that consists of at least three overlapping sheets of plastic over an existing or temporarily framed doorway. One sheet shall be secured at the top and left side, the second sheet at the top and right side, and the third sheet at the top and the left side. All sheets shall have weights attached to the bottom to insure that the sheets hang straight and maintain a seal over the doorway when not in use.

Decontamination enclosure system - A series of connected rooms, separated from the work area and from each other by air locks, for the decontamination of persons, materials, equipment, and authorized visitors.

Encapsulant (sealant) or encapsulating agent - A liquid material that can be applied to asbestos material and which prevents the release of asbestos from the material by creating a membrane over the surface.

Enclosure - The construction of airtight walls, ceilings and floors between the asbestos material and the facility environment, or around surfaces coated with asbestos materials, or any other appropriate procedure that prevents the release of asbestos materials.

Equipment room - A contaminated area or room that is part of the personal decontamination enclosure system with provisions for the storage of contaminated clothing and equipment.

Fixed object - A unit of equipment, furniture or other fixture in the work area which cannot be readily removed from the work area.

Friable Asbestos Material - That condition of crumbled, pulverized, powdered, crushed or exposed asbestos capable of being released into the air by hand pressure.

Friable material containment - The encapsulation or enclosure of any friable asbestos material.

Glovebag technique - A method for removing asbestos material from heating, ventilating, and air conditioning (HVAC) ducts, piping runs, valves, joints, elbows, and other nonplanar surfaces in a noncontained work area. The glovebag assembly is a manufactured device consisting of a glovebag constructed of at least six mil transparent plastic, two inward-projecting longsleeve gloves, which may contain an inward projecting waterwand sleeve, an internal tool pouch, and an attached, labeled receptacle or portion for asbestos waste. The glovebag is constructed and installed in such a manner that it surrounds the object or area to be decontaminated and to contain all asbestos fibers released during the abatement process.

HEPA filter - A high efficiency particulate air filter capable of trapping and retaining 99.97 percent of particulate greater than 0.3 microns equivalent aerodynamic diameter.

HEPA vacuum equipment - Vacuuming equipment with a high efficiency particulate air filtration system.



Holding area - A chamber in the waste decontamination enclosure located between the washroom and an adjacent uncontaminated area.

Homogeneous work area - A site within the abatement work area that contains one type of asbestos material and where one type of abatement is used.

Large asbestos project - An asbestos project involving the installation, removal, disturbance, enclosure, or encapsulation of 160 square feet or more of asbestos or asbestos material or 260 linear feet or more of asbestos or asbestos material.

Minor asbestos project - An asbestos project involving the installation, removal, disturbance, enclosure, or encapsulation of 10 square feet or less of asbestos or asbestos material, or 25 linear feet or less of asbestos or asbestos material.

Movable object - A unit of equipment, furniture or fixture in the work area that can be readily removed from the work area.

Negative air pressure equipment - A local exhaust system equipped with HEPA filtration. The system shall be capable of creating and maintaining a negative pressure differential between the outside and the inside of the work area.

Non-asbestos material - Any material containing one percent or less asbestos by weight.

Occupied area - Any frequented portion of the work site where abatement is not taking place.

Outside air - The air outside the building or structure.

Personal air monitoring - A method used to determine an individual's exposure to airborne contaminants. The sample is collected outside the respirator in the person's breathing zone.

Plasticize - To cover floors, walls, ceilings and other surfaces with 6 mil fire retardant plastic sheeting as herein specified.

Project - Any form of work performed in connection with the abatement of asbestos or alteration, renovation, modification or demolition of a building or structure that may disturb asbestos or asbestos material.

Removal - The stripping of any asbestos material.

Repair - Corrective action using required work practices to control fiber release from damaged areas.

Respiratory protection - Respiratory protection required of licensed asbestos workers and authorized visitors in accordance with the applicable laws.

Satisfactory clearance air monitoring results - For all post- abatement samples, airborne concentrations of total fibers that are less than 0.01 fibers per cubic centimeter or background levels, whichever are greater, using phase contrast microscopy (PCM).

Shower room - A room between the clean room and the equipment room in the personal decontamination enclosure with hot and cold running water controllable at the top and arranged for complete showering during decontamination.

Small asbestos project - An asbestos project involving the installation, removal, disturbances, enclosure, or encapsulation of more than 10 and less than 160 square feet of asbestos or asbestos material of more than 25 and less than 260 linear feet of asbestos or asbestos material.

Staging area - The area near the waste transfer airlock where containerized asbestos waste has been placed prior to removal from the work area.

Surfactant - A chemical wetting agent added to water to improve its penetration.

Visible emissions - An emissions of particulate material that can be seen without the aid of instruments.

Washroom - A room between the work area and the holding area in the waste decontamination enclosure system, where equipment and waste containers are wet cleaned and/or HEPA vacuumed.

Waste decontamination enclosure system - An area, consisting of a washroom and a holding area, designated for the controlled transfer of materials and equipment.

Wet cleaning - The process of eliminating asbestos contamination from surfaces, equipment or other objects by using cloths, mops, or other cleaning tools.

Work area - Designated rooms, spaces, or areas where asbestos abatement takes place.

Work site - Premises where asbestos abatement is taking place.

Work Surface - Substrate surface from which asbestos-containing material has been removed.

## 1.07 UTILITIES, SERVICE AND TEMPORARY FACILITIES

A. The Owner shall make available to the Abatement Contractor all reasonable amounts of

water and electrical power at no charge.

- B. The Abatement Contractor shall provide, at his own expense, all electrical, water, and waste connections, extensions, and construction materials, supplies, etc. All connections must be approved in advance by the Owner and all work relative to the utilities must be in accordance with the applicable building codes.
- C. The Abatement Contractor shall provide scaffolding, ladders and staging, etc. as necessary to accomplish the work of this contract. The type, erection and use of all scaffolding, ladders and staging, etc. shall comply with all applicable OSHA provisions.
- D. All connections to the Owner's water system shall include reduced pressure backflow protection or double check and double gate valves. Valves shall be temperature and pressure rated for operation of the temperatures and pressures encountered. After completion of use, connections and fittings shall be removed without damage or alteration to existing water piping and equipment. Leaking or dripping valves shall be piped to the nearest drain or located over an existing sink or grade where water will not damage existing finishes or equipment.
- E. The Abatement Contractor shall use only heavy-duty abrasion resistant hoses with a pressure rating greater than the maximum pressure of the water distribution system to provide water to each work area and to each decontamination unit. Provide fittings as required to allow for connection to existing wall hydrants or spouts, as well as temporary water heating equipment, branch piping, showers, shut-off nozzles and equipment. All water must be shut off at the end of each shift.
- F. The Abatement Contractor shall provide service to decontamination unit electrical subpanel with minimum 60 amp, 2 pole circuit breaker or fused disconnect and ground-fault circuit interrupters (GFCI), reset button and pilot light, connected to the building's main distribution panel. Subpanel and disconnect shall be sized and equipped to accommodate all electrical equipment required for completion of the work. This electrical subpanel shall be used for hot water heater, PAPR battery recharging and air sampling pumps.
- G. The Abatement Contractor shall provide UL rated 40-gallon electric hot water heater to supply hot water for the decontamination unit shower. Activate from 30 amp circuit breaker on the electrical subpanel located within the decontamination unit. Provide with relief valve compatible with water heater operation; relief valve down to drip pan on floor with type L copper. Wiring of the hot water heater shall be in compliance with NEMA, NEC, and UL standards.
- H. The Abatement Contractor shall provide identification warning signs at power outlets, which are other than 110-120 volt power. Provide polarized outlets for plug-in type outlets, to prevent insertion of 110-120 plugs into higher voltage outlets. Dry transformers shall be provided where required to provide voltages necessary for work operations. All

outlets or power supplies shall be protected by ground fault circuit interrupter (GFCI) at the power source.

- I. The Abatement Contractor shall use only grounded extension cords; use "hard-service" cords where exposed to abrasion and traffic. Use single lengths or use waterproof connectors to connect separate lengths of electric cords, if single lengths will not reach areas of work.
- J. The Abatement Contractor shall provide general service incandescent lamps of wattage indicated or required for adequate illumination; Protect lamps with guard cages or tempered glass enclosures; Provide exterior fixtures where fixtures are exposed to moisture.
- K. The Abatement Contractor shall provide temporary heat or air conditioning as necessary to maintain comfortable working temperatures inside and immediately outside the work areas. Heating and A/C equipment shall have been tested and labeled by UL, FM or another recognized trade association related to the fuel being used. Fuel burning heaters shall not be used inside containment areas. The Contractor shall also provide a comfortable working environment for occupied areas that are impacted by the asbestos removal.
- L. The Abatement Contractor shall comply with recommendations of the NFPA standard in regard to the use and application of fire extinguishers. Locate fire extinguishers where they are most convenient and effective for their intended purpose, but provide not less than one extinguisher in each work area, equipment room, clean room and outside the work area

#### 1.08 REMOVAL OF FIXTURES

- A. In locations where the Abatement Contractor is directed to dispose of fixtures he shall either decontaminate the fixtures and dispose of them as non-asbestos containing materials or he shall place them in an appropriate container and dispose of them as asbestos containing material.
- B. In locations where the Abatement Contractor is directed to remove and reinstall fixtures, the fixtures shall be removed, decontaminated, labeled, protected with plastic, and stored by the contractor in a location as directed by the Owner.
- C. Upon completion of the asbestos removal and upon receiving satisfactory clearance air monitoring results, all items to be replaced shall be restored to their original location and reinstalled by the Abatement Contractor.

### PART 2 – PRODUCTS

#### 2.01 MATERIALS AND EQUIPMENT

A. GENERAL REQUIREMENTS

1. Materials shall be stored off the ground, away from wet or damp surfaces and under protective cover to prevent damage or contamination.
2. Damaged or deteriorating materials shall not be used and shall be removed from the premises.
3. Power tools used to drill, cut into, or otherwise disturb asbestos material shall be equipped with HEPA filtered local exhaust ventilation.
4. The Abatement Contractor shall make available to authorized visitors, ladders and/or scaffolds of sufficient dimension and quantity so that all work surfaces can be easily and safely reached for inspection. Scaffold joints and ends shall be sealed with tape to prevent incursion of asbestos. Scaffolds and ladders shall comply with all applicable codes.

B. PLASTIC BARRIERS (POLYETHYLENE)

1. In sizes and shapes to minimize the number of joints.
  - a. Six mil. (.006") fire-retardant for vertical protection (walls, entrances, and openings).
  - b. Six mil. (.006") fire-retardant for horizontal protection (fixed equipment) and heating grilles.
  - c. Six mil. (.006") reinforced fire-retardant for floors of decon units.
2. Provide two (2) layers over all roof, wall and ceiling openings. Floor penetrations shall be sealed with a rigid material prior to plasticizing to prevent tripping and fall hazards. All seams within a layer shall be separated by a minimum distance of six feet and sealed airtight. All seams between layers shall be staggered.
3. Barrier Attachment - Commercially available duct tape (fabric or paper) and spray-on adhesive. Duct tape shall be capable of sealing joints of adjacent sheets of plastic, facilitating attachment of plastic sheets to finished or unfinished surfaces of dissimilar materials and adhering under both dry and wet conditions.

C. SIGNS

1. Danger signs shall be provided and shall conform to 29 CFR 1926.1101 and be 14" x 20". These signs shall bear the following information:

DANGER  
ASBESTOS  
CANCER AND LUNG DISEASE HAZARD  
RESPIRATORS AND PROTECTIVE  
CLOTHING  
ARE REQUIRED IN THIS AREA

D. DANGER LABELS AND TAPE

1. Labels shall be affixed to any asbestos contaminated material in accordance with the requirements of 29 CFR 1910.1200 (f) of OSHA's Hazard Communication Standard, and shall contain the following information:

DANGER  
CONTAINS ASBESTOS FIBERS  
AVOID BREATHING DUST  
CANCER AND LUNG DISEASE HAZARD

2. A label shall be affixed on each container of asbestos waste in accordance with the requirements of 49 CFR Parts 171 and 172, Hazardous Substances; Final Rule (U.S. Department of Transportation), and shall contain the following information:

RQ HAZARDOUS SUBSTANCE  
SOLID, NOS, ORM-E, NA 9188  
(ASBESTOS)

3. A label shall be affixed on each container of asbestos waste in accordance with the requirements of 40 CFR Part 61.150, NESHAP; Asbestos; Final Rule (USEPA) and shall contain the name of the waste generator and the location at which the waste was generated.

NOTE: All containers marked as above (1, 2 and 3) shall be disposed of as asbestos waste.

4. Provide 3" red barrier tape printed with black lettered "DANGER ASBESTOS REMOVAL". Locate barrier tape across all corridors, entrances and access routes to asbestos work area.

E. PROTECTIVE EQUIPMENT

1. Respiratory Requirements

- a. Where fiber levels permit, and in compliance with regulatory requirements, Powered Air Purifying Respirators are the minimum allowable respiratory protection permitted to be utilized during removal operations.
- b. Where not in violation of NIOSH, OSHA, and any other regulatory requirements, the Abatement Contractor shall provide the following minimum respiratory protection to the maximum use concentrations indicated:

| <u>MSHA/NIOSH Approved<br/>Respiratory Protection</u>   | <u>Maximum Use<br/>Concentration</u> |
|---|--------------------------------------|
| Half-Mask Air Purifying<br>with HEPA Filters  | 10x PEL                              |
| Full-Facepiece Air Purifying<br>HEPA Filters and Quantitative<br>Fit Test                             | 10x PEL                              |
| Powered Air Purifying (PAPR),<br>Loose fitting Helmet or Hood,<br>HEPA Filter                         | 25x PEL                              |
| Powered Air Purifying (PAPR),<br>Full Facepiece, HEPA Filter  | 50x PEL                              |
| Supplied Air, Continuous Flow<br>Loose fitting Helmet or Hood   | 25x PEL                              |
| Supplied Air, Continuous Flow<br>Full Facepiece, HEPA Filter  | 50x PEL                              |
| Full Facepiece-Supplied Air<br>Pressure Demand, HEPA Filter   | 100x PEL                             |
| Full Facepiece-Supplied Air<br>Pressure Demand, with Aux. SCBA,<br>Pressure Demand or Continuous Flow | > 100x PEL                           |

2. Disposable Clothing - "Tyvek" manufactured by Dupont or approved equal.

3. NIOSH approved safety goggles to protect eyes.
4. Polyethylene bags, 6 mil. (.006") thick (use double bags).

NOTE: Workers must wear disposable coveralls and respirator masks at all times while in the work area. Contaminated coveralls or equipment must be left in work area and not worn into other parts of the building.

#### F. TOOLS AND EQUIPMENT

1. Airless Sprayer - An airless sprayer, suitable for application of encapsulating material, shall be used.
2. Scaffolding - Scaffolding, as required to accomplish the specified work, shall meet all applicable safety regulations.
3. Transportation Equipment - Transportation equipment, as required, shall be suitable for loading, temporary storage, transport and unloading of contaminated waste without exposure to persons or property. Water tight, hard wall containers shall be provided to retain and dispose of any asbestos waste material with sharp-edged components that may tear plastic bags or sheeting. The containers shall be marked with danger labels.
4. Surfactant - Wetting Agents - "Asbestos-Wet" - Aquatrols Corp. of America or approved equal, and shall be non-carcinogenic.
5. Portable (negative air pressure) asbestos filtration system - by Micro-Trap, or approved equal.
6. Vacuum, HEPA type equal to "Nilfisk" #GA73, or "Pullman/Holt" #75 ASA.
7. Amended Water Sprayer - The water sprayer shall be an airless or other low-pressure sprayer for amended water application.
8. Other Tools and Equipment - The Abatement Contractor shall provide other suitable tools for the stripping, removal, encapsulation, and disposal activities including but not limited to: hand-held scrapers, nylon brushes, sponges, rounded edge shovels, brooms, and carts.

### PART 3 – EXECUTION

#### 3.01 PRE-ABATEMENT WORK AREA PREPARATION

- A. The work area shall be vacated by the occupants prior to work area preparation and not reoccupied until satisfactory clearance air monitoring results have been achieved.



- B. Caution signs shall be posted at all locations and approaches to a location where airborne concentrations of asbestos may exceed ambient background levels. Signs shall be posted that permit a person to read the sign and take the necessary protective measures to avoid exposure.
- C. Shut down and lock out electric power to all work areas. The Abatement Contractor shall provide temporary power and lighting and ensure safe installation of temporary power sources and equipment used where high humidity and/or water shall be sprayed in accordance with all applicable codes. All power to work areas shall be brought in from outside the area through a ground-fault interrupter at the source.
- D. Isolate the work area HVAC system.
- E. The personnel decontamination enclosure system shall be installed or constructed prior to preparatory work in the work area and in particular before the disturbance of asbestos material. The waste decontamination enclosure system shall be installed or constructed prior to commencement of abatement activities.
- F. Movable objects within the work area shall be pre-cleaned using HEPA filtered vacuum equipment an/or wet cleaning and such objects shall be removed from the work area to an uncontaminated location. If disposed of as asbestos waste material, cleaning is not required.
- G. Fixed objects and other items, which are to remain within the work area, shall be pre-cleaned using HEPA filtered vacuum equipment and/or wet cleaning. Such objects shall be enclosed with two layers of at least six mil plastic sheeting and sealed with tape.
- H. The work area shall be pre-cleaned using HEPA filtered vacuum equipment and/or wet cleaning. Methods that raise dust, such as dry sweeping or vacuuming with equipment not equipped with HEPA filters, shall be prohibited. Asbestos material shall not be disturbed during pre-cleaning.
- I. Isolation barriers that seal off all openings, including windows, corridors, doorways, ducts, and any other penetrations of the work area, shall be constructed using two layers of at least six mil fire-retardant plastic sheeting sealed with tape. Also, all seams in mechanical system components that pass through the work area shall be sealed. Doorways and corridors, which shall not be used for passage during work, shall also be sealed.
- J. Removal of mounted objects. After isolation barriers are in place, objects such as light fixtures, electrical track, alarm systems, ventilation equipment and other items not previously sealed, shall be double sealed with six mil fire-retardant plastic sheeting. Localized HEPA filtered vacuum equipment shall be used during fixture removal to reduce asbestos dispersal.

- K. Individual roof and floor drains shall be sealed watertight using two layers of 6-mil fire-retardant plastic sheeting and tape prior to plasticizing. Openings in floor shall be fully covered with plywood sheeting secured to the floor in such a way as to minimize a tripping hazard prior to plasticizing.
- L. Emergency and fire exits from the work area shall be maintained or alternate exits shall be established according to all applicable codes.
- M. Adequate toilet facilities shall be supplied by the Abatement Contractor and shall be located either in the clean area of the personnel decontamination enclosure or shall be readily accessible to the personnel decontamination enclosure.

3.02 LARGE ASBESTOS PROJECT PERSONNEL DECONTAMINATION ENCLOSURE SYSTEM  
(ICR 56-7.5)

- A. The personnel decontamination enclosure shall be constructed prior to preparatory work in the work area and in particular before the disturbance of asbestos material.
  - 1. Construction and use of personnel decontamination enclosure systems shall be in accordance with ICR-56 and any Applicable or Site-Specific Variances utilized on this project. Such systems may consist of existing rooms outside of the work area, if the layout is appropriate, that can be enclosed is plastic sheeting and are accessible from the work area. When this situation does not exist, enclosure systems may be constructed out of metal, wood, or plastic support.
  - 2. The personnel decontamination enclosure system shall consist of a clean room, a shower room, and an equipment room, in series, separated from each other and from the work area by three airlocks.
  - 3. There shall be one shower per six full shift abatement persons calculated on the basis of the largest shift.
  - 4. The personnel decontamination enclosure system shall be fully framed, sheathed for safety and constructed to prevent unauthorized entry.
  - 5. Personnel decontamination enclosure systems constructed at the work site shall utilize at least six mil fire-retardant opaque plastic sheeting. At least two layers of six mil fire-retardant reinforced plastic sheeting shall be used for the flooring of this area.
  - 6. All prefabricated decontamination units shall be completely decontaminated and sealed prior to separation and removal from the work area. Mobile decontamination units shall remain in place until satisfactory clearance results have been attained.
  - 7. The clean room shall be sized to accommodate all authorized persons. Benches, lockers,

and hooks shall be provided for street clothes. Shelves for storing respirators shall also be provided. Clean clothing, replacement filters for respirators, towels and other necessary items shall be provided. The clean room shall not be used for the storage of tools, equipment, or materials. It shall not be used for office space. A lockable door shall be provided to permit access to the clean room from outside the work area or enclosure. It shall be used to secure the work area and decontamination enclosure during off-shift hours.

8. The shower room shall contain one or more showers. Each shower head shall be supplied with hot and cold water adjustable at the tap. The shower enclosure shall be constructed to ensure against leakage of any kind. Uncontaminated soap, shampoo and towels shall be available at all times. Shower water shall be drained, collected, and filtered through a system with at least 5.0-micron particle size collection capability. A system containing a series of several filters with progressively smaller pore sizes shall be used to avoid rapid clogging of the filtration system by large particles. Filtered wastewater shall be discharged in accordance with applicable codes. Contaminated filters shall be disposed of as asbestos waste. The shower room shall be constructed in such way that travel through the decontamination unit shall be through the shower.
9. The equipment room shall be used for the storage of equipment and tools after decontamination using a HEPA filtered vacuum and/or wet cleaning. A one-day supply of replacement filters, in sealed containers, for HEPA vacuums and negative pressure ventilation equipment, extra tools, containers of surfactant and other materials and equipment that may be required during the abatement project may also be stored here. A walk-off pan filled with water shall be located in the work area just outside the equipment room for persons to clean foot covering when leaving the work area. A drum lined with a labeled, at least six mil plastic bag is required for collection of clothing and shall be located in this room. Contaminated footwear and work clothes shall be stored in this area.

### 3.03 WASTE DECONTAMINATION ENCLOSURE SYSTEM (ICR 56-7.5)

#### A. General Requirements

1. A waste decontamination enclosure system shall consist of the following:
  - a. A washroom/cleanup room shall be constructed with an airlock doorway to the work area and another airlock doorway to the holding area.
  - b. The holding area shall be constructed with an airlock doorway to the washroom/cleanup room and another lockable door to the outside.
2. Where there is only one egress from the work area, the holding area of the waste decontamination enclosure system may branch off from the equipment decontamination

room, which doubles as a waste washroom, of the personnel decontamination enclosure.

3. The waste washroom shall be equipped with a drain installed to collect water and deliver it to the shower drain where it shall be filtered through a system with at least 5.0-micron particle size collection capability. A system containing a series of several filters with progressively smaller pore sizes shall be used to avoid rapid clogging of the filtration system by large particles. Filtered wastewater shall be discharged in accordance with applicable codes. Contaminated filters shall be disposed of as asbestos waste.
4. The waste washroom shall be constructed in such a way that travel through the rooms shall be through the waste washroom

### 3.04 WORK AREA ENTRY AND EXIT PROCEDURES

- A. The following procedures shall be followed throughout the asbestos abatement project until satisfactory clearance air monitoring results have been achieved:
  1. All persons shall enter and exit the work area through the personnel decontamination enclosure system.
  2. All persons who enter the work area or an enclosure shall sign the entry/exit log, located in the clean room, upon every entry and exit.
  3. All persons, before entering the work area, or an enclosure shall read and be familiar with all posted regulations, personal protection requirements, including work area entry and exit procedures, and emergency procedures. The entry/exit log headings shall indicate, and the signatures shall be used to acknowledge, that these have been reviewed and understood by all persons prior to entry.
  4. All persons shall proceed first to the clean room, remove all street clothing, store these items in clean sealable plastic bags or lockers and don coveralls, head covering, foot covering and gloves. All persons shall also don NIOSH approved respiratory protection. Clean respirators and protective clothing shall be utilized, by each person, for each separate entry into the work area. Respirators shall be inspected prior to each use and tested for proper seal using quantitative or qualitative fit checks.
  5. Persons wearing designated personal protective equipment shall proceed from the clean room through the shower room to the equipment room, where necessary tools are collected and any additional clothing shall be donned, before entry into the work area.
  6. Before leaving the work area, all persons shall remove gross contamination from the outside of respirators and protective clothing by brushing, wet cleaning, and/or HEPA vacuuming.

7. Persons shall proceed to the equipment room where all coveralls, head covering, foot covering, and gloves shall be removed. Disposable clothing shall be deposited into labeled containers for disposal. Reusable contaminated clothing, footwear, head gear and gloves shall be stored in the equipment room when not being used in the work area.
8. Still wearing respirators, persons shall proceed to the shower area, clean the outside of the respirator and the exposed face area under running water prior to removal of the respirator, and then fully and vigorously shower and shampoo to remove residual asbestos contamination. Respirators shall be washed thoroughly with soap and water. Some types of respirators will require slight modification of these procedures. An airline respirator with HEPA filtered disconnect protection shall be disconnected in the equipment room and worn into the shower. A powered air-purifying respirator facepiece shall be disconnected from the filter/power pack assembly prior to entering the shower.
9. After showering and drying, all persons shall proceed to the clean room and don clean personal protective equipment if returning to the work area or street clothing if exiting the enclosure.

### 3.05 EQUIPMENT AND WASTE CONTAINER DECONTAMINATION & REMOVAL PROCEDURES

- A. The following procedures shall be followed throughout the asbestos abatement project until satisfactory clearance air monitoring results have been achieved.
  1. External surfaces of contaminated containers and equipment shall be cleaned by wet cleaning and/or HEPA vacuuming in the work area before moving such items into the waste decontamination enclosure system airlock by persons assigned to this duty. These work area persons shall not enter the airlock.
  2. These contaminated items shall be removed from the airlock by persons stationed in the washroom during waste removal operations. These washroom persons shall remove gross contamination from the exterior of their respirators and protective clothing by brushing, HEPA vacuuming and/or wet cleaning.
  3. Once in the waste decontamination enclosure system, external surfaces of contaminated containers and equipment shall be cleaned a second time by wet cleaning.
  4. The cleaned containers of asbestos material and equipment are to be dried of any excessive pooled or beaded liquid, placed in uncontaminated plastic bags or sheeting, and sealed airtight.
  5. The clean re-containerized items shall be moved into the airlock that leads to the holding area. The washroom persons shall not enter this airlock or the work area until waste removal is finished for that period.

6. Containers and equipment shall be moved from the airlock and into the holding area by persons dressed in clean personal protective equipment, who have entered from uncontaminated areas.
7. The cleaned containers of asbestos material and equipment shall be placed in water tight carts with doors or tops that shall be closed and secured. These carts shall be held in the holding area pending removal. The carts shall be wet cleaned and/or HEPA vacuumed at least once each day.
8. The exit from the decontamination enclosure system shall be secured to prevent unauthorized entry.
9. Where the waste removal enclosure is part of the personnel decontamination enclosure, waste removal shall not occur during shift changes or when otherwise occupied. Precautions shall be taken to prevent short circuiting and cycling of air outward through the shower and clean room.
10. Containers labeled with Asbestos hazard warnings shall not be used to dispose of non-asbestos waste.

### 3.06 ENGINEERING CONTROLS

#### A. Ventilation.

1. The Abatement Contractor shall employ HEPA equipped vacuums or negative air pressure equipment for ventilation as required.
2. All negative air pressure equipment ventilation units shall be equipped with HEPA filtration. The Contractor shall provide a manufacturer's test certificate for each unit documenting the capability of trapping and retaining 99.97 percent of asbestos fibers greater than 0.3 microns equivalent aerodynamic diameter.
3. A power supply shall be available to satisfy the requirements of the total of all ventilating units.
4. On electric power failure, abatement shall stop immediately and shall not resume until power is restored and exhaust units are operating fully. On extended power failure, longer than one hour, the decontamination facilities, after the evacuation of all persons from the work area, shall be sealed airtight.
5. If extending the exhaust of the ventilation units 50 feet from the building would result in an exhaust location either in the road, blocking driveway access to the facility or within 50 feet of other buildings, a second unit will be run in series with the primary unit.

### 3.07 MAINTENANCE OF DECONTAMINATION ENCLOSURE SYSTEMS AND WORK AREA BARRIERS

#### A. GENERAL REQUIREMENTS

1. The Consultant must review and approve installation before commencement of work. Upon completion of the construction of all plastic barriers and decontamination system enclosures and prior to beginning actual abatement activities.
2. All plastic barriers inside the work area, in the personnel decontamination enclosure system, in the waste decontamination enclosure system and at partitions constructed to isolate the work area from occupied areas, shall be inspected by the asbestos supervisor at least twice daily. The barriers shall be inspected before the start of and following the completion of the day's abatement activities. Inspections and observations shall be documented in the project log.
3. Damage and defects in the barriers and/or enclosure systems shall be repaired immediately upon discovery and prior to resumption of abatement activities.
4. At any time during the abatement activities, if visible emissions are observed outside of the work area or if damage occurs to the barriers, work shall be stopped, repairs made, and visible residue immediately cleaned up using HEPA vacuuming methods prior to the resumption of abatement activities.
5. The Abatement Contractor shall HEPA vacuum and/or wet clean the waste decontamination enclosure system and the personnel decontamination enclosure system at the end of each day of abatement activities.

### 3.08 HANDLING AND REMOVAL PROCEDURES

The Abatement Contractor may utilize existing provisions of ICR-56, Applicable Variances or a Site-Specific Variance, approved by the Owner's Consultant, to permit the conduct of this work.

### 3.09 ABATEMENT PROCEDURES

#### A. AIR SAMPLING - By Owner

1. Air sampling and analysis shall be conducted according to the requirements of Subpart 56-4 before the start, during and after the completion of the asbestos removal project.
2. In addition to the requirements of Subpart 56-4, air monitoring shall be conducted in accordance with any approved job specific variance(s) or applicable variance utilized.



3. Clearance samples may be analyzed using PCM to maintain compliance with ICR-56.
  4. If applicable, clearance samples will be analyzed using TEM to maintain compliance with ICR-56 and 40 CFR 763.90[i].
- B. The provisions of the Applicable Variances or a Job Specific Variance shall apply only in those areas where approval has been granted by the NYS DOL and the Contractor has obtained concurrence from the Owner's Consultant. All other applicable provisions of Industrial Code Rule 56-1 through 56-12 shall be complied.
  - C. A copy of the NYS DOL Job Specific or Applicable Variance, if applicable, shall be conspicuously posted at the work area(s).
  - D. The Abatement Contractor shall construct a decontamination unit at the work site. The Abatement Contractor shall, as a minimum, comply with the requirements of 29 CFR 1926.1101(j); Hygiene facilities and practices for employees.

### 3.10 ENCAPSULATION PROCEDURES

The following procedures shall be followed to seal in non-visible residue, after obtaining satisfactory clearance air monitoring results, while conducting lockdown encapsulation on any surfaces which were the subject of removal or other remediation activities:

- A. Only encapsulants rated as acceptable or marginally acceptable on the basis of Battelle Columbus Laboratory test procedures and rating requirements developed under the 1978 USEPA contract shall be used for lockdown encapsulation.
- B. Sealants considered for use in encapsulation shall first be tested to ensure that the sealant is adequate for its intended use. A section of the work surface shall be evaluated following this initial test application of the sealant to quantitatively determine the sealant's effectiveness in terms of penetrating and locking down the asbestos fibers. The American Society of Testing and Materials (ASTM) Committee E06.21.06E on Encapsulation of Building Materials has developed a guidance document to assist in the selection of an encapsulant.
- C. The encapsulant solvent or vehicle shall not contain a volatile hydrocarbon.
- D. Encapsulants shall be applied using airless spray equipment.
  1. Spraying is to occur at the lowest pressure range possible to minimize fiber release from encapsulant impact at the surface. It shall be applied with a consistent horizontal or vertical motion.
- E. Encapsulation shall be utilized as a surface sealant once all asbestos containing materials



have been removed in a work area. In no event shall encapsulant be applied to any surface that was the subject of removal or other remediation activities prior to obtaining satisfactory clearance air monitoring.

### 3.11 CLEANUP PROCEDURES

A. The following cleanup procedures shall be required.

1. Cleanup of accumulations of loose asbestos material shall be performed whenever enough loose asbestos materials have been removed to fill a single leak tight container of the type commensurate with the material properties. In no case shall cleanup be performed less than once prior to the close of each working day. Asbestos material shall be kept wet until cleaned up.
2. Accumulations of dust shall be cleaned off all surfaces on a daily basis using HEPA vacuum cleaning methods.
3. Decontamination enclosures shall be HEPA vacuumed at the end of each shift.
4. Accumulations of asbestos waste material shall be containerized utilizing HEPA vacuums or rubber or plastic dust pans, squeegees, or shovels. Metal shovels shall not be used to pick up or move waste.
5. Excessive water accumulation or flooding in the area shall require work to stop until the water is collected and disposed of properly.

B. The following cleanup procedures shall be required after completion of all removal activities.

1. All accumulations of asbestos waste material shall be containerized utilizing HEPA vacuums or rubber or plastic dust pan, squeegees or shovels. Metal shovels shall not be used to pick up or move waste. HEPA vacuums shall be used to clean all surfaces after gross cleanup.
2. Cleaning. All surfaces in the work area shall be HEPA vacuumed. To pick up excess liquid and wet debris, a wet purpose shop vacuum may be used and shall be decontaminated prior to removal from the work area.
3. Windows, doors, HVAC system vents and all other openings shall remain sealed. Decontamination enclosure systems shall remain in place and be utilized.
4. All containerized waste shall be removed from the work area and the holding area.
5. All tools and equipment shall be decontaminated and removed from the work area.

6. A final visual inspection and clearance air monitoring, as per the schedule for air sampling and analysis, shall be conducted.
7. The isolation barriers and decontamination unit shall be removed only after satisfactory clearance air monitoring results have been achieved.

### 3.12 SAFETY MONITORING – CONSULTANT:

The Consultant will designate an Asbestos Safety Technician (AST) to represent the Owner during the removal program. The AST must be on the job site at all times during abatement work. Absolutely no abatement or preparation work will occur without the presence of the AST.

The AST will conduct four (4) milestone inspections.

1. Pre-commencement inspection shall be conducted as follows:
  - a. Notification in writing to the Consultant shall be made by the Abatement Contractor to request a pre-commencement inspection at least 48 hours in advance of the desired date of inspection. This inspection shall be requested prior to beginning preparatory work in another work area.
  - b. The AST shall ensure that:
    - i. The job site is properly prepared and that all containment measures are in place;
    - ii. The designated supervisor shall present to the inspector a valid supervisor's license issued by the New York Department of Labor;
    - iii. All workers shall present to the inspector a valid handler's license issued by the New York Department of Labor;
    - iv. Measures for the disposal of removed asbestos material are in place and shall conform to the adopted standards;
    - v. The Abatement Contractor has a list of emergency telephone numbers at the job site which shall include the monitoring firm employed by the Owner and telephone numbers for fire, police, emergency squad, local hospital, and health officer.
  - c. If all is in order, the AST shall issue a written notice to proceed in the field. If the job site is not in order, then any needed corrective action must be taken before any work is to commence. Conditional approvals shall not be granted.

Progress inspection shall be conducted as follows:

- a. Primary responsibility for ensuring that the abatement work progresses in accordance with these technical specifications and regulatory requirements rests with the Abatement Contractor. The AST shall continuously be present to observe the progress of work and perform required tests.
- b. If the AST observes irregularities at any time, he shall direct such corrective action as may be necessary. If the Abatement Contractor fails to take the corrective action required, or if the Abatement Contractor or any of their employees habitually and/or excessively violate the requirements of any regulation, then the AST shall inform the Owner who shall issue a Stop Work Order to the Abatement Contractor and have the work site secured until all violations are abated.

Clean-up inspections shall be conducted as follows:

- a. Notice for clean-up inspection shall be requested by the Abatement Contractor at least 24 hours in advance of the desired date of inspection;
  - b. The clean-up inspection shall be conducted prior to the removal of any isolation or critical barriers and before final air clearance monitoring;
  - c. The AST shall ensure that:
    - i. The work site has been properly cleaned and is free of visible asbestos containing material and debris.
    - ii. All removed asbestos has been properly placed in a locked secure container outside of the work area.
  - d. If all is in order, the AST shall issue a written notice of authorization to remove surface barriers from the work area. All isolation barriers shall remain in place until satisfactory clearance air sampling has been completed.
4. Clearance Visual Inspection shall be conducted after the removal of non-critical plastic sheeting. The AST shall insure that:
- a. The work area is free of all visible asbestos or suspect asbestos debris and residue.
  - b. All waste has been properly bagged and removed from the work area.
  - c. Should clearance visual inspection identify residual debris, as determined by the AST, the Abatement Contractor is responsible for recleaning the area at his own cost and shall bear all costs of reinspection until acceptable levels are achieved.

- B. The Abatement Contractor shall be required to receive written approval before proceeding after each milestone inspection.

### 3.13 PERSONNEL AIR MONITORING – CONTRACTOR (29 CFR 1926.1101)

- A. Personnel air monitoring shall be provided to determine both short-term (STEL) and full shift during when abatement activities occur. Personnel sampling shall be performed in each work area in order to accurately determine the concentrations of airborne asbestos to which workers may be exposed.
- B. The Abatement Contractor shall have a qualified "Competent Person" (as specified in 29 CFR 1926 OSHA) to conduct personnel air monitoring.
- C. The laboratory performing the air sample analysis shall be certified by NYS DOH ELAP and approved by the consultant.
- D. Personnel air monitoring test results for OSHA Compliance. Results shall be posted at the work site within 24 hours of testing and copies supplied to the Owner within five (5) days of testing. Abnormalities shall be supplied to the Owner immediately.

### 3.14 CLEARANCE AIR MONITORING

- A. Air samples will be collected in and around the work areas at the completion of abatement activities.
- B. Clearance samples may be analyzed using PCM to maintain compliance with ICR-56.
- C. If applicable, clearance samples will be analyzed using TEM to maintain compliance with ICR-56 and 40 CFR part 763 "Asbestos-Containing Materials in Schools; Final Rule and Notice" section 763.90.
- D. \*\*\*RETESTING\*\*\*  
Should clearance air monitoring yield fiber concentrations above the "Clearance" criteria of either 0.01 fibers per CC and/or background levels (PCM) –OR- seventy (70) structures per square millimeter (TEM/AHERA), the Abatement Contractor is responsible for re-cleaning the area at his own cost and shall bear all costs associated with the retesting of the work area(s) including monitoring labor, sampling, analysis, etc. until such levels are achieved.

### 3.15 RESPIRATORY PROTECTION REQUIREMENT

- A. Respiratory protection shall be worn by all individuals inside the work area from the initiation of the asbestos project until all areas have successfully passed clearance air monitoring in accordance with these specifications. The Abatement Contractor shall keep available at all times two PAPR's with new filters and charged batteries for use by

authorized visitors.

- B. All respiratory protection shall be MSHA/NIOSH approved in accordance with the provisions of 30 CFR Part II. All respiratory protection shall be provided by the Abatement Contractor, and used by workers in conjunction with the written respiratory protection program.
- C. The Abatement Contractor shall provide respirators that meet the requirements of 29 CFR Parts 1910 and 1926.
  - 1. Full facepiece Type C supplied-air respirators operated in pressure demand mode equipped with an auxiliary self-contained breathing apparatus, operated in pressure demand or continuous flow, shall be worn during gross removal, demolition, renovation and/or other disturbance of ACM whenever airborne fiber concentrations inside the work area are greater than 10.0 f/cc.
  - 2. Full facepiece Type C supplied-air respirators operated in pressure demand mode with HEPA filter disconnect protection shall be work during gross removal, demolition, renovation and/or other disturbance of ACM with an amphibole content and/or whenever airborne fiber concentrations inside the work area are equal to or greater than 0.5 f/cc and less than or equal to 10.0 f/cc.
  - 3. Full facepiece powered air-purifying respirators (PAPR) equipped with HEPA filters shall be worn during the removal, encapsulation, enclosure, repair and/or other disturbance of friable ACM if airborne fiber concentrations inside the work area are less than 0.5 f/cc. A supply of charged replacement batteries, HEPA filters and flow test meter shall be available in the clean room for use with powered air-purifying respirators. HEPA filters shall be changed daily or as flow testing indicates change is necessary. Any Type C supplied-air respirator operated in continuous flow, with HEPA filter disconnect protection, may be substituted for a powered air-purifying respirator.
  - 4. Loose fitting helmets or hoods with powered air-purifying respirators (PAPR) equipped with HEPA filters may be worn during the removal, encapsulation, enclosure, repair and/or other disturbance of friable ACM if airborne fiber concentrations inside the work area are less than 0.25 f/cc. A supply of charged replacement batteries, HEPA filters and flow test meter shall be available in the clean room for use with powered air-purifying respirators. HEPA filters shall be changed daily or as flow testing indicates change is necessary. Any Type C supplied-air respirator operated in continuous flow may be substituted for a powered air- purifying respirator.
  - 5. Half-mask or full-face air-purifying respirators with HEPA filters shall be worn only during the preparation of the work area and final clean up procedures provided airborne fiber concentrations inside the work area are less than 0.1 f/cc.

6. Use of single use dust respirators is prohibited for the above respiratory protection.
- D. Workers shall be provided with personally issued and individually marked respirators. Respirators shall not be marked with any equipment that will alter the fit of the respirator in any way. Only waterproof identification markers shall be used.
- E. The Abatement Contractor shall ensure that the workers are qualitatively or quantitatively fit tested by an Industrial Hygienist initially and every six months thereafter with the type of respirator he/she will be using.
- F. Whenever the respirator design permits, workers shall perform the positive and negative air pressure fit test each time a respirator is worn. Powered air-purifying respirators shall be tested for adequate flow as specified by the manufacturer.
- G. No facial hair, which interferes with the face-to-mask sealing surface, shall be permitted to be worn when wearing respiratory protection that requires a mask-to-face seal.
- H. Contact lenses shall not be worn in conjunction with respiratory protection.
- I. If a worker wears glasses, a spectacle kit to fit their respirator shall be provided by the Abatement Contractor at the Abatement Contractor's expense.
- J. Respiratory protection maintenance and decontamination procedures shall meet the following requirement:
  1. Respiratory protection shall be inspected and decontaminated on a daily basis in accordance with OSHA 29 CFR 1910.134(b); and
  2. HEPA filters for negative pressure respirators shall be changed after each shower; and
  3. Respiratory protection shall be the last piece of worker protection equipment to be removed. Workers must wear respirators in the shower when going through decontamination procedures; and
  4. Airline respirators with HEPA filtered disconnect shall be disconnected in the equipment room and worn into the shower. Powered air-purifying respirator facepieces shall be worn into the shower. Filtered/power pack assemblies shall be decontaminated in accordance with manufacturers' recommendations; and
  5. Respirators shall be stored in a dry place and in such a manner that the facepiece and exhalation valves are not distorted; and
  6. Organic solvents shall not be used for washing of respirators.

- K. No visitors shall be allowed to enter the contaminated area if they do not have their medical certification and training certificate. Authorized visitors shall be provided with suitable PAPR respirators and instructions on the proper use of respirators whenever entering the work area.

### 3.16 DISPOSAL OF WASTE

#### A. APPLICABLE REGULATIONS

- 1. All asbestos waste shall be stored, transported, and disposed of as per, but not limited to, the following Regulations:
  - a. NYS Code Rule 56
  - b. U.S. Department of Transportation (DOT)  
Hazardous Substances  
Title 29, Part 171 and 172 of the code of Federal Regulations  
regarding waste collector registration
  - c. Regulations regarding waste collector registration Title 6, part 364 of the New York State Official Compilation of Codes, Rules and Regulations – 6 NYCRR 364
  - d. USEPA NESHAPS 40 CRF 61
  - e. USEPA ASBESTOS WASTE MANAGEMENT GUIDANCE EPA/530-SW-85-007

#### B. TRANSPORTER OR HAULER - The Abatement Contractor shall bear full responsibility for proper characterization, transportation, and disposal of all solid or liquid waste, generated during the project, in a legal manner. The Owner shall approve all transportation and disposal methods.

- 1. The Abatement Contractor's Transporter (hauler) and disposal site shall be approved by the Owner. The Abatement Contractor shall remove within 48 hours all asbestos waste from the site after completing the clean-up.
- 2. The Transporter must possess and present to the Owner's representative a valid New York State Department of Environmental Conservation Part 364 asbestos hauler's permit to verify license plate and permit numbers. The Owner's representative will verify the authenticity of the hauler's permit with the proper authority.
- 3. The Abatement Contractor shall give 24-hour notification prior to removing any waste from the site. All waste shall be removed from site only during normal working hours. No waste may be taken from the site without authorization from the Owner's

representative.

4. The Abatement Contractor shall have the Transporter give the date and time of arrival at the disposal site.
5. The Transporter with the Abatement Contractor and Owner's consultant shall inspect all material in the transport container prior to taking possession and signing the Waste Manifest. The Transporter shall not have any off-site transfers or be combined with any other off-site asbestos material.
6. The Transporter must travel directly to the disposal site with no unauthorized stops.

#### C. WASTE STORAGE CONTAINER

1. During loading and on-site storage, the asbestos waste container shall be labeled with EPA Danger signage:

|   |
|---|
| <p style="text-align: center;">DANGER<br/>CONTAINS ASBESTOS FIBERS<br/>AVOID CREATING DUST<br/>CANCER AND LUNG DISEASE HAZARD</p> |
|---|

2. The NYS DEC Hauler's Permit number shall be on both sides and back of the container.
3. The Container will not be permitted to leave the site without the proper signage.
4. A copy of the completed waste manifest shall be forwarded directly to the Owner's Consultant by the disposal facility.
5. Packaging of Non-friable Asbestos. Use of an open top container shall require written request, by the Contractor, and written approval by the Owners Representative, and be performed in compliance with all applicable regulations.
  - a) A chute, if used, shall be air/dust tight along its lateral perimeter and at the terminal connection to the dumpster at ground level (solid wall and top container). The upper end of the chute shall be furnished with a hinged lid, to be closed when the chute is not being used.
  - b) The container shall be lined with a minimum of two (2) layers of 6 mil. Fire-retardant polyethylene draped loosely over the sides so as to facilitate being wrapped over the top of the load and sealed prior to transport from the site.



- c) Prior to transport from the work site the Dumpster will be disconnected from the chute and sealed air/dust tight utilizing six mil plastic and tape. The waste material will be transported as an asbestos containing material by appropriate legal methods.

6. Packaging Friable Asbestos.

- a) The container shall be a solid wall, hard top and lockable container.
- b) The container shall be locked upon arrival at the site to restrict access. Security shall be provided at the entrance to the container during the loading process and immediately locked upon completion.
- c) The interior walls, floor and ceiling shall be lined with two (2) layers of 6 mil. Fire-retardant polyethylene.
- d) The waste shall be loaded in such a manner as to protect the integrity of the individual waste packages.
- e) Prior to transport from the work site the interior of the Dumpster will sealed air/dust tight utilizing six mil plastic and tape. The waste material will be transported as an asbestos containing material by appropriate legal methods.

D. WASTE DISPOSAL MANIFEST

- 1. The Asbestos Waste Manifest shall be equivalent to the "Waste Shipment Record" included in 40 CFR 61. A copy of the Contractor's manifest shall be reviewed by the Owner's Consultant and shall be the only manifest used.
- 2. The Manifest shall be verified by the Owner's Consultant indicating that all the information and amounts are accurate, and the proper signatures are in place.
- 3. The Manifest shall have the signatures of the Abatement Contractor and the Transporter prior to any waste being removed from the site.
- 4. The Manifest shall be signed by the Disposal Facility owner or operator to certify receipt of asbestos containing materials covered by the manifest.
- 5. A copy of the completed manifest shall be provided by the Abatement Contractor to the Owner's Consultant and remain on site for inspection.
- 6. Abatement Contractor shall maintain a waste disposal log which indicates load number, date and time left site, container size, type of waste, quantity of waste, name of hauler, NYS DES permit number, trailer and tractor license number, and date manifest was returned to Consultant.

7. The Disposal Facility owner or operator shall return a signed copy of the Waste Manifest directly to:

Beacon City School District  
10 Education Drive  
Beacon, New York 12508  
ATTN: Nick Miller

8. Copies of the completed Waste Manifest are to be sent by the disposal facility to the Hauler and Abatement Contractor.
9. Submit signed dump tickets and manifests with final payment request.
10. Final payment request will not be honored without signed dump ticket or manifests accounting for all asbestos waste removed from the site.

E. VIOLATIONS OF SPECIFICATIONS

1. Violations of the safety, hygiene, environmental, procedures herein, any applicable federal, state or local requirements or failure to cooperate with the Owner's representative shall be grounds for dismissal and/or termination of this contract.

F. VIOLATIONS OF NO SMOKING POLICY

1. The Federal Pro Children Act of 1994 prohibits School District Officials from smoking in any buildings or on the grounds that is property of the School District. The District shall be considered smoke free. The School District strongly enforces its' No Smoking Policy. It is the Contractor's responsibility to inform all workers of this policy. Any worker(s) involved with this project that are found smoking or using tobacco products will be informed that they are in violation of the Federal and State Law and School Board Policy and will be removed from site.

3.17 LOCATION OF WORK – BASE BID

*(Please see attached Drawings for approximate locations)*

Asbestos Abatement Contractor is responsible for providing all demolition activities required to access materials, as well as for providing all labor, equipment, and materials necessary. All ceiling tile grids are to be removed under negative pressure containment.

Glenham Elementary School – Exterior Louver Mortar

- Asbestos Abatement Contractor responsible for complete and total removal and disposal of approximately 250 LF of Asbestos-containing friable mortar around 30 louvers between Brick & metal.

Beacon Middle School – Science and Art Room Renovations

- Asbestos Abatement Contractor responsible for complete and total removal and disposal of approximately 4585 SF of Asbestos-containing floor tile on NON-ACM associated mastic and cementitious slab.

General Science Rooms & Storage

B121 – 941 SF  
B119 – 942 SF  
B121C – 95 SF  
B119B – 95 SF  
B119A – 65 SF

Art Rooms & Storage

A108 – 998 SF  
A110 – 1162 SF  
Storage 134 – 287 SF

JV Forestall Elementary School – Unit Ventilator Replacements

- Asbestos Abatement Contractor responsible for complete and total removal and disposal of approximately 250 SF of Asbestos-containing floor tile and associated Asbestos-containing mastic on NON ACM cementitious slab. There are twenty-four rooms in total with approximately 10 SF of floor tile to be removed around unit ventilators.

South Avenue Elementary School – Emergency Egress Door

- Asbestos Abatement Contractor responsible for complete and total removal and disposal of approximately 400 SF of Asbestos-containing plaster walls within the emergency egress stair-well off of the faculty room.

END OF WORK LOCATIONS

3.18 GENERAL

- A. The Abatement Contractor will be responsible for repairing all building components damaged during abatement including, but not limited to: ceiling tiles, ceiling finishes, wall finishes, floor finishes, etc.
- B. The Abatement Contractor shall be responsible for all demolition required to access materials identified in scope of work and on associated drawings.
- C. Concealed conditions that are exposed and may require additional work shall be brought to the attention of the Owner immediately. The Abatement Contractor shall not abate these areas without a written notice to proceed. Additional asbestos abatement performed prior to the order to proceed will not be acknowledged.
- D. The Abatement Contractor shall remove asbestos-containing floor covering to the building substrate beneath; in areas indicted. Subsequent to final air clearance the substrate shall be washed with a neutralizing agent to prepare the substrate to accept new floor covering and

eliminate residual odors.

- E. Power tools used to drill, cut into, or otherwise disturb asbestos containing material shall be equipped with HEPA filtered local exhaust ventilation.
- F. The Abatement Contractor shall provide access to GFCI electrical power, required to perform the area air monitoring for this project, within and immediately adjacent to each work area.
- G. Unwrapped or unbagged ACM shall be immediately placed in an impermeable waste bag or wrapped in plastic sheeting.
- H. Coordinate all removal operations with the Owner.

.....  
RETURN THIS EXECUTED FORM WITH COMPLETED BID SHEET  
.....

Asbestos Employee Medical Examination Statement  
Certificate of Worker Release  
Asbestos Employee Training Statement  
CERTIFICATE OF WORKERS'S ACKNOWLEDGEMENT

PROJECT NAME: 2021 Capital Project D

Beacon City School District

10 Education Drive, Beacon, NY 12508

ABATEMENT CONTRACTOR'S NAME:\_\_\_\_\_

WORKING WITH ASBESTOS INVOLVES POTENTIAL EXPOSURE TO AIRBORNE ASBESTOS FIBERS. INHALING ASBESTOS FIBERS HAS BEEN LINKED WITH VARIOUS TYPES OF CANCER AND RESPIRATORY DISEASES. SMOKING CIGARETTES AND INHALATION OF ASBESTOS FIBERS INCREASES THE RISK THAT YOU WILL DEVELOP LUNG CANCER ABOVE THAT OF THE NON-SMOKING PUBLIC.

The Contract for this project requires the Abatement Contracting Company to: 1) supply proper respiratory protection devices, and training on their use, to their employees; 2) provide training on safe work practices, and on use of the equipment used on the project, to their employees; and, 3) provide annual medical examinations to their employees meeting the requirements of 29 CFR 1926.1101. The Abatement Contracting Company's signature on this certificate, documents that these contractual obligations are fulfilled, and that you understand the information presented to you.

\*\*\*\*\*DO NOT SIGN THIS FORM UNLESS YOU FULLY UNDERSTAND THIS  
INFORMATION\*\*\*\*\*

RESPIRATORY PROTECTION: I have been trained in the proper use and limitations of the type of respiratory protection devices to be used on this project. I have reviewed the written respiratory protection program manual and a copy is available for my use. Respiratory protection equipment has been provided, by the Contractor, at no cost to me.

TRAINING COURSE: I have been trained in the risks and dangers associated with handling asbestos, breathing asbestos dust, proper work procedures, personal protection, and engineering controls. I have satisfactorily completed and Asbestos Safety Training Program for New York State and have been issued a New York State Department of Health Certificate of Asbestos Safety Training.

MEDICAL EXAMINATION: I have satisfactorily completed a medical examination within the last 12 months that meets the OSHA requirement for an asbestos worker and included at least 1) medical history 2) pulmonary function 3) medical examination 4) approval to wear respiratory protection devices and may have included an evaluation of a chest x-ray.

Signature: \_\_\_\_\_ Printed Name: \_\_\_\_\_  
Date: \_\_\_\_\_

Witness Signature: \_\_\_\_\_ Printed Name: \_\_\_\_\_  
Date: \_\_\_\_\_

.....  
RETURN THIS EXECUTED FORM WITH COMPLETED BID SHEET  
.....

ESTIMATE OF ACM QUANTITIES

PROJECT NAME: 2021Capital Project D

10 Education Drive, Beacon, NY 12508

\*\*\*\*\*

EACH ABATEMENT CONTRACTOR SHALL READ AND ACKNOWLEDGE THE FOLLOWING NOTICE. A SIGNED AND DATED COPY OF THIS ACKNOWLEDGMENT SHALL BE SUBMITTED WITH THE ABATEMENT CONTRACTOR'S BID FOR THIS PROJECT. FAILURE TO DO SO MAY, AT THE SOLE DISCRETION OF THE OWNER, RESULT IN THE BID BEING CONSIDERED NON-RESPONSIVE AND RESULT IN DISQUALIFICATION OF THE ABATEMENT CONTRACTOR'S BID ON THIS PROJECT.

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\*\*\* NOTICE \*\*\*

*The linear and square footages listed within this specification are approximates. Abatement Contractor is required to visit the work locations prior to bid submittal in order to take actual field measurements within each listed location. The Abatement Contractor shall base their bid on actual quantities determined, by them, at the site walkthrough. Estimates provided in these specifications are for informational purposes only and shall not be considered a basis for Change Orders on this project.*

\*\*\*\*\*

Acknowledgment: I have read and understand the above NOTICE regarding removal quantity estimates and understand that estimates provided in these specifications are for informational purposes only and shall not be considered a basis for Change Orders on this project. The Abatement Contractor's signatory represents to the Owner that he/she has the authority of the entity he/she represents to sign this agreement on its behalf.

Company Name: \_\_\_\_\_  
Type or Print

BY: \_\_\_\_\_  
Signature Title Date

Print Name: \_\_\_\_\_

RETURN THIS EXECUTED FORM WITH COMPLETED BID SHEET

.....

ASSOCIATED ASBESTOS REMOVAL LOCATION DRAWINGS ATTACHED BELOW

- 2021 Capital Project D – Abatement Project
- LOCATED at JV Forrestal Elementary School
- Glenham Elementary School
- South Avenue Elementary School
- Rombout Middle School

END OF SECTION 028213

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**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. Foundation walls.
  - 3. Slabs-on-grade.
  - 4. Suspended slabs.
  - 5. 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. Vapor barrier.
    - c. Curing compound.
    - d. Slab control joint sealer.
    - e. Penetrating silane sealer.
    - f. Grout.
    - g. Chemical anchor adhesives.
    - h. Corrective mortar (industry name is Repair mortar).
    - i. Thin coat patching mortar.
    - j. 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.

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 fabric.
  - 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.
  - 2. ACI 117, "Specifications for Tolerances for Concrete Construction and Materials."

## 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.

## PART 2 - PRODUCTS

### 2.1 FORM-FACING MATERIALS

- A. Smooth-Formed Finished Concrete: Form-facing panels that will provide continuous, true, and smooth concrete surfaces. Furnish in largest practicable sizes to minimize number of joints.
  - 1. Plywood, metal, or other approved panel materials.
- B. Rough-Formed Finished Concrete: Plywood, lumber, metal, or another approved material. Provide lumber dressed on at least two edges and one side for tight fit.
- C. Chamfer Strips: Wood, metal, PVC, or rubber strips 3/4 by 3/4 inch, minimum.
- D. Rustication Strips: Wood, metal, PVC, or rubber strips, kerfed for ease of form removal.
- E. 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.
- F. Form Ties: Factory-fabricated, removable or snap-off metal or glass-fiber-reinforced plastic form ties designed to resist lateral pressure of fresh concrete on forms and to prevent spalling of concrete on removal.
  - 1. Furnish units that will leave no corrodible metal closer than 1 inch to the plane of exposed concrete surface.
  - 2. Furnish ties that, when removed, will leave holes no larger than 1 inch in diameter in concrete surface.

## 2.2 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 Fabric: ASTM A 185/A 185M, 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. 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 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. 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 VAPOR BARRIER

- A. Vapor Barrier: Water-vapor transmission rate (permeance) less than 0.015 perms (gr/ft<sup>2</sup>/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.

## 2.8 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.

## 2.9 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. 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 Armatex 110 EpoCem.
- F. 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+

## 2.10 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.

## 2.11 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.
  - 2. Combined Fly Ash and Pozzolan: 25 percent.
  - 3. Ground Granulated Blast-Furnace Slag: 50 percent.
  - 4. Combined Fly Ash or Pozzolan and Ground Granulated Blast-Furnace Slag: 50 percent Portland cement minimum, with fly ash or pozzolan not exceeding 25 percent.

- 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.

## 2.12 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 (27.6 MPa) 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..



## 2.13 CONCRETE MIXTURES FOR EXTERIOR CONCRETE

- A. Exterior Architectural Concrete Elements And Retaining Walls: 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: 6 percent, plus or minus 1.5 percent at point of delivery for 1-inch nominal maximum aggregate size.
- B. 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 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 FABRICATING REINFORCEMENT

- A. Fabricate steel reinforcement according to CRSI's "Manual of Standard Practice."

## 2.15 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 C, 1/2 inch for rough-formed finished surfaces without additional finish, permanently exposed.
  - 3. 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.
  - 2. Do not use rust-stained steel form-facing material.
- 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 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 and other 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 barrier before placing concrete.
- B. Clean reinforcement of loose rust and mill scale, earth, ice, and other foreign materials that would reduce bond to concrete.
- C. Accurately position, support, and secure reinforcement against displacement. Locate and support reinforcement with bar supports to maintain minimum concrete cover. Do not tack weld crossing reinforcing bars.
- 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 beams, slabs, joists, and girders in the middle third of spans. Offset joints in girders a minimum distance of twice the beam width from a beam-girder intersection.
  4. Locate horizontal joints in walls and columns at underside of floors and slabs and at the top of footings or floor slabs.
  5. Locate joints beside piers integral with walls, near corners, and in concealed locations where possible.
  6. Roughen surface of hardened concrete, wet surface, and immediately pour fresh concrete against wet surface.
- C. Vertical Control Joints in Walls: Space vertical control joints in walls that have any portion exposed to public view as shown on Drawings or, if not indicated, at 20 feet maximum.
- D. 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.
- E. 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.
- F. 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.
  4. Concrete placed over steel deck is to have a minimum thickness as shown on the Drawings. Thickness of the slab will be greater at the center of the beam or deck spans as they deflect during casting of the concrete. Estimated deflections of the composite beams due to the wet weight of the concrete are indicated on the plans. Compensate for beam deflection by adding additional concrete as required near the center of the beam span.
- 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. Smooth-Formed Finish: As-cast concrete texture imparted by form-facing material, arranged in an orderly and symmetrical manner with a minimum of seams. Correct and patch tie holes and defects. Remove fins and other projections that exceed specified limits on formed-surface irregularities.
1. Apply to concrete surfaces exposed to public view.
- C. 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, restraighening, 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 restraighening until surface is left with a uniform, smooth, granular texture.
  - 1. Apply float finish to surfaces to receive trowel 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.
  - 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 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 carpeting, vinyl composition tile, and linoleum.
  - 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 carpet, 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.
- 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.

- G. Exposed Architectural Concrete Surfaces: From time of pour, to Final Completion, protect all Architectural Concrete elements from damage, disfiguration, discoloration, staining, and all other types of damage which would affect the final appearance of the Architectural Concrete elements. Protection is to include, but is not limited to:
1. All hydraulic powered equipment must be diapered to avoid staining on the concrete.
  2. Drops cloths need to be placed under vehicles/equipment at all times.
  3. No pipe cutting machines shall be used on the slabs.
  4. Steel shall not be placed on slabs to avoid rust staining.
  5. Provide shields and other protective elements over Architectural Concrete elements.

### 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.

### 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 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; 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. 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.
9. 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.
10. 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.
11. 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.

12. 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.
  13. 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.
  14. 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.
  15. 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.
  16. Additional testing and inspecting, at Contractor's expense, will be performed to determine compliance of replaced or additional work with specified requirements.
  17. 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 03 54 15 – MOISTURE CONTROL SYSTEM**

### **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 moisture control system for concrete surfaces below hydraulic-cement-based underlayment and interior floor coverings.

#### **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. Moisture control system.
- 2. Crack and joint filler.
- 3. Patching compound.

- B. Warranty: Sample of special warranty.

#### **1.5 INFORMATIONAL SUBMITTALS**

- A. Manufacturer Certificates: Signed by manufacturers of moisture control system, underlayment and floor covering system certifying that products are compatible.
- B. Agreement to Warranty: Signed by manufacturer of moisture control system confirming agreement to warranty the system.

#### **1.6 CLOSEOUT SUBMITTALS**

- A. Warranty: Executed special warranty.



## 1.7 QUALITY ASSURANCE

- A. Installer Qualifications: Installer who is approved by manufacturer for application of moisture control system products required for this Project.
- B. Product Compatibility: Manufacturers of moisture control system, underlayment and floor covering system certify in writing that products are compatible.
- C. Pre-installation 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. Store materials to comply with manufacturer's written instructions to prevent deterioration from moisture or other detrimental effects.

## 1.9 PROJECT CONDITIONS

- A. Environmental Limitations: Comply with manufacturer's written instructions for substrate temperature, ambient temperature and humidity, ventilation, and other conditions affecting moisture control system performance.
  - 1. Place moisture control system only when ambient temperature and temperature of substrates are between 50 and 80 deg F. Expedite installation if substrate and site conditions are above 70 deg F.
  - 2. Place moisture control system only when building is enclosed, with permanent HVAC system operating.

## 1.10 COORDINATION

- A. Coordinate application of moisture control system with requirements of underlayment products, specified in other Division 03 Sections, and with requirements of floor covering products, including adhesives, specified in Division 09 Sections, to ensure compatibility of products.

## 1.11 WARRANTY

- A. Special Warranty: Moisture control system manufacturer's standard form in which manufacturer agrees to repair or replace moisture control system that does not comply with requirements to properly control moisture within specified warranty period.
  - 1. Warranty Period: 20 years from date of Substantial Completion.

## PART 2 - PRODUCTS

### 2.1 MOISTURE CONTROL SYSTEM

- A. Moisture Control System: One-component epoxy-based moisture control system “Ardex MC Rapid” consisting of primer, P-4 and sealer coats.
- B. Sand: Fine sand less than 1/50 of an inch in grain size or 98.5 percent passing sieve size #35.
- C. Crack and Joint Filler: Two-part epoxy crack and joint filler.
  - 1. Available Products: Subject to compliance with requirements, products that may be incorporated into the Work include, but are not limited to, the following:
    - a. Ardex Ardifix Joint Sealant.
- D. Patching Compound: Portland cement-based smoothing compound.
  - 1. Available Products: Subject to compliance with requirements, products that may be incorporated into the Work include, but are not limited to, the following:
    - a. Ardex; K-60, K-301 and MRP.
- E. Water: Potable and at a temperature of not more than 70 deg F.

## PART 3 - EXECUTION

### 3.1 EXAMINATION

- A. Examine substrates, with Installer present, for conditions affecting performance.
  - 1. File pre-installation checklist with manufacturer and obtain manufacturer’s written agreement to warranty and confirmation of approval to proceed.
  - 2. Proceed with application only after unsatisfactory conditions have been corrected.
- B. Beginning installation constitutes Contractor’s acceptance of substrates and conditions.

### 3.2 PREPARATION

- A. General: Prepare and clean substrate according to manufacturer's written instructions.
  - 1. Treat nonmoving substrate cracks according to manufacturer's written instructions to prevent cracks from telegraphing (reflecting) through moisture control system.
- B. Concrete Substrates: Mechanically remove, according to manufacturer's written instructions, laitance, glaze, efflorescence, curing compounds, form-release agents, dust, dirt, grease, oil, and other contaminants that might impair moisture control system bond. Prepare surface to achieve minimum surface profile of ICRI CSP #3 (light shot blast).

1. Apply patching compound to pre-smooth concrete where mechanical preparation results in a surface exceeding limits set by moisture control system manufacturer.
- C. Testing: Test substrates for moisture vapor emissions in accordance with either of the following methods:
1. Moisture Testing Method 1: Perform anhydrous calcium chloride test, ASTM F 1869. Proceed with installation only after substrates do not exceed a maximum moisture-vapor-emission rate of 20 lb.
  2. Moisture Testing Method 2: Perform relative humidity test, ASTM F 2170. Proceed with installation only after substrates do not exceed a maximum relative humidity of 95 percent as measured by a Wagner Rapid RH probe.

### 3.3 APPLICATION

- A. General: Mix and apply moisture control system components according to manufacturer's written instructions.
1. Close areas to traffic during moisture control system application and for time period after application recommended in writing by manufacturer.
  2. Coordinate application of components to provide optimum substrate and intercoat adhesion.
  3. At substrate expansion, isolation, and other moving joints, allow joint of same width to continue through moisture control system.
- B. Apply primer over prepared substrate at manufacturer's recommended spreading rate.
- C. Apply sealer coat over primer at manufacturer's recommended spreading rate. While sealer coat is fresh, broadcast sand layer at manufacturer's recommended spreading rate.
- D. Unless otherwise recommended by manufacturer, allow system to cure for at least 16 hours before broom sweeping and vacuuming to remove excess sand.
- E. Do not allow traffic of any type on unprotected moisture control system.
- F. Apply compatible underlayment over moisture control system after time period recommended in writing by manufacturer.

### 3.4 PROTECTION

- A. Protect moisture control system during installation of construction over system and for remainder of construction period.

END OF SECTION 03 54 15

**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. Face brick.
3. Mortar and grout.
4. Steel reinforcing bars.
5. Masonry-joint reinforcement.
6. Ties and anchors.
7. Embedded flashing.
8. Miscellaneous masonry accessories.

B. Products Installed but not Furnished under This Section:

1. Steel lintels in unit masonry.
2. Cavity wall insulation.

**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. CMUs.
2. Face brick.
3. Portland cement.
4. Hydrated lime.
5. Portland cement-lime mix.
6. Mortar pigments.
7. Colored cement products.
8. Aggregate for mortar.
9. Aggregate for grout.
10. Uncoated-steel reinforcing bars.
11. Low-alloy steel reinforcing bars.

12. Reinforcing bar positioners.
13. Masonry-joint reinforcement for single-wythe masonry.
14. Individual wire ties.
15. Anchors for connecting CMU to existing masonry.
16. Anchors for connecting veneer to existing concrete or masonry, spiral type.
17. Adjustable anchors for connecting to structural steel framing.
18. Adjustable anchors for connecting to structural steel columns at isolated pilasters.
19. Joint stabilization anchors.
20. Adjustable masonry-veneer anchors.
21. Proprietary acidic 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. Integral water repellent.
2. Face brick.
3. Water-repellent admixture.
4. Flexible 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. .
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.

## 1.5 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. Water-repellent admixture used in mortar.

#### 4. Preblended, dry mortar mixes. Include description of type and proportions of ingredients.

#### 5. Grout mixes. Include description of type and proportions of ingredients.

#### 6. Reinforcing bars.

#### 7. Low-alloy steel reinforcing bars.

#### 8. Joint reinforcement.

#### 9. Anchors, ties, and metal accessories.

### B. Mix Designs: For each type of mortar and grout. Include description of type and proportions of ingredients.

1. Include test reports, 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.

## 1.6 QUALITY ASSURANCE

### A. Testing Agency Qualifications: Qualified according to ASTM C 1093 for testing indicated.

## 1.7 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.

## 1.8 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.
- 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 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.

### 2.3 CONCRETE MASONRY UNITS

- A. Shapes: Provide shapes indicated and as follows, with exposed surfaces matching exposed faces of adjacent units unless otherwise indicated.
  - 1. Provide special shapes for lintels, corners, jambs, sashes, movement joints, headers, bonding, and other special conditions.
  - 2. Provide square-edged units for outside corners unless otherwise indicated.
  - 3. Provide sizes to match existing, 8" x 16" x 4" nominal-verify in field.
- B. CMUs: ASTM C90.
  - 1. Density Classification: Lightweight unless otherwise indicated.
  - 2. Size (Width): Manufactured to dimensions 3/8 inch less than nominal dimensions.
  - 3. Exposed Faces: Provide uniform fine texture units suitable for painting.
  - 4. Faces to Receive Plaster: Where units are indicated to receive a direct application of plaster, provide textured-face units made with gap-graded aggregates.



## 2.4 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.
- B. Face Brick: Facing brick complying with ASTM C216.
1. Basis-of-Design Product: Subject to compliance with requirements, available products that may be incorporated into the Work include, but are not limited to, the following:
    - a. JV Forrestal Elementary School; Brick Type B1, sanded, molded brick: Glen Gery Shenandoah/Glen Gery 53 DD.
    - b. Glenham Elementary School; Brick Type B2, 12" Norman brick: Bowerston Shale, Meadowbrook Blend/Bowerston Shale, Desert brown wirecut.
    - c. Sargent Elementary School; Brick Type B3: Bowerston Shale, 85/15 smooth/Bowerston Shale, Sunset Flash Smooth.
    - d. South Avenue Elementary School; Brick Type B4: modular brick to match existing building brick – verify in field.
    - e. Rombout Middle School; Brick Type B5: Bowerston Shale, Terra Cotta Red/Glen Gery, Red Matt (Proj A=50% Glen Gery: "Wirecut Red" modular, 50% Glen Gery "900 Red Matt" modular. Distributed by Bock Brick, Inc., East Syracuse, NY. (Match existing brick – verify in field).
  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. Size (Actual Dimensions): 3-5/8 inches wide by 2-1/4 inches high by 7-5/8 inches long, unless otherwise noted.
  7. Application: Use where brick is exposed unless otherwise indicated.
  8. Where shown to "match existing," provide face brick matching color range, texture, and size of existing adjacent brickwork.

9. Color and Texture: As selected by Architect.
- C. 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.
- D. Hydrated Lime: ASTM C207, Type S.
- E. Portland Cement-Lime Mix: Packaged blend of portland cement and hydrated lime containing no other ingredients.
- 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: Potable.

## 2.5 REINFORCEMENT

- A. Uncoated-Steel Reinforcing Bars: ASTM A615/A615M or ASTM A996/A996M, Grade 60.
- B. Reinforcing Bar Positioners: Wire units designed to fit into mortar bed joints spanning masonry unit cells and to hold reinforcing bars in center of cells. Units are formed from 0.148-inch (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.
- C. Masonry-Joint Reinforcement, General: ASTM A951/A951M.
1. Interior Walls: Hot-dip galvanized carbon steel.
2. Exterior Walls: Hot-dip galvanized carbon steel.
3. Wire Size for Side Rods: 0.148-inch 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.
- D. Masonry-Joint Reinforcement for Single-Wythe Masonry: Horizontal ladder with single pair of side rods; provide truss type except for masonry with grouted cores containing reinforcing bars provide ladder type.
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.
    - c. Wire-Bond; Series 200 Ladder Mesh 2 Wire.

## 2.6 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. Anchors for Connecting Veneer to Existing Concrete or Masonry, Spiral Type: Stainless steel spiral rods for anchoring veneer to existing walls; driven-in anchors for installation in drilled holes, relying on screw effect, rather than adhesive to secure veneer to backing.
  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.; Helix Remedial Tie (391).
    - b. Hohmann & Barnard, Inc.; Spira-Lok.
- F. 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.
- G. Adjustable Anchors for Connecting to Structural Steel Columns at Isolated Pilasters: Provide anchors that allow vertical adjustment.
  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.; 345-BT Flexible Tie.
    - b. Wire-Bond; #2102 Dovetail Triangular Tie.
  2. Anchor Section: Tab formed from 0.105-inch-thick (12 gage) steel sheet, hot-dip galvanized after fabrication.
  3. Tie Section: Triangular-shaped wire tie made from 0.187-inch-diameter, hot-dip galvanized steel wire, sized to extend within one inch of masonry face.

- H. 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.
- I. 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, hot-dip galvanized-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.

## 2.7 EMBEDDED FLASHING MATERIALS

- A. Flexible Flashing: Use the following unless otherwise indicated:
1. Copper-Laminated Flashing: **5-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. Single-Wythe CMU Flashing System: System of CMU cell flashing pans and interlocking CMU web covers made from UV-resistant, high-density polyethylene. Cell flashing pans have integral weep spouts designed to be built into mortar bed joints and that extend into the cell to prevent clogging with mortar.
  - 1. Basis-of-Design Product: Subject to compliance with requirements, provide Mortar Net Solutions; BlockFlash or comparable product.
- 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.

## 2.8 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.
  - b. Mortar Net Solutions; WallDefender.
  - c. Wire-Bond; Cavity Net DT.
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.

## 2.9 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. Diedrich Technologies, Inc.
    - b. EaCo Chem, Inc.
    - c. ProSoCo, Inc.

## 2.10 MORTAR AND GROUT MIXES

- A. General: Do not use admixtures, including pigments, air-entraining agents, accelerators, retarders, water-repellent agents, antifreeze compounds, or other admixtures unless otherwise indicated.
  1. Do not use calcium chloride in mortar or grout.
  2. Use portland cement-lime mortar unless otherwise indicated.

- 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, 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, paragraph 4.2.2 for specified 28-day compressive strength indicated, but not less than 2000 psi.
  - 3. Provide grout with a slump of 8 to 11 inches as measured according to 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.

### 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.

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. 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 with masonry-veneer anchors to comply with the following requirements:

1. Locate anchor sections to allow maximum vertical differential movement of ties up and down.
2. 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."
- D. Provide horizontal, pressure-relieving joints by either leaving an airspace or inserting a compressible filler of width required for installing sealant and backer rod specified in Division 07 Section "Joint Sealants," but not less than 3/8 inch.

### 3.12 LINTELS

- A. Install steel lintels where indicated.
- B. 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 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.
  - 3. Apply a continuous bead of compatible sealant to the top of the termination bar.
  - 4. 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.
  - 5. Cut flexible flashing off flush with face of wall after masonry wall construction is completed.

- C. Install single-wythe CMU flashing system in bed joints of CMU walls where indicated to comply with manufacturer's written instructions. Install CMU cell pans with upturned edges located below face shells and webs of CMUs above and with weep spouts aligned with face of wall. Install CMU web covers so that they cover upturned edges of CMU cell pans at CMU webs and extend from face shell to face shell.
- D. 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.
- E. Place cavity drainage material in airspace behind veneers to comply with configuration requirements for cavity drainage material in "Miscellaneous Masonry Accessories" Article.
- F. 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. Placing Reinforcement: Comply with requirements in TMS 602.
- B. Grouting: Do not place grout until entire height of masonry to be grouted has attained enough strength to resist grout pressure.
  - 1. Comply with requirements in TMS 602 for cleanouts and for grout placement, including minimum grout space and maximum pour height.
  - 2. Limit height of vertical grout pours to not more than 60 inches.

### 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 2 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."

#### **1.4 SUBMITTALS**

- A. Action Submittals:
  - 1. Product Data: For each type of product indicated.
    - a. High-strength bolts, nuts and washers
    - b. Zinc-coated high strength bolts, nuts and washers
    - c. Shear stud connectors
    - d. Headed anchor rods
    - e. Threaded rods
    - f. Post-installed Anchors
    - g. Fiberglass reinforced polymer structural shapes
    - h. 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) 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.
  - 2) Include details of cuts, connections, splices, camber, holes, and other pertinent data.
  - 3) 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.
  - 4) Indicate type, size, and length of bolts, distinguishing between shop and field bolts. Identify pretensioned and slip-critical high-strength bolted connections.
- e. Shear Stud Placement Drawings: Submit shear stud placement drawings showing layout of shear studs, stud size, number, spacing and installation details and instructions.

**B. Informational Submittals:**

1. Product Test Reports: For the following:
  - a. Bolts, nuts, and washers including mechanical properties and chemical analysis.
  - b. Shear stud connectors.
  - c. Fiberglass reinforced polymer structural shapes.
  - d. Non-shrink grout.

## 1.5 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."
- D. Comply with applicable provisions of the following specifications and documents:
  - 1. AISC 303.
  - 2. AISC 360.
  - 3. RCSC's "Specification for Structural Joints Using ASTM A325 or A490 Bolts."

## 1.6 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.
- C. Keep shear studs and ferrules dry by storing in waterproof enclosure.

## 1.7 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. 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.
- B. Zinc-Coated High-Strength Bolts, Nuts, and Washers: ASTM F3124, 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.
- C. Shear Stud Connectors: ASTM A 108, Grades 1015 through 1020, headed-stud type, cold-finished carbon steel; AWS D1.1/D1.1M, Type B.
- D. 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.
- E. 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.

F. 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 1 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.
    - 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+.

2.3 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 material 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 x 10 <sup>6</sup> psi          |
| Flexural Strength                | D 790       | 24,000 psi                         |
| Flexural Modulus                 | D 790       | 2.0 x 10 <sup>6</sup> psi          |
| Coefficient of Thermal Expansion | D 696       | 8.0 x 10 <sup>-6</sup> 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. Exposed Exterior Structural Steel: Refer to First Coat for Steel Substrates in Exterior High-Performance Coating Schedule.

## 2.5 NON-SHRINK GROUT

- A. Non-shrink 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. 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.
- B. Weld Connections: Comply with AWS D1.1/D1.1M 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.
- 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.
- 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."
- 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 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.
- 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.

### 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 shrinkage-resistant 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.
  - 2. Make allowances for difference between temperature at time of erection and mean temperature when structure is completed and in service.
- 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. Shear Stud 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.
  - 1. Ensure that metal deck rests tightly against beam flange.
  - 2. Place studs in location and spacing shown in Drawings and approved shear stud placement drawings.
  - 3. Do not lay out any more ferrules ahead of stud welder than can be welded in one production period.

I. 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.
- 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 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 tested and 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.
- D. Shear Stud Connectors: In addition to visual inspection for installation, quantity and placement, test and inspect field-welded shear stud connectors according to requirements in AWS D1.1/D1.1M for stud welding and as follows:
1. Perform bend tests if visual inspections reveal either a less-than-continuous 360-degree flash or welding repairs to any shear connector.
  2. Conduct tests on an additional ten, randomly selected shear connectors if weld fracture occurs on shear connectors already tested, according to requirements in AWS D1.1/D1.1M.
- 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.

### 3.6 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. 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

## **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. Special "SP" joists.
- 3. 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. Roof Joists: Vertical deflection of 1/240 of the span, unless otherwise noted.
  - 2. Design joists and bridging for net uplift pressure where 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. 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."

## 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.
- B. Do not camber joists.
- C. 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 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.

### 2.3 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.

## 2.4 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.
- 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. 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.
  - 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.
- 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. 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. Composite floor deck.
  - 3. 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.

## 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.
- 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."

### 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 zinc coating.
  - 2. Deck Profile: Type WR, wide rib.
  - 3. Profile Depth: As indicated on Drawings.
  - 4. Design Uncoated-Steel Thickness: As indicated on Drawings.

5. Span Condition: Triple span or more, unless otherwise shown on Drawings.
6. Side Laps: Flat overlapped, except at areas where deck is exposed to public view, provide interlocking seam.

## 2.3 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.

## 2.4 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. 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.
- E. 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.
- F. Column Closures, End Closures, Z-Closures, and Cover Plates: Steel sheet, of same material, finish, and thickness as deck unless otherwise indicated.
- G. Galvanizing Repair Paint: ASTM A 780.
- H. 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.
- 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.
  - 2. Fasten with a minimum of 1-1/2-inch- long welds for deck is exposed to public view.

- 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<br>Designation | Intermediate<br>Supports<br>(inches) | End<br>Supports<br>(inches) | Edge<br>Supports<br>(inches) | Side<br>Laps<br>(inches) |
|----|---------------------|--------------------------------------|-----------------------------|------------------------------|--------------------------|
| 1. | WR.....             | 12                                   | 12                          | 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 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. 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.
  - 2. Canopy joist framing.

#### **1.3 PERFORMANCE REQUIREMENTS**

- A. Delegated Design: Engage a qualified professional engineer, as defined in Section 01 40 00 "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 1/600 for masonry veneer.
    - b. Canopy Joist Framing: Vertical deflection of 1/360 for total loads 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

- A. General: Submit all action submittals and informational submittals required by this Section concurrently.
- B. Action Submittals:
  - 1. Product Data: For each type of cold-formed metal framing product and accessory indicated.
  - 2. 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.
    - a. 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.
- C. Informational Submittals:
  - 1. 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:
    - a. Steel sheet.
    - b. Expansion anchors.
    - c. Power-actuated anchors.
    - d. Mechanical fasteners.
    - e. Vertical deflection clips.
    - f. Horizontal drift deflection clips.
    - g. Miscellaneous structural clips and accessories.

## 1.5 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."

## 1.6 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 A 1003/A 1003M, Structural Grade, Type H, metallic coated, of grade and coating weight as follows:
  1. Grade: As required by structural performance.
  2. Coating: G60.

## 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: 54 mils for masonry veneer back-up.
  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: 54 mils.
  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.
- D. Double Deflection Tracks: Manufacturer's double, deep-leg, U-shaped steel tracks, consisting of nested inner and outer tracks; unpunched, with unstiffened flanges.
  1. Outer Track: Of web depth to allow free vertical movement of inner track, with flanges designed to support horizontal and lateral loads and transfer them to the primary structure, and as follows:
    - a. Minimum Base-Metal Thickness: 54 mils.
    - b. Flange Width: 1 inch plus the design gap for 1-story structures.
  2. Inner Track: Of web depth indicated, and as follows:
    - a. Minimum Base-Metal Thickness: 54 mils.
    - b. Flange Width: Insert dimension equal to sum of outer deflection track flange width plus 1 inch.

## 2.4 CANOPY JOIST FRAMING

- A. Steel Joists: Manufacturer's standard C-shaped steel joists, of web depths indicated, unpunched, with stiffened flanges, and as follows:
  - 1. Minimum Base-Metal Thickness: 33 mils.
  - 2. Minimum Flange Width: 2 inches.
- B. Steel Joist Track: Manufacturer's standard U-shaped steel joist track, of web depths indicated, unpunched, with unstiffened flanges, and as follows:
  - 1. Minimum Base-Metal Thickness: 33 mils or at least matching steel joists.
  - 2. Minimum Flange Width: 1-5/8 inches.

## 2.5 FRAMING ACCESSORIES

- A. Fabricate steel-framing accessories from steel sheet, ASTM A 1003/A 1003M, Structural Grade, Type H, metallic coated, of same grade and coating weight used for framing members.
- B. Provide accessories of manufacturer's standard thickness and configuration, unless otherwise indicated, as follows:
  - 1. Supplementary framing.
  - 2. Bracing, bridging, and solid blocking.
  - 3. Web stiffeners.
  - 4. Anchor clips.
  - 5. End clips.
  - 6. Foundation clips.
  - 7. Gusset plates.
  - 8. Stud kickers, knee braces, and girts.
  - 9. Joist hangers and end closures.
  - 10. Hole reinforcing plates.
  - 11. Backer plates.

## 2.6 ANCHORS, CLIPS, AND FASTENERS

- A. Steel Shapes and Clips: ASTM A 1003/A 1003M, Structural Grade, Type H, metallic coated, of grade and coating weight matching associated member.
- B. Anchor Bolts: ASTM F 1554, 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 A 153/A 153M, 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 E 488 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 E 1190 conducted by a qualified independent testing agency.
- E. Mechanical Fasteners: ASTM C 1513, corrosion-resistant-coated, self-drilling, self-tapping steel drill screws.
  - 1. Head Type: Low-profile head beneath sheathing, manufacturer's standard elsewhere.
- F. Welding Electrodes: Comply with AWS standards.

## 2.7 MISCELLANEOUS MATERIALS

- A. Galvanizing Repair Paint: ASTM A 780.
- B. Nonmetallic, Non-shrink Grout: Premixed, nonmetallic, noncorrosive, non-staining grout containing selected silica sands, portland cement, shrinkage-compensating agents, and plasticizing and water-reducing agents, complying with ASTM C 1107, 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.

## 2.8 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 JOIST INSTALLATION

- A. Install perimeter joist track sized to match joists. Align and securely anchor or fasten track to supporting structure at corners, ends, and spacings indicated on approved Shop Drawings.
- B. Install joists bearing on supporting frame, level, straight, and plumb; adjust to final position, brace, and reinforce. Fasten joists to both flanges of joist track.
  - 1. Install joists over supporting frame with a minimum end bearing of 1-1/2 inches.
  - 2. Reinforce ends and bearing points of joists with web stiffeners, end clips, joist hangers, steel clip angles, or steel-stud sections as indicated on approved Shop Drawings.
- C. Space joists not more than 2 inches from abutting walls, and as follows:
  - 1. Joist Spacing: As indicated on approved Shop Drawings.
- D. Frame openings with built-up joist headers consisting of joist and joist track, nesting joists, or another combination of connected joists as indicated on approved Shop Drawings.
- E. Install joist reinforcement at interior supports with single, short length of joist section located directly over interior support, with lapped joists of equal length to joist reinforcement, or as indicated on approved Shop Drawings.
  - 1. Install web stiffeners to transfer axial loads of walls above.
- F. Install bridging at intervals indicated on approved Shop Drawings. Install prior to application of loads. Fasten bridging at each joist intersection.
  - 1. Bridging may be one of the following:
    - a. Joist-track solid blocking of width and thickness indicated, secured to joist webs.
    - b. Combination of flat, taut, steel sheet straps of width and thickness indicated and joist-track solid blocking of width and thickness indicated. Fasten flat straps to bottom flange of joists and secure solid blocking to joist webs.
  - 2. Provide end blocking where joist/rafter ends are not restrained against rotation.
- G. Secure joists to load-bearing interior walls to prevent lateral movement of bottom flange.
- H. Provide additional joist under parallel, non-load bearing partitions when partition length exceeds one half span.
- I. Do not install web knock-outs within 1.5 times depth of member from edge of bearing, unless necessary. Where required, reinforce web.

- J. Install miscellaneous joist framing and connections, including web stiffeners, closure pieces, clip angles, continuous angles, hold-down angles, anchors, and fasteners, to provide a complete and stable joist-framing assembly.

### 3.6 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.

### 3.7 REPAIRS AND PROTECTION

- A. Galvanizing Repairs: Prepare and repair 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 mechanical and electrical equipment.
- 2. Steel framing and supports for applications where framing and supports are not specified in other Sections.
- 3. Miscellaneous steel trim.
- 4. Loose bearing and leveling plates for applications where they are not specified in other Sections.

- 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 SUBMITTALS, GENERAL**

- A. General: Submit all action submittals required by this Section concurrently.

#### **1.4 ACTION SUBMITTALS**

- A. Product Data: For the following:

- 1. Slotted channel framing.
- 2. Non-shrink 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.

#### **1.5 QUALITY ASSURANCE**

- A. Welding Qualifications: Qualify procedures and personnel according to the following:

- 1. AWS D1.1/D1.1M, "Structural Welding Code - Steel."

## 1.6 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 Plates, Shapes, and Bars: ASTM A 36/A 36M.
- B. Stainless-Steel Sheet, Strip, and Plate: ASTM A 240/A 240M or ASTM A 666, Type 304.
- C. Stainless-Steel Bars and Shapes: ASTM A 276, Type 304.
- D. Steel Tubing: ASTM A 500, cold-formed steel tubing.
- E. Steel Pipe: ASTM A 53/A 53M, standard weight (Schedule 40) unless otherwise indicated.
- F. 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 FASTENERS

- A. General: Unless otherwise indicated, provide Type 304 stainless-steel fasteners for exterior use and zinc-plated fasteners with coating complying with ASTM B 633 or ASTM F 1941, Class Fe/Zn 5, at exterior walls. Select fasteners for type, grade, and class required.
- B. Post-installed Anchors: Chemical anchors.
  - 1. 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.
  - 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+.

## 2.4 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. Interior Structural Steel: Refer to First Coat for Steel, Structural Steel in Interior High-Performance Coating Schedule: General Use.
    - b. 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 C 1107. 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.

## 2.5 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.

## 2.6 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.

## 2.7 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.

## 2.8 LOOSE BEARING AND LEVELING PLATES

- A. Provide loose bearing and leveling plates for steel items bearing on masonry or concrete construction. Drill plates to receive anchor bolts and for grouting.

## 2.9 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.

## 2.10 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.

## 2.11 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.

## 2.12 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 D 6386, "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 A 153/A 153M for steel and iron hardware and with ASTM A 123/A 123M 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.

## 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.

### 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. 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 repair galvanizing to comply with ASTM A 780.

END OF SECTION 05 50 00

## **SECTION 05 51 13 - METAL PAN STAIRS**

### **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. Preassembled steel stairs with concrete-filled treads.

#### **1.3 COORDINATION**

- A. Coordinate installation of anchorages for metal stairs.
  - 1. 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.
  - 2. Deliver such items to Project site in time for installation.
- B. Coordinate locations of hanger rods and struts with other work so they do not encroach on required stair width and are within fire-resistance-rated stair enclosure.

#### **1.4 SUBMITTALS, GENERAL**

- A. General: Submit all action submittals required by this Section and by Division 05 Section **“Tube Railings (Stainless Steel)”** concurrently.

#### **1.5 ACTION SUBMITTALS**

- A. Product Data: For the following:
  - 1. Metals.
  - 2. Fasteners.
  - 3. Prefilled metal-pan-stair treads.
- B. Shop Drawings:
  - 1. Include plans, elevations, sections, details, and attachments to other work.
  - 2. Indicate sizes of metal sections, thickness of metals, profiles, holes, and field joints.
  - 3. Include plan at each level.

## 1.6 QUALITY ASSURANCE

- A. Welding Qualifications: Qualify procedures and personnel according to the following:
  - 1. AWS D1.1/D1.1M, "Structural Welding Code - Steel."
  - 2. AWS D1.3/D1.3M, "Structural Welding Code - Sheet Steel."

## 1.7 DELIVERY, STORAGE, AND HANDLING

- A. Store materials to permit easy access for inspection and identification.
  - 1. Keep steel members off ground and spaced by using pallets, dunnage, or other supports and spacers.
  - 2. Protect steel members and packaged materials from corrosion and deterioration.
  - 3. Do not store materials on structure in a manner that might cause distortion, damage, or overload to members or supporting structures.
    - a. Restore or replace damaged materials or structures as directed.

## PART 2 - PRODUCTS

### 2.1 METALS

- A. Metal Surfaces: Provide materials with smooth, flat surfaces unless otherwise indicated. For components exposed to view in the completed Work, provide materials without seam marks, roller marks, rolled trade names, or blemishes.
- B. Steel Plates, Shapes, and Bars: ASTM A36/A36M.
- C. Uncoated, Cold-Rolled Steel Sheet: ASTM A1008/A1008M, structural steel, Grade 25, unless another grade is required by design loads; exposed.
- D. Uncoated, Hot-Rolled Steel Sheet: ASTM A1011/A1011M, structural steel, Grade 30, unless another grade is required by design loads.
- E. Galvanized-Steel Sheet: ASTM A653/A653M, G90 coating, structural steel, Grade 33, unless another grade is required by design loads.

### 2.2 FASTENERS

- A. General: Provide zinc-plated fasteners with coating complying with ASTM B633 or ASTM F1941/F1941M, Class Fe/Zn 5 where built into exterior walls.
  - 1. Select fasteners for type, grade, and class required.

- B. Bolts and Nuts: Regular hexagon-head bolts, ASTM A307, Grade A; with hex nuts, ASTM A563; and, where indicated, flat washers.
- C. Anchor Bolts: ASTM F1554, Grade 36, of dimensions indicated; with nuts, ASTM A563; and, where indicated, flat washers.
  - 1. Provide mechanically deposited or hot-dip, zinc-coated anchor bolts for stairs indicated to be galvanized.
- D. Post-Installed Anchors: **chemical anchors** capable of sustaining, without failure, a load equal to six times the load imposed when installed in unit masonry and four times the load imposed when installed in concrete, as determined by testing according to ASTM E488/E488M, conducted by a qualified independent testing agency.
  - 1. Material for Interior Locations: Carbon-steel components zinc plated to comply with ASTM B633 or ASTM F1941/F1941M, Class Fe/Zn 5, unless otherwise indicated.
  - 2. Material Where Stainless Steel Is Indicated: Alloy **Group 1** stainless-steel bolts, ASTM F593, and nuts, ASTM F594.

## 2.3 MISCELLANEOUS MATERIALS

- A. Welding Electrodes: Comply with AWS requirements.
- 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. Interior Structural Steel: Refer to First Coat for Steel, Structural Steel in Interior High-Performance Coating Schedule: General Use.
    - b. Exposed Exterior Structural Steel: Refer to First Coat for Steel Substrates in Exterior High-Performance Coating Schedule.
- C. Galvanizing Touch-up Paint: High-zinc-dust-content paint complying with ASTM A780/A780M and compatible with paints specified to be used over it.
- D. Prefilled Concrete Treads:
  - 1. Concrete Materials and Properties: Comply with requirements in Division 03 Section "Cast-in-Place Concrete" for normal-weight, air-entrained, ready-mix concrete with minimum 28-day compressive strength of 3000 psi and maximum aggregate size of 1/2 inch unless otherwise indicated.
  - 2. Plain Steel Welded-Wire Reinforcement: ASTM A1064/A10645M, steel, 6 by 6 inches, W1.4 by W1.4, unless otherwise indicated on Drawings.
  - 3. Reinforcement Supports: Bolsters, chairs, spacers, and other devices for spacing, supporting, and fastening welded-wire reinforcement in place.

- a. Manufacture bar supports from steel wire, plastic, or precast concrete according to CRSI's "Manual of Standard Practice," of greater compressive strength than concrete.

## 2.4 FABRICATION, GENERAL

- A. Provide complete stair assemblies, including metal framing, hangers, struts, clips, brackets, bearing plates, and other components necessary to support and anchor stairs and platforms on supporting structure.
  1. Join components by welding unless otherwise indicated.
  2. Use connections that maintain structural value of joined pieces.
- B. Assemble stairs in shop to greatest extent possible.
  1. Disassemble units only as necessary for shipping and handling limitations.
  2. Clearly mark units for reassembly and coordinated installation.
- C. Cut, drill, and punch metals cleanly and accurately.
  1. Remove burrs and ease edges to a radius of approximately 1/32 inch unless otherwise indicated.
  2. Remove sharp or rough areas on exposed surfaces.
- D. Form bent-metal corners to smallest radius possible without causing grain separation or otherwise impairing work.
- E. Form exposed work with accurate angles and surfaces and straight edges.
- F. Weld connections to comply with the following:
  1. Use materials and methods that minimize distortion and develop strength and corrosion resistance of base metals.
  2. Obtain fusion without undercut or overlap.
  3. Remove welding flux immediately.
  4. Weld exposed corners and seams continuously unless otherwise indicated.
  5. At exposed connections, finish exposed welds to comply with NOMMA's "Voluntary Joint Finish Standards" for Finish #1 - No evidence of welded joint.
- G. Form exposed connections with hairline joints, flush and smooth, using concealed fasteners where possible.
  1. Where exposed fasteners are required, use Phillips flat-head (countersunk) screws or bolts unless otherwise indicated.
  2. Locate joints where least conspicuous.
  3. Provide weep holes where water may accumulate internally.



## 2.5 FABRICATION OF STEEL-FRAMED STAIRS

- A. NAAMM Stair Standard: Comply with NAAMM AMP 510, "Metal Stairs Manual," for Commercial Class, unless more stringent requirements are indicated.
- B. Stair Framing:
  - 1. Fabricate stringers steel rectangular tubes as indicated on Drawings.
    - a. Stringer Size: As indicated on Drawings.
    - b. Provide closures for exposed ends of channel and rectangular tube stringers.
    - c. Finish: Shop primed.
  - 2. Construct platforms of steel rectangular tube headers and miscellaneous framing members as indicated on Drawings.
    - a. Provide closures for exposed ends of channel and rectangular tube framing.
    - b. Finish: Shop primed.
  - 3. Weld stringers to headers; weld framing members to stringers and headers.
  - 4. Where stairs are enclosed by gypsum board assemblies, provide hanger rods or struts to support landings from floor construction above or below.
    - a. Locate hanger rods and struts where they do not encroach on required stair width and are within the fire-resistance-rated stair enclosure.
  - 5. Where masonry walls support metal stairs, provide temporary supporting struts designed for erecting steel stair components before installing masonry.
- C. Metal Pan Stairs: Form risers, subtread pans, and subplatforms to configurations shown from steel sheet of thickness needed to comply with performance requirements, but not less than 0.067 inch.
  - 1. Steel Sheet: Uncoated, **cold**-rolled steel sheet **unless otherwise indicated**.
  - 2. Directly weld metal pans to stringers; locate welds on top of subtreads where they will be concealed by concrete fill. Do not weld risers to stringers.
  - 3. Attach risers and subtreads to stringers with brackets made of steel angles or bars. Weld brackets to stringers and attach metal pans to brackets by welding.
  - 4. Shape metal pans to include nosing integral with riser.
  - 5. Provide subplatforms of configuration indicated or, if not indicated, the same as subtreads. Weld subplatforms to platform framing.
    - a. Smooth Soffit Construction: Construct subplatforms with flat metal under surfaces to produce smooth soffits.

## 2.6 FABRICATION OF STAIR RAILINGS AND GUARDS

- A. Comply with applicable requirements in Division 05 Section “Tube Railings (Stainless Steel).”

## 2.7 FINISHES

- A. Finish metal stairs after assembly.
- B. 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 D 6386, “Standard Practice for Preparation of Zinc (Hot-Dip Galvanized) Coated Iron and Steel Product and Hardware Surfaces for Painting.”
- C. Shop prime iron and steel items 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.

## PART 3 - EXECUTION

### 3.1 EXAMINATION

- A. Verify elevations of floors, bearing surfaces and locations of bearing plates, and other embedments for compliance with requirements.
- B. Proceed with installation only after unsatisfactory conditions have been corrected.
- C. Beginning installation constitutes Contractor’s acceptance of substrates and conditions.

### 3.2 INSTALLATION OF METAL PAN STAIRS

- A. Fastening to In-Place Construction: Provide anchorage devices and fasteners where necessary for securing metal stairs to in-place construction.

1. Include threaded fasteners for concrete and masonry inserts, through-bolts, lag bolts, and other connectors.
- B. Cutting, Fitting, and Placement: Perform cutting, drilling, and fitting required for installing metal stairs. Set units accurately in location, alignment, and elevation, measured from established lines and levels and free of rack.
- C. Install metal stairs by welding stair framing to steel structure or to weld plates cast into concrete unless otherwise indicated.
- D. Provide temporary bracing or anchors in formwork for items that are to be built into concrete, masonry, or similar construction.
- E. Fit exposed connections accurately together to form hairline joints.
  1. Weld connections that are not to be left as exposed joints but cannot be shop welded because of shipping size limitations.
  2. Comply with requirements for welding in "Fabrication, General" Article.
- F. Place and finish concrete fill for treads and platforms to comply with Division 03 Section "Cast-in-Place Concrete."

### 3.3 RESTORATION

- 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/A780M.

END OF SECTION 05 51 13

**SECTION 05 52 13 - TUBE RAILINGS (STAINLESS 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. Stainless-steel tube railings.
  - 2. Stainless-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 and informational submittals required by this Section concurrently.

**1.5 ACTION SUBMITTALS**

- A. Product Data: For the following:
  - 1. Stainless-steel tube.
  - 2. Fasteners.
  - 3. Railing brackets, flanges, fittings, and anchors.
- B. Shop Drawings: Include plans, elevations, sections, details, and attachments to other work.
- C. Samples: For each type of exposed finish required.
  - 1. Include sample radius bend and weld.

## 1.6 INFORMATIONAL SUBMITTALS

- A. Mill Certificates: Signed by manufacturers of stainless-steel products certifying that products furnished comply with requirements.

## 1.7 QUALITY ASSURANCE

- A. Source Limitations: Obtain each type of railing from single source from single manufacturer.
- B. Welding Qualifications: Qualify procedures and personnel according to the following:
  - 1. AWS D1.6/D1.6M, "Structural Welding Code - Stainless Steel."
- C. Shop Conditions: Maintain shop conditions in a clean manner to prevent contamination of stainless-steel surfaces.

## 1.8 DELIVERY, STORAGE, AND HANDLING

- A. Protect mechanical finishes on exposed surfaces from damage by applying a strippable, temporary protective covering before shipping.

## 1.9 FIELD CONDITIONS

- A. Field Measurements: Verify actual locations of walls and other construction contiguous with metal fabrications by field measurements before fabrication.

# PART 2 - PRODUCTS

## 2.1 PERFORMANCE REQUIREMENTS

- A. Thermal Movements: Allow for thermal movements from ambient and surface temperature changes.
  - 1. Temperature Change: 120 deg F, ambient; 180 deg F, material surfaces.

## 2.2 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.

## 2.3 STAINLESS STEEL

- A. Tubing: ASTM A 269, Grade MT 316L.
- B. Castings: ASTM A 743/A 743M, Grade CF 8M or CF 3M.
- C. Sheet, Strip, Plate, and Flat Bar: ASTM A 666, Type 316L.
- D. Bars and Shapes: ASTM A 276, Type 316L.

## 2.4 FASTENERS

- A. General: Provide the following:
  - 1. Stainless-Steel Railings: Type 316 stainless-steel fasteners.
- 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 exposed fasteners are unavoidable or are the standard fastening method for railings indicated.
  - 2. Provide tamper-resistant flat-head machine screws for exposed fasteners unless otherwise indicated.
- D. Post-Installed Anchors: Torque-controlled expansion anchors or chemical anchors capable of sustaining, without failure, a load equal to 6 times the load imposed when installed in unit masonry and 4 times the load imposed when installed in concrete, as determined by testing according to ASTM E 488/E 488M, conducted by a qualified independent testing agency.
  - 1. Material: Alloy Group 2 stainless-steel bolts, ASTM F 593, and nuts, ASTM F 594.

## 2.5 MISCELLANEOUS MATERIALS

- A. Welding Rods and Bare Electrodes: Select according to AWS specifications for metal alloy welded.
  - 1. For stainless-steel railings, provide type and alloy as recommended by producer of metal to be welded and as required for color match, strength, and compatibility in fabricated items.
- B. Nonshrink, Nonmetallic Grout: Factory-packaged, nonexpanding, nonstaining, noncorrosive, nongaseous grout complying with ASTM C 1107/C 1107M. Provide grout specifically recommended by manufacturer for interior and exterior applications.

## 2.6 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. Fabricate connections that are exposed to weather in a manner that excludes water. Provide weep holes where water may accumulate.
- F. Cut, reinforce, drill, and tap as indicated to receive finish hardware, screws, and similar items.
- G. Connections: Fabricate railings with welded connections unless otherwise indicated.
- H. 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.
- I. Form Changes in Direction as Follows:
  - 1. As detailed.
  - 2. By radius bends of radius indicated or not greater than 4".
- J. For changes in direction made by bending, use jigs to produce uniform curvature for each repetitive configuration required. Maintain cross section of member throughout entire bend without buckling, twisting, cracking, or otherwise deforming exposed surfaces of components.
- K. Close exposed ends of railing members with prefabricated end fittings.
- L. Provide wall returns at ends of wall-mounted handrails unless otherwise indicated. Close ends of returns.
- M. Brackets, Flanges, Fittings, and Anchors: Provide stainless-steel wall brackets, flanges, miscellaneous fittings, and anchors to interconnect railing members to other work unless otherwise indicated.

1. Concealed Anchorage Brackets (Assembled Type):
    - a. Basis-of-Design Product: Subject to compliance with requirements, provide R & B Wagner, Inc.; Handrail Bracket RB34125.4, or comparable product.
      - 1) Description: Round saddle with tapped mounting hole, high luster finish, Type 316L.
        - a) Secure handrail to bracket with countersunk, tamper-resistant screws.
  2. Flanges:
    - a. Basis-of-Design Product: Subject to compliance with requirements, provide R & B Wagner, Inc.; Heavy Base Flange 1537T, or comparable product.
      - 1) Description: Flange for level surface, high luster finish, Type 316L.
        - a) Secure base flange to vertical post with set screw.
    - b. Basis-of-Design Product: Subject to compliance with requirements, provide R & B Wagner, Inc.; Heavy Flush Base Flange 2606T, or comparable product.
      - 1) Description: Flange for level surface modified for angle, high luster finish, Type 316L.
        - a) Secure beveled base flange to substrate at angled post with construction adhesive.
  3. At brackets and fittings fastened to plaster or gypsum board partitions, provide crush-resistant fillers or other means to transfer loads through wall finishes to structural supports and prevent bracket or fitting rotation and crushing of substrate.
- N. Provide inserts and other anchorage devices for connecting railings to concrete or masonry work. Fabricate anchorage devices capable of withstanding loads imposed by railings. Coordinate anchorage devices with supporting structure.
- O. For railing posts set in concrete, provide stainless-steel sleeves not less than 6 inches long with inside dimensions not less than 1/2 inch greater than outside dimensions of post, with metal plate forming bottom closure.
- P. 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.
- 2.7 STAINLESS-STEEL FINISHES
- A. Comply with NAAMM's "Metal Finishes Manual for Architectural and Metal Products" for recommendations for applying and designating finishes.
- B. Remove tool and die marks and stretch lines, or blend into finish.



- C. Grind and polish surfaces to produce uniform, directionally textured, polished finish indicated, free of cross scratches. Run grain with long dimension of each piece.
- D. Stainless Steel Tubing Finishes:
  - 1. 180-Grit Polished Finish: Uniform, directionally textured finish.
- E. Stainless Steel Sheet and Plate Finishes:
  - 1. Directional Satin Finish: ASTM A 489/A 480, No. 4.
- F. Passivating: When polishing is completed, passivate all surfaces, including areas sensitive to corrosion, including welded areas and adjacent heat-affected zones, perforated surfaces, etc. Follow passivating procedure established by standard industry best practices to thoroughly remove embedded foreign matter and leave surfaces chemically clean. Rinse thoroughly.

## 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.
- B. Expansion Joints: Install expansion joints at locations indicated but not farther apart than required to accommodate thermal movement. Provide slip-joint internal sleeve extending 2 inches beyond joint on either side, fasten internal sleeve securely to one side, and locate joint within 6 inches of post. Apply bead of clear silicone to provide smooth transition at joint.

### 3.4 ANCHORING POSTS

- A. Use stainless-steel sleeves preset and anchored into concrete for installing posts. After posts are inserted into sleeves, fill annular space between post and sleeve with nonshrink, nonmetallic grout, mixed and placed to comply with anchoring material manufacturer's written instructions, in two applications.
- B. Form or core-drill holes not less than 6 inches deep and 1/2 inch larger than OD of post for installing posts in concrete. Clean holes of loose material, insert posts, and fill annular space between post and concrete with nonshrink, nonmetallic grout, mixed and placed to comply with anchoring material manufacturer's written instructions, in two applications. Cover anchorage joint with stainless steel flange, welded to post after placing anchoring material.
- C. Leave anchorage joint exposed with 1/8-inch buildup, sloped away from post.
- D. 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.
- E. Install removable railing sections, where indicated, in slip-fit metal sockets cast in concrete.

### 3.5 ATTACHING RAILINGS

- A. Return railing ends at walls to within 1/2 inch of wall; provide fully-welded end closure of railings, ground smooth.
- B. Return railing ends to posts; fully welded to posts, ground smooth.
- C. Attach railings to wall with wall brackets. Provide brackets with minimum 1-1/2 inch clearance from inside face of handrail and finished wall surface.
  - 1. Locate brackets as indicated or, if not indicated, at spacing required to support structural loads.
- D. Secure wall brackets to building construction as follows:
  - 1. For concrete and solid masonry anchorage, use drilled-in expansion shields and hanger or lag bolts.
  - 2. For hollow masonry anchorage, use toggle bolts.

3. For steel-framed partitions, use self-tapping screws fastened to steel framing or to concealed steel reinforcements.
- E. Attach railing gates level, plumb, and secure for full opening without interference.
  1. Attach hardware using tamper-resistant or concealed means.
  2. Adjust hardware for smooth operation.

### 3.6 ADJUSTING AND CLEANING

- A. Clean stainless steel by washing thoroughly with clean water and soap and rinsing with clean water and wiping dry.

### 3.7 PROTECTION

- A. Protect finishes of railings from damage during construction period with temporary protective coverings approved by railing manufacturer. Remove protective coverings at time of Substantial Completion.
- B. Restore finishes damaged during installation and construction so no evidence remains of correction work. Return items that cannot be refinished in field to shop; make required alterations and refinish entire unit or provide new units.

END OF SECTION 05 52 13

**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-preserved-treated lumber.
  - 2. Dimension lumber framing (non-treated).
  - 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.
- 3. Dimension lumber framing (non-treated).
- 4. Metal framing anchors.

## 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.

### 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. Spruce-pine-fir; NLGA.
3. Hem-fir; 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 DIMENSION LUMBER FRAMING (NON-TREATED)

A. Joists, Rafters, and Other Framing Not Listed Above: No. 2 grade.

1. Species:
  - a. Hem-fir (north); NLGA.
  - b. Southern pine; SPIB.
  - c. Douglas fir-larch; WCLIB or WWPA.
  - d. Spruce-pine-fir; NLGA.
  - e. Douglas fir-south; WWPA.
  - f. Hem-fir; WCLIB or WWPA.
  - g. Douglas fir-larch (north); NLGA.
  - h. Spruce-pine-fir (south); NeLMA, WCLIB, or WWPA.

## 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.
5. Spruce-pine-fir (south); NeLMA, WCLIB, or WWPA.

C. 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.

## 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.

## 2.6 METAL FRAMING ANCHORS

- 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. Cleveland Steel Specialty Company.
  - 2. Simpson Strong-Tie Company Inc.
- B. Allowable design loads, as published by manufacturer, shall meet or exceed those of products of manufacturers listed. Manufacturer's published values shall be determined from empirical data or by rational engineering analysis and demonstrated by comprehensive testing performed by a qualified independent testing agency. Framing anchors shall be punched for fasteners adequate to withstand same loads as framing anchors.
- C. Stainless Steel Sheet: ASTM A240/A240M or ASTM A666, Type 316.
  - 1. Use for exterior locations and where indicated.
- D. Bridging: Rigid, V-section, nailless type, 0.050 inch thick, length to suit joist size and spacing.

## PART 3 - EXECUTION

### 3.1 INSTALLATION, GENERAL

- A. Beginning installation constitutes Contractor's acceptance of substrates and conditions.
- B. Framing Standard: Comply with AF&PA's WCD 1, "Details for Conventional Wood Frame Construction," unless otherwise indicated.
- C. 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 blocking and similar supports to comply with requirements for attaching other construction.
- D. Install metal framing anchors to comply with manufacturer's written instructions. Install fasteners through each fastener hole.
- E. Do not splice structural members between supports unless otherwise indicated.
- F. 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.
- G. Provide fire blocking in furred spaces, stud spaces, and other concealed cavities as indicated and as follows:
1. 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.
- H. 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.
- I. Comply with AWP A M4 for applying field treatment to cut surfaces of preservative-treated lumber.
- J. 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.
- K. 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.

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. For products receiving a waterborne treatment, include statement that moisture content of treated materials was reduced to levels specified before shipment to Project site.
  - 1. Wood-Preservative-Treated Materials: 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. Fasteners.
  - 3. Adhesives.
  - 4. 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: AWWA 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.
- B. Isolation Barrier Membrane: 40-mil-thick, self-adhering sheet consisting of rubberized asphalt laminated to a cross-laminated polyethylene film with release liner on adhesive side.

1. Basis-of-Design Product: Subject to compliance with requirements, provide Carlisle Coatings & Waterproofing, Incorporated; CCW-705, or 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 AWWA 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 and soffit sheathing.
  - 2. Composite nail base insulated roof sheathing.
  - 3. Subflooring.
  - 4. Underlayment.
  - 5. 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. Product Data: For each type of process and factory-fabricated product. Indicate component materials and dimensions and include construction and application details. For products receiving waterborne treatment, include statement that moisture content of treated materials was reduced to levels specified before shipment to Project site.
  - 1. Screws for fastening sheathing to cold-formed metal framing.
- 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. Glass-mat gypsum wall sheathing.
  - 2. Cementitious backer units.

## 1.5 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.

## 1.6 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 PERFORMANCE REQUIREMENTS

- A. Fire-Resistance Ratings: As tested according to ASTM E119; testing by a qualified testing agency. Identify products with appropriate markings of applicable testing agency.
  - 1. Fire-Resistance Ratings: Indicated by design designations from UL's "Fire Resistance Directory" or from the listings of another qualified testing agency.

### 2.2 WALL AND SOFFIT SHEATHING

- 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 **Type X**.
    - b. Georgia-Pacific Gypsum, LLC; DensGlass **Fireguard** Sheathing.
    - c. USG Corporation; USG Securock Brand Glass-Mat Sheathing **Firecode X**.
  - 2. Type and Thickness: Type X, 5/8 inch thick.
- B. Cementitious Backer Units: ASTM C1325, Type A.
  - 1. Basis-of-Design Product: Subject to compliance with requirements, provide USG Corporation; Durock Brand Cement Board with EdgeGuard, or comparable product.
  - 2. Thickness: 5/8 inch.

## 2.3 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. 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. Screws for Fastening Sheathing to Wood Framing: ASTM C1002.
- E. Screws for Fastening Wood Structural Panels to Cold-Formed Metal Framing: ASTM C954, except with wafer heads and reamer wings, length as recommended by screw manufacturer for material being fastened.
- F. 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.

## 2.4 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. 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.
- F. Do not bridge building expansion joints; cut and space edges of panels to match spacing of structural support elements.
- G. 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 wood framing with screws.
  - 2. Fasten gypsum sheathing to cold-formed metal framing with screws.
  - 3. Install panels with a 3/8-inch gap where non-load-bearing construction abuts structural elements.
  - 4. 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 CEMENTITIOUS BACKER UNIT INSTALLATION

- A. Install panels and treat joints according to ANSI A108.11 and manufacturer's written instructions for type of application indicated.

### 3.4 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 01 50.19 - PREPARATION FOR RE-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. Partial Roof tear-off.
  - 2. Removal of base flashings.

**1.3 DEFINITIONS**

- A. Roofing Terminology: Refer to ASTM D 1079 and glossary in NRCA's "The NRCA Roofing and Waterproofing Manual" for definition of terms related to roofing work in this Section.
- B. Existing Membrane Roofing System: EPDM roofing membrane, roof insulation, surfacing, and components and accessories between deck and roofing membrane.
- C. Partial Roof Tear-Off: Removal of a portion of existing membrane roofing system from deck.
- D. Remove: Detach items from existing construction and legally dispose of them off-site unless indicated to be removed and reinstalled.
- E. Existing to Remain: Existing items of construction that are not indicated to be removed.

**1.4 SUBMITTALS, GENERAL**

- A. General: Submit all informational submittals required by this Section concurrently.

**1.5 INFORMATIONAL SUBMITTALS**

- A. Photographs or Videotape: Show existing conditions of adjoining construction and site improvements, including exterior and interior finish surfaces, that might be misconstrued as having been damaged by reroofing operations. Submit before Work begins.

**1.6 CLOSEOUT SUBMITTALS**

- A. Landfill Records: Indicate receipt and acceptance of hazardous wastes, such as asbestos-containing material, by a landfill facility licensed to accept hazardous wastes.
- B. Existing Roofing System Warranty Documentation: Documentation verifying that existing roofing system has been inspected and warranty remains in effect.

## 1.7 QUALITY ASSURANCE

- A. **Installer Qualifications:** Installer of new membrane roofing system, licensed to perform asbestos abatement in the State or jurisdiction where Project is located and approved by warrantor of existing roofing system to work on existing roofing.
- B. **Regulatory Requirements:** Comply with governing EPA notification regulations before beginning membrane roofing removal. Comply with hauling and disposal regulations of authorities having jurisdiction.
- C. **Reroofing Conference:** Conduct conference at Project site.
  - 1. Meet with Owner; Architect; testing and inspecting agency representative; roofing system manufacturer's representative; deck Installer; roofing Installer including project manager, superintendent, and foreman; and installers whose work interfaces with or affects reroofing including installers of roof accessories and roof-mounted equipment.
  - 2. Review methods and procedures related to roofing system tear-off and replacement including, but not limited to, the following:
    - a. Reroofing preparation, including membrane roofing system manufacturer's written instructions.
    - b. Temporary protection requirements for existing roofing system that is to remain during and after installation.
    - c. Existing roof drains and roof drainage during each stage of reroofing, and roof drain plugging and plug removal requirements.
    - d. Construction schedule and availability of materials, Installer's personnel, equipment, and facilities needed to make progress.
    - e. Existing deck removal procedures and Owner notifications.
    - f. Condition and acceptance of existing roof deck and base flashing substrate for reuse.
    - g. Structural loading limitations of deck during reroofing.
    - h. Base flashings, special roofing details, drainage, penetrations, equipment curbs, and condition of other construction that will affect reroofing.
    - i. HVAC shutdown and sealing of air intakes.
    - j. Shutdown of fire-suppression, -protection, and -alarm and -detection systems.
    - k. Asbestos removal and discovery of asbestos-containing materials.
    - l. Governing regulations and requirements for insurance and certificates if applicable.
    - m. Existing conditions that may require notification of Architect before proceeding.

## 1.8 PROJECT CONDITIONS

- A. Owner will occupy portions of building immediately below reroofing area. Conduct reroofing so Owner's operations will not be disrupted. Provide Owner with not less than 72 hours' notice of activities that may affect Owner's operations.
- B. Protect building to be reroofed, adjacent buildings, walkways, site improvements, exterior plantings, and landscaping from damage or soiling from reroofing operations.

- C. Maintain access to existing walkways, corridors, and other adjacent occupied or used facilities.
- D. Conditions existing at time of inspection for bidding will be maintained by Owner as far as practical.
  - 1. The results of an analysis of test cores from existing membrane roofing system are available for Contractor's reference.
- E. Handle and store materials and place equipment in a manner to avoid deflection of deck, overloading, and possible disturbance to the building structure.
- F. Weather Limitations: Proceed with reroofing preparation only when existing and forecasted weather conditions permit Work to proceed without water entering existing roofing system or building.
- G. Hazardous Materials: It is not expected that hazardous materials such as asbestos-containing materials will be encountered in the Work.
  - 1. If materials suspected of containing hazardous materials are encountered, do not disturb; immediately notify Architect and Owner.

## 1.9 WARRANTY

- A. Existing Warranties: Remove, replace, patch, and repair materials and surfaces cut or damaged during reroofing, by methods and with materials so as not to void existing roofing system warranty. Notify warrantor before proceeding.
  - 1. Notify warrantor of existing roofing system on completion of reroofing, and obtain documentation verifying that existing roofing system has been inspected and warranty remains in effect. Submit documentation at Project closeout.

## PART 2 - PRODUCTS

### 2.1 AUXILIARY REROOFING MATERIALS

- A. General: Auxiliary reroofing preparation materials recommended by roofing system manufacturer for intended use and compatible with components of existing and new membrane roofing system.

## PART 3 - EXECUTION

### 3.1 PREPARATION

- A. Protect existing membrane roofing system that is indicated not to be reroofed.
  - 1. Limit traffic and material storage to areas of existing roofing membrane that have been protected.

2. Maintain temporary protection and leave in place until replacement roofing has been completed. Remove temporary protection on completion of reroofing.
- B. Coordinate with Owner to shut down air-intake equipment in the vicinity of the Work. Cover air-intake louvers before proceeding with reroofing work that could affect indoor air quality or activate smoke detectors in the ductwork.
  - C. During removal operations, have sufficient and suitable materials on-site to facilitate rapid installation of temporary protection in the event of unexpected rain.
    1. Test, verify and confirm existing roof drains are operational and document conditions at each roof drain in writing prior to beginning work.
  - D. Maintain roof drains in functioning condition to ensure roof drainage at end of each workday. Prevent debris from entering or blocking roof drains and conductors. Use roof-drain plugs specifically designed for this purpose. Remove roof-drain plugs at end of each workday, when no work is taking place, or when rain is forecast.
    1. If roof drains are temporarily blocked or unserviceable due to roofing system removal or partial installation of new membrane roofing system, provide alternative drainage method to remove water and eliminate ponding. Do not permit water to enter into or under existing membrane roofing system components that are to remain.
  - E. Verify that rooftop utilities and service piping have been shut off before beginning the Work.
  - F. Beginning reroofing preparation constitutes Contractor's acceptance of substrates and conditions.

### 3.2 ROOF TEAR-OFF

- A. General: Notify Owner each day of extent of roof tear-off proposed for that day.
- B. Roof Tear-Off: Remove existing roofing membrane and other membrane roofing system components down to the deck.
  1. Remove cover boards, roof insulation and substrate boards.
  2. Bitumen and felts that are firmly bonded to concrete decks are permitted to remain if felts are dry. Remove unadhered bitumen and felts and wet felts.
  3. Remove excess asphalt from steel deck. A maximum of 15 lb/100 sq. ft. of asphalt is permitted to remain on steel decks.
  4. Remove fasteners from deck.

### 3.3 DECK PREPARATION

- A. Inspect deck after tear-off of membrane roofing system.
- B. Verify that concrete substrate is visibly dry and free of moisture.

- C. If broken or loose fasteners that secure deck panels to one another or to structure are observed or if deck appears or feels inadequately attached, immediately notify Architect. Do not proceed with installation until directed by Architect.
- D. If deck surface is not suitable for receiving new roofing or if structural integrity of deck is suspect, immediately notify Architect. Do not proceed with installation until directed by Architect.
- E. Replace deck as indicated on Drawings. Replacement deck is specified in Division 5 Section "Steel Decking."

#### 3.4 EXISTING BASE FLASHINGS

- A. Remove existing base flashings and counterflashings around parapets, curbs, walls, and penetrations.
  - 1. Clean substrates of contaminants such as asphalt, sheet materials, dirt, and debris.

#### 3.5 DISPOSAL

- A. Collect demolished materials and place in containers. Promptly dispose of demolished materials. Do not allow demolished materials to accumulate on-site.
  - 1. Storage or sale of demolished items or materials on-site is not permitted.
- B. Transport and legally dispose of demolished materials off Owner's property.

END OF SECTION 07 01 50.19

## **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 IV, 25-psi, geotextile-faced drainage panels.
  - 3. Glass-fiber blanket, unfaced.
  - 4. Closed-cell spray polyurethane foam.
  - 5. Thermal barrier intumescent coating.
  - 6. Insulation for miscellaneous voids.

#### **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 IV, Geotextile-Faced Drainage Panels: ASTM C 578, Type IV, 25-psi minimum compressive strength; geotextile-faced; maximum flame-spread and smoke-developed indexes of 25 and 450, respectively, per ASTM E 84; fabricated with one side having grooved drainage channels.
  - 1. Products: Subject to compliance with requirements, available products that may be incorporated in the Work, include, but are not limited to:

- a. Owens Corning; Foamular NGX Insul-Drain XPS Drainage Board.
  - b. T. Clear Corporation; ThermaDry Insulating Drainage Panels Type 750.
- 2. Thermal Resistance: R-value of 9.4 for 2-inch thickness.
- C. Extruded Polystyrene Board, Type VI: ASTM C 578, Type VI, 40-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 40 psi Extruded Polystyrene Foam Insulation (Reduced GWP).
    - b. Owens Corning; Foamular NGX 400 Extruded Polystyrene (XPS) Rigid Foam 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.

### 3.4 INSTALLATION OF FOUNDATION WALL INSULATION

- A. Butt extruded polystyrene board 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 24 19 - WATER-DRAINAGE EXTERIOR INSULATION AND FINISH SYSTEM (EIFS)****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. EIFS-clad drainage-wall assemblies, including EIFS manufacturer's air and water-resistive barrier system, that are field applied over substrate.

**1.3 DEFINITIONS**

- A. Definitions in ASTM E2110 apply to Work of this Section.
- B. EIFS: Exterior insulation and finish system(s).
- C. Polymer-Based Exterior Insulation and Finish System: Class PB EIFS, as defined in ASTM E2568.

**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 EIFS component indicated.
  - 1. Air and water-resistive barrier system.
  - 2. Flexible-membrane flashing.
  - 3. Insulation adhesive.
  - 4. Molded, (expanded) rigid cellular polystyrene board insulation.
  - 5. Reinforcing mesh.
  - 6. Base coat.
  - 7. Water-resistant base coat.
  - 8. Primer.
  - 9. Finish coat.
  - 10. Sealer.
  - 11. Trim accessories.

- B. Shop Drawings: Include plans, elevations, sections, details of components, details of penetrations and terminations, flashing details, joint locations and configurations, air and water-resistive barrier system details, and connections and attachments to other work.
- C. Samples: For each type of finish-coat color and texture indicated.
  - 1. Include similar Samples of exposed accessories involving color selection.
- D. Sample Warranties: For special warranties.

#### 1.6 INFORMATIONAL SUBMITTALS

- A. Manufacturer Certificates: Signed by EIFS manufacturer, certifying the following:
  - 1. EIFS complies with requirements.
  - 2. EIFS substrate is acceptable to EIFS manufacturer.
  - 3. Accessory products installed with EIFS, including joint sealants, flashing, air and water-resistive barrier systems, and trim, whether or not furnished by EIFS manufacturer and whether or not specified in this Section, are acceptable to EIFS manufacturer.

#### 1.7 CLOSEOUT SUBMITTALS

- A. Maintenance Data: For EIFS to include in maintenance manuals.
- B. Executed Warranties: For special warranties.

#### 1.8 QUALITY ASSURANCE

- A. Installer Qualifications: An installer who is currently listed in the AWCI International database, is certified in writing by EIFS manufacturer as qualified to install Class PB EIFS using trained workers, and who has successfully completed a minimum of three comparable projects.
- B. Mockups: Build mockups to verify selections made under Sample submittals, to demonstrate aesthetic effects, to set quality standards for materials and execution, and to set quality standards for fabrication and installation.
  - 1. Build mockup of typical wall area in size approximately 96 inches long by 96 inches high by full thickness, including metal studs, sheathing, and EIFS-clad drainage-wall assemblies, including air and water-resistive barrier system.
  - 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.
- C. Identification: Identify product R-values with manufacturer's markings, or certification, in accordance with requirements of building Code in effect for the Project.



## 1.9 DELIVERY, STORAGE, AND HANDLING

- A. Deliver materials in original, unopened packages with manufacturers' labels intact and clearly identifying products.
- B. Store materials inside and under cover; keep them dry and protected from weather, direct sunlight, surface contamination, aging, corrosion, damaging temperatures, construction traffic, and other causes.
  - 1. Stack insulation board flat and off the ground.
  - 2. Protect plastic insulation against ignition at all times. Do not deliver plastic insulating materials to Project site before installation time.
  - 3. Complete installation and concealment of plastic materials as rapidly as possible in each area of construction.

## 1.10 FIELD CONDITIONS

- A. Weather Limitations: Proceed with installation only when existing and forecasted weather conditions and ambient outdoor air, humidity, and substrate temperatures permit EIFS to be applied, dried, and cured according to manufacturers' written instructions and warranty requirements.

## 1.11 WARRANTY

- A. Manufacturer's Special Warranty: Manufacturer agrees to correct or replace components of EIFS-clad drainage-wall assemblies that fail in materials within specified warranty period.
  - 1. Failures include, but are not limited to, the following:
    - a. Bond integrity and weathertightness.
    - b. Deterioration of EIFS finishes and other EIFS materials beyond normal weathering.
  - 2. Warranty coverage includes the following components of EIFS-clad drainage-wall assemblies:
    - a. EIFS finish, including base coats, finish coats, and reinforcing mesh.
    - b. Insulation installed as part of EIFS.
    - c. Insulation adhesive.
    - d. Flashing.
    - e. Air and water-resistive barrier systems.
    - f. EIFS drainage components.
  - 3. Warranty Period: Minimum **10** years from date of Substantial Completion.
- B. Special Project Warranty: Installer agrees to restore or replace EIFS work as necessary to correct faulty and defective work and as necessary to maintain work in a weathertight condition. This warranty, signed by the Installer, covers the Work of this Section, including all components of the EIFS system for the following warranty period:

1. Warranty Period: **Two** 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:
  1. Dryvit Systems, Inc.
  2. Sto Corp.
- B. Source Limitations: Obtain EIFS from single source from single EIFS manufacturer and from sources approved by EIFS manufacturer as compatible with EIFS components.

### 2.2 PERFORMANCE REQUIREMENTS

- A. EIFS Performance: Comply with ASTM E2568 and with the following:
  1. Weathertightness: Resistant to uncontrolled water penetration from exterior, with a means to drain water entering EIFS to the exterior.
  2. Structural Performance of Assembly and Components:
    - a. Wind Loads: As indicated on Drawings.
  3. Impact Performance: ASTM E2568, Ultra-High impact resistance unless otherwise indicated.
  4. Abrasion Resistance of Finish Coat: Sample consisting of 1-inch-thick EIFS mounted on 1/2-inch-thick gypsum board; cured for a minimum of 28 days and shows no cracking, checking, or loss of film integrity after exposure to 528 quarts of sand when tested according to ASTM D968, Method A.
  5. Mildew Resistance of Finish Coat: Sample applied to 2-by-2-inch clean glass substrate; cured for 28 days and shows no growth when tested according to ASTM D3273 and evaluated according to ASTM D3274.
  6. Drainage Efficiency: 90 percent average minimum when tested according to ASTM E2273.

### 2.3 EIFS MATERIALS

- A. Air and Water-Resistive Barrier System: EIFS manufacturer's standard formulation and accessories for use as air and water-resistive barrier system; vapor-permeable type; compatible with substrate.

1. Water-Resistance: Comply with physical and performance criteria of ASTM E2570/E2570M.
- B. Flexible-Membrane Flashing: Cold-applied, self-adhering, self-healing, rubberized-asphalt, and polyethylene-film composite sheet or tape and primer; EIFS manufacturer's standard or product recommended in writing by EIFS manufacturer.
- C. Insulation Adhesive: EIFS manufacturer's standard formulation designed for indicated use; specifically formulated to be applied to back side of insulation in a manner that creates open vertical channels designed to serve as an integral part of the water-drainage system of the EIFS-clad drainage-wall assembly; compatible with substrate; and complying with one of the following:
  1. Job-mixed formulation of portland cement complying with ASTM C150/C150M, Type I, and polymer-based adhesive specified for base coat.
  2. Factory-blended dry formulation of portland cement, dry polymer admixture, and fillers specified for base coat.
- D. Drainage Strip: EIFS manufacturer's standard or product recommended in writing by EIFS manufacturer.
- E. Molded, (Expanded) Rigid Cellular Polystyrene Board Insulation: Comply with ASTM E2430/E2430M, unless otherwise noted, and the following:
  1. Flame-Spread and Smoke-Developed Indexes: 25 and 450 or less, respectively, according to ASTM E84.
  2. Dimensions: Provide insulation boards of not more than 24 by 48 inches, with thickness indicated on Drawings.
  3. Foam Buildouts: Provide with profiles and dimensions indicated on Drawings.
- F. Reinforcing Mesh: Balanced, alkali-resistant, open-weave, glass-fiber mesh treated for compatibility with other EIFS materials, made from continuous multiend strands with retained mesh tensile strength of not less than 120 lbf/in. according to ASTM E2098/E2098M and the following:
  1. Reinforcing Mesh for EIFS, General: Not less than weight required to comply with impact-performance level specified in "Performance Requirements" Article.
  2. Detail-Reinforcing Mesh: Not less than 4.0 oz./sq. yd.
- G. Base Coat: EIFS manufacturer's standard mixture complying with one of the following:
  1. Job-mixed formulation of Portland cement complying with ASTM C150/C150M, Type I, white or natural color; and manufacturer's standard polymer-emulsion adhesive designed for use with Portland cement.
  2. Factory-blended dry formulation of Portland cement, dry polymer admixture, and inert fillers to which only water is added at Project site.
- H. Water-Resistant Base Coat: EIFS manufacturer's standard water-resistant formulation complying with one of the following:

1. Job-mixed formulation of Portland cement complying with ASTM C150/C150M, Type I, white or natural color; and manufacturer's standard polymer-emulsion adhesive designed for use with Portland cement.
  2. Job-combined formulation of manufacturer's standard polymer-emulsion adhesive and manufacturer's standard dry mix containing Portland cement.
- I. Primer: EIFS manufacturer's standard factory-mixed, elastomeric-polymer primer for preparing base-coat surface for application of finish coat.
  - J. Finish Coat: EIFS manufacturer's standard acrylic-based coating complying with the following:
    1. Factory-mixed formulation of polymer-emulsion binder, colorfast mineral pigments, sound stone particles, and fillers.
    2. Colors: As selected by Architect from manufacturer's full range.
    3. Textures: As selected by Architect from manufacturer's full range.
  - K. Sealer: Manufacturer's waterproof, clear acrylic-based sealer for protecting finish coat.
  - L. Water: Potable.
  - M. Trim Accessories: Type as designated or required to suit conditions indicated and to comply with EIFS manufacturer's written instructions; manufactured from UV-stabilized PVC; and complying with ASTM D1784, manufacturer's standard cell class for use intended, and ASTM C1063, including, but not limited to, the following:
    1. Weep Screed/Track: Prefabricated, one-piece type for attachment behind insulation with perforated face leg extended to form a drip and weep holes in track bottom, of depth required to suit thickness of coating and insulation, with face leg perforated for bonding to coating and back leg; designed to drain incidental moisture that gets into wall construction to the exterior at terminations of EIFS with drainage.

## 2.4 MIXING

- A. Comply with EIFS manufacturer's requirements for combining and mixing materials. Do not introduce admixtures, water, or other materials, except as recommended by EIFS manufacturer. Mix materials in clean containers. Use materials within time period specified by EIFS manufacturer or discard.

## 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 roof edges, wall framing, flashings, openings, substrates, and junctures at other construction for suitable conditions where EIFS will be installed.

- C. Proceed with installation only after unsatisfactory conditions have been corrected.
  - 1. Begin coating application only after surfaces are dry.
- D. Beginning installation constitutes Contractor's acceptance of substrates and conditions.

### 3.2 PREPARATION

- A. Protect contiguous work from moisture deterioration and soiling caused by application of EIFS. Provide temporary covering and other protection needed to prevent spattering of exterior finish coats on other work.
- B. Protect EIFS, substrates, and wall construction behind them from inclement weather during installation. Prevent penetration of moisture behind drainage plane of EIFS and deterioration of substrates.
- C. Prepare and clean substrates to comply with EIFS manufacturer's written instructions to obtain optimum bond between substrate and adhesive for insulation.
  - 1. Concrete Substrates: Provide clean, dry, neutral-pH substrate for insulation installation. Verify suitability of substrate by performing bond and moisture tests recommended by EIFS manufacturer.

### 3.3 EIFS INSTALLATION, GENERAL

- A. Comply with ASTM C1397, ASTM E2511, and EIFS manufacturer's written instructions for installation of EIFS as applicable to each type of substrate indicated.

### 3.4 SUBSTRATE PROTECTION APPLICATION

- A. Air and Water-Resistive Barrier System: Apply over sheathing to provide an air and water-resistive barrier.
  - 1. Tape and seal joints, exposed edges, terminations, and inside and outside corners of sheathing unless otherwise indicated by EIFS manufacturer's written instructions.
- B. Flexible-Membrane Flashing: Install over water-resistive barrier coating, applied and lapped to shed water; seal at openings, penetrations, and terminations. Prime substrates with flashing primer if required and install flashing.

### 3.5 TRIM INSTALLATION

- A. Trim: Apply trim accessories as indicated, and as accepted by EIFS manufacturer. Coordinate with installation of insulation.
  - 1. Weep Screed/Track: Use at finished grade bottom termination edges of water-drainage EIFS unless otherwise indicated.

### 3.6 INSULATION INSTALLATION

- A. Board Insulation: Adhesively attach insulation to substrate in compliance with ASTM C1397 and the following:
1. Apply adhesive to insulation by notched-trowel method, with notches oriented vertically to produce drainage channels that remain functional after the insulation is adhered to substrate.
  2. Press and slide insulation into place. Apply pressure over entire surface of insulation to accomplish uniform contact, high initial grab, and overall level surface.
  3. Allow adhered insulation to remain undisturbed for not less than 24 hours, before beginning rasping and sanding insulation or applying base coat and reinforcing mesh.
  4. Apply insulation over substrates in courses with long edges of boards oriented horizontally.
  5. Begin first course of insulation from a level base line and work upward.
  6. Begin first course of insulation from screed/track and work upward.
  7. Stagger vertical joints of insulation boards in successive courses to produce running bond pattern. Locate joints, so no piece of insulation is less than 12 inches wide or 6 inches high. Offset joints not less than 6 inches from corners of window and door openings and not less than 4 inches from aesthetic reveals.
    - a. Adhesive Attachment: Offset joints of insulation not less than 6 inches from horizontal and 4 inches from vertical joints in sheathing.
  8. Interlock ends at internal and external corners.
  9. Abut insulation tightly at joints within and between each course to produce flush, continuously even surfaces without gaps or raised edges between boards. If gaps greater than 1/16 inch occur, fill with insulation cut to fit gaps exactly; insert insulation without using adhesive or other material.
  10. Cut insulation to fit openings, corners, and projections precisely and to produce edges and shapes complying with details indicated.
  11. Rasp or sand flush entire surface of insulation to remove irregularities projecting more than 1/32 inch from surface of insulation and to remove yellowed areas due to sun exposure; do not create depressions deeper than 1/16 inch. Prevent airborne dispersal and immediately collect insulation raspings or sandings.
  12. Cut aesthetic reveals in outside face of insulation with high-speed router and bit configured to produce grooves, rabbets, and other features that comply with profiles and locations indicated. Do not reduce insulation thickness at aesthetic reveals to less than 3/4 inch.
  13. Install foam buildouts and attach to structural substrate by adhesive.

14. Interrupt insulation for expansion joints where indicated.
  15. Form joints for sealant application by leaving gaps between adjoining insulation edges and between insulation edges and dissimilar adjoining surfaces. Make gaps wide enough to produce joint widths indicated after encapsulating joint substrates with base coat and reinforcing mesh.
  16. Before installing insulation and before applying field-applied reinforcing mesh, fully wrap board edges. Cover edges of board and extend encapsulating mesh not less than 2-1/2 inches over front and back face unless otherwise indicated on Drawings.
  17. Treat exposed edges of insulation as follows:
    - a. Except for edges forming substrates of sealant joints, encapsulate with base coat, reinforcing mesh, and finish coat.
    - b. Encapsulate edges forming substrates of sealant joints within EIFS or between EIFS and other work with base coat and reinforcing mesh. Treat edges as recommended by EIFS manufacturer for proper sealant installation.
    - c. At edges trimmed by accessories, extend base coat, reinforcing mesh, and finish coat over face leg of accessories.
  18. Coordinate installation of flashing and insulation to produce wall assembly that does not allow water to penetrate behind flashing and water-resistive barrier coating.
- B. Expansion Joints: Install at locations indicated, where required by EIFS manufacturer, and as follows:
1. At expansion joints in substrates behind EIFS.
  2. Where EIFS adjoin dissimilar substrates, materials, and construction, including other EIFS.
  3. Where wall height or building shape changes.
  4. Where EIFS manufacturer requires joints in long continuous elevations.

### 3.7 BASE-COAT APPLICATION

- A. Water-Resistant Base Coat: Apply full-thickness coverage to exposed insulation and to exposed surrounding surfaces indicated on Drawings.
- B. Base Coat: Apply full coverage to exposed insulation with not less than **1/16-inch** dry-coat thickness.
- C. Reinforcing Mesh: Embed reinforcing mesh in wet base coat to produce wrinkle-free installation with mesh continuous at corners, overlapped not less than 2-1/2 inches or otherwise treated at joints to comply with ASTM C1397. Do not lap reinforcing mesh within 8 inches of corners. Completely embed mesh, applying additional base-coat material if necessary, so reinforcing-mesh color and pattern are invisible.

- D. Double-Layer Reinforcing-Mesh Application: Where indicated or required, apply second base coat and second layer of reinforcing mesh, overlapped not less than 2-1/2 inches or otherwise treated at joints to comply with ASTM C1397 in same manner as first application. Do not apply until first base coat has cured.
- E. Additional Reinforcing Mesh: Apply detail-reinforcing mesh around openings, extending 4 inches beyond perimeter. Apply additional 9-by-12-inch detail-reinforcing mesh diagonally at corners of openings (re-entrant corners). Apply 8-inch-wide, detail-reinforcing mesh at both inside and outside corners unless base layer of mesh is lapped not less than 4 inches on each side of corners.
  - 1. At aesthetic reveals, apply detail-reinforcing mesh not less than 8 inches wide.
  - 2. Embed detail-reinforcing mesh in base coat before applying first layer of reinforcing mesh.
- F. Double Base-Coat Application: Where indicated, apply second base coat in same manner as first application, except without reinforcing mesh. Do not apply until first base coat has cured, or as recommended by manufacturer.

### 3.8 FINISH-COAT APPLICATION

- A. Primer: Apply over dry base coat.
- B. Finish Coat: Apply full-thickness coverage over dry **primed** base coat, maintaining a wet edge at all times for uniform appearance, to produce a uniform finish of color and texture matching approved sample and free of cold joints, shadow lines, and texture variations.
- C. Sealer Coat: Apply over dry finish coat, in number of coats and thickness required by EIFS manufacturer.

### 3.9 FIELD QUALITY CONTROL

- A. Special Inspections: Owner will engage a qualified special inspector to perform the following special inspections:
  - 1. Air and water-resistive barrier systems applied over sheathing.
- B. Testing Agency: Owner will engage a qualified testing agency to perform tests and inspections.
- C. EIFS Tests and Inspections: According to ASTM E2359/E2359M.
- D. EIFS will be considered defective if it does not pass tests and inspections.



### 3.10 CLEANING AND PROTECTION

- A. Remove temporary covering and protection of other work. Promptly remove coating materials from window and door frames and other surfaces outside areas indicated to receive EIFS coatings.

END OF SECTION 07 24 19

## **SECTION 07 25 00 - WEATHER 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. Building paper.
  - 2. Building wrap.
  - 3. Flexible flashing.

#### 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. Building paper.
  - 2. Building-wrap tape.
- 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. Building Wrap.
  - 2. Flexible flashing.

### PART 2 - PRODUCTS

#### 2.1 WATER-RESISTIVE BARRIER

- A. Building Paper: ASTM D 226, Type 1 (No. 15 asphalt-saturated organic felt), unperforated.

- B. Building Wrap: ASTM E 1677, Type I air barrier; meeting air and water-vapor permeance standards and with flame-spread and smoke-developed indexes of less than 25 and 450, respectively, when tested according to ASTM E 84; UV stabilized; and acceptable to authorities having jurisdiction.
  - 1. Products: Subject to compliance with requirements, available products that may be incorporated into the Work include, but are not limited to, the following:
    - a. DuPont (E. I. du Pont de Nemours and Company); Tyvek CommercialWrap.
    - b. Reemay, Inc.; Typar HouseWrap.
  - 2. Allowable UV Exposure Time: Not less than three months.
- C. Building-Wrap Tape: Pressure-sensitive plastic tape recommended by building-wrap manufacturer for sealing joints and penetrations in building wrap.

## 2.2 MISCELLANEOUS MATERIALS

- A. Flexible Flashing: Composite, self-adhesive, flashing product consisting of a pliable, rubberized-asphalt compound, bonded to a high-density polyethylene film, aluminum foil, or spunbonded polyolefin to produce an overall thickness of not less than 0.040 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; CCW-705-TWF Thru-Wall Flashing.
    - b. Grace Construction Products, a unit of W. R. Grace & Co. - Conn.; Vycor V40 Self-Adhered Flashing.
    - c. Sandell Manufacturing Co., Inc.; Presto-Seal.
- B. Primer for Flexible Flashing: Product recommended by manufacturer of flexible flashing for substrate.
- C. Nails and Staples: ASTM F 1667.

## PART 3 - EXECUTION

### 3.1 WATER-RESISTIVE BARRIER INSTALLATION

- A. Beginning installation constitutes Contractor's acceptance of substrates and conditions.
- B. Cover exposed exterior surface of sheathing with water-resistive barrier securely fastened to framing immediately after sheathing is installed.
- C. Cover sheathing with water-resistive barrier as follows:
  - 1. Cut back barrier 1/2 inch on each side of the break in supporting members at expansion- or control-joint locations.

2. Apply barrier to cover vertical flashing with a minimum 4-inch overlap unless otherwise indicated.
- D. Building Paper: Apply horizontally with a 2-inch overlap and a 6-inch end lap; fasten to sheathing with galvanized staples or roofing nails.
- E. Building Wrap: Comply with manufacturer's written instructions.
1. Seal seams, edges, fasteners, and penetrations with tape.
  2. Extend into jambs of openings and seal corners with tape.

### 3.2 FLEXIBLE FLASHING INSTALLATION

- A. Apply flexible flashing where indicated to comply with manufacturer's written instructions.
1. Prime substrates as recommended by flashing manufacturer.
  2. Lap seams and junctures with other materials at least 4 inches except that at flashing flanges of other construction, laps need not exceed flange width.
  3. Lap flashing over water-resistive barrier at bottom and sides of openings.
  4. Lap water-resistive barrier over flashing at heads of openings.
  5. After flashing has been applied, roll surfaces with a hard rubber or metal roller to ensure that flashing is completely adhered to substrates.

END OF SECTION 07 25 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. 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.
- B. Mockups: Build mockups to set quality standards for materials and execution.
1. Build integrated mockups of exterior wall assembly 8 feet long by 8 feet high, incorporating backup wall construction, external cladding, window, storefront, door frame and sill, insulation, ties and other penetrations, and flashing to demonstrate surface preparation, crack and joint treatment, application of air barriers, and sealing of gaps, terminations, and penetrations of air-barrier assembly.
    - a. Include junction with roofing membrane and foundation wall intersection.
    - b. If Architect determines mockups do not comply with requirements, reconstruct mockups and apply air barrier until mockups are approved.
  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.

## 1.9 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.

### 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: Minimum 300 percent; ASTM D412, Die C.
- d. Adhesion to Substrate: Minimum 16 lbf/sq. in. when tested according to ASTM D4541.
- e. Fire Propagation Characteristics: Passes NFPA 285 testing as part of an approved assembly.
- f. UV Resistance: Can be exposed to sunlight for 90 days according to manufacturer's written instructions.

## 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. Test concrete substrates for capillary moisture by plastic sheet method according to ASTM D4263.
  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 expansion joints and 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 FIELD QUALITY CONTROL

- A. Testing Agency: Owner may engage a qualified testing agency to perform tests and inspections.
- B. Inspections: Air-barrier materials, accessories, and installation are subject to inspection for compliance with requirements. Inspections may include the following:
  - 1. Continuity of air-barrier system has been achieved throughout the building envelope with no gaps or holes.
  - 2. Air-barrier dry film thickness.
  - 3. Continuous structural support of air-barrier system has been provided.
  - 4. Masonry and concrete surfaces are smooth, clean, and free of cavities, protrusions, and mortar droppings.
  - 5. Site conditions for application temperature and dryness of substrates have been maintained.
  - 6. Maximum exposure time of materials to UV deterioration has not been exceeded.
  - 7. Surfaces have been primed, if applicable.
  - 8. Laps in strips and transition strips have complied with minimum requirements and have been shingled in the correct direction (or mastic has been applied on exposed edges), with no fishmouths.
  - 9. Termination mastic has been applied on cut edges.
  - 10. Strips and transition strips have been firmly adhered to substrate.
  - 11. Compatible materials have been used.
  - 12. Transitions at changes in direction and structural support at gaps have been provided.
  - 13. Connections between assemblies (air-barrier and sealants) have complied with requirements for cleanliness, surface preparation and priming, structural support, integrity, and continuity of seal.
  - 14. All penetrations have been sealed.
- C. Tests: As determined by testing agency from among the following tests:
  - 1. Adhesion Testing: Air-barrier assemblies will be tested for required adhesion to substrate according to ASTM D4541 for each 600 sq. ft. of installed air barrier or part thereof.
- D. Air barriers will be considered defective if they do not pass tests and inspections.

1. Apply additional air-barrier material, according to manufacturer's written instructions, where inspection results indicate insufficient thickness.
  2. Remove and replace deficient air-barrier components for retesting as specified above.
- E. Correct damage to air barriers caused by testing; follow manufacturer's written instructions.
- F. Prepare test and inspection reports.

### 3.6 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 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. Substrate board.
  - 3. Vapor/air retarder.
  - 4. Roof insulation.
  - 5. Cover board.
  - 6. 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. Metal termination bars.
  9. Fasteners.
  10. Miscellaneous accessories.
  11. Substrate board.
  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 walkway pads.
- B. 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. Walkway pad layout.

C. Samples: For the following products:

1. Roof membrane and flashings.
2. Substrate board.
3. Roof insulation.
4. Cover board.
5. Walkway pads.

D. Wind Uplift Resistance Submittal: For roofing system, indicating compliance with wind uplift performance requirements.

E. 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 UL listed, listed in FM Approvals' RoofNav and listed in SPRI's Directory of Roof Assemblies 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, adhesives, cover boards, substrate board, vapor/air retarders, walkway pads 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: 20-years (Base Bid), 30-years (Alternate) from Date of Substantial Completion.
- B. Special Project Warranty: Submit roofing Installer's warranty, covering the Work of this Section, and roof specialties specified in Division 07 Section "Roof Specialties" including all components of roofing system such as roof membrane, base flashing, roof insulation, fasteners, adhesives, cover boards, substrate boards, vapor/air retarders, walkway pads and other components, 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 (Base Bid), 90 mils (Alternate), 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, 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. 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.
- J. Fasteners: Factory-coated steel fasteners and metal 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.
- K. Miscellaneous Accessories: Provide pourable sealers, preformed cone and vent sheet flashings, molded pipe boot flashings, preformed inside and outside corner sheet flashings, reinforced EPDM securement strips, T-joint covers, in-seam sealants, termination reglets, cover strips, and other accessories.

## 2.5 SUBSTRATE BOARDS

- A. Substrate Board: ASTM C1278/C1278M, fiber-reinforced gypsum board.
  1. Basis-of-Design Product: Subject to compliance with requirements, provide United States Gypsum Company; USG Securock Brand Gypsum-Fiber Roof Board, or comparable product.
  2. Thickness: 1/2 inch.
  3. Size: 48 by 96 inches.
  4. Surface Finish: Factory primed.
- B. Fasteners: Factory-coated steel fasteners and metal plates complying with corrosion-resistance provisions in FM Approvals 4470, designed for fastening substrate panel to roof deck.
  1. Provide white fasteners where underside of roof deck will remain exposed to view.

## 2.6 VAPOR/AIR RETARDER

- A. Self-Adhering-Sheet Vapor/Air Retarder: ASTM D1970/D1970M, polyethylene film laminated to layer of rubberized asphalt adhesive, minimum 40-mil-total thickness; maximum permeance rating of 0.1 perm; cold applied, with slip-resisting surface and release paper backing. Provide primer when recommended by vapor/air retarder manufacturer.
  - 1. Basis-of-Design Product: Subject to compliance with requirements, provide Carlisle SynTec Incorporated; VapAir Seal 725TR, or comparable product.

## 2.7 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. Provide insulation tested as part of an assembly that satisfactorily passes UL 1256.
  - 2. Compressive Strength: 20 psi.
  - 3. Size: 48 by 48 inches, for adhered installation and 48 by 96 inches, for mechanical attachment.
  - 4. 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: 1/8 inch per foot unless otherwise indicated on Drawings.
    - b. Saddles and Crickets: 1/2 inch per foot unless otherwise indicated on Drawings.
  - 4. Provide fiber board tapered edge strips to transition from 1/2-inch to 0-inch.

## 2.8 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 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.

## 2.9 WALKWAYS

- A. Flexible Walkway Pads: 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.

## 2.10 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 steel roof deck is solid and securely attached.
  4. Verify that concrete substrate is visibly dry and free of moisture.
- 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. Remove all debris from metal deck flutes.
- C. 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 in to existing roofing to maintain weathertightness of transition and to not void warranty for existing roofing system.

### 3.4 INSTALLATION OF SUBSTRATE BOARD AT STEEL DECK

- A. Install substrate board with long joints in continuous straight lines, with end joints staggered not less than 24 inches in adjacent rows.
  - 1. At steel roof decks, install substrate board at right angle to flutes of deck.
    - a. Locate end joints over crests of steel roof deck.
  - 2. Tightly butt substrate boards together.
  - 3. Cut substrate board to fit tight around penetrations and projections, and to fit tight to intersecting sloping roof decks.
  - 4. Mechanically Attached Substrate Boards: Fasten substrate board to top flanges of steel deck to resist uplift pressure at corners, perimeter, and field of roof according to roofing system manufacturers' written instructions and 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.
    - a. Steel Deck: Size fasteners to extend no further than elevation of bottom flute.

### 3.5 INSTALLATION OF VAPOR/AIR RETARDER

- A. Self-Adhering-Sheet Vapor/Air Retarder: Thoroughly clean and prime substrate if required by manufacturer. Install self-adhering-sheet vapor/air retarder over area to receive vapor retarder, side and end lapping each sheet a minimum of 3-1/2 and 6 inches, respectively.
  - 1. Extend vertically up parapet walls and projections to a minimum height equal to height of insulation and cover board.
  - 2. Seal laps by rolling.
- B. Completely seal vapor retarder at terminations, obstructions, and penetrations to prevent air movement into roofing system.

### 3.6 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 fiber board tapered edge strips to transition from 1/2-inch to 0-inch.
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.

E. Installation Over Substrate Board and Vapor/Air Retarder on Steel Decking:

1. Adhered Base Layer: Install base layer of insulation with joints staggered not less than 24 inches in adjacent rows.

- a. Adhere base layer of insulation to substrate in compliance with “Performance Requirements” Article and FM Global Property Loss Prevention Data Sheet 1-29, as follows:
  - 1) Set base 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.
- 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 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.

F. Installation Over Concrete Decks:

- 1. Adhered Base Layer: Thoroughly clean and prime deck surface, install base layer of insulation with joints staggered not less than 24 inches in adjacent rows.
  - a. Adhere base layer of insulation to concrete roof deck in compliance with “Performance Requirements” Article and FM Global Property Loss Prevention Data Sheet 1-29, as follows:
    - 1) Set 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.
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.

### 3.7 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.

### 3.8 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 membrane 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. Bonding Adhesive: Apply 100 percent coverage to substrate and underside of roof membrane at rate required by manufacturer and allow to partially dry before installing roof membrane. Do not apply to splice area of roof membrane.
- G. In addition to adhering, mechanically fasten roof membrane securely at terminations, penetrations, and perimeters.
- H. Apply roof membrane with side laps shingled with slope of roof deck where possible.
- I. Apply pressure to the membrane surface in accordance with manufacturer's instructions to obtain maximum contact between the membrane and substrate.
- J. 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.
- K. Repair tears, voids, and lapped seams in roof membrane that do not comply with requirements.
- L. Spread sealant or mastic bed over deck-drain flange at roof drains, and securely seal roof membrane in place with clamping ring.

### 3.9 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.

### 3.10 INSTALLATION OF WALKWAY PADS

- A. Flexible Walkway Pads: Install walkway pads according to manufacturer's written instructions.
  - 1. Install flexible walkway pads at the following locations:
    - a. Perimeter of each rooftop unit (not required at fans and small condensers).
    - b. Top and bottom of each roof access ladder.
    - c. Roof access points/doors.
    - d. Locations indicated on Drawings.
    - e. As required by roof membrane manufacturer's warranty requirements.
  - 2. Adhere walkway products to substrate according to roofing system manufacturer's written instructions leaving a 1 ½ space between pads.

### 3.11 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).

### 3.12 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. 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.
- C. Correct or remove and replace components of roofing system where inspections indicate that they do not comply with specified requirements.
- D. Additional testing and inspecting, at Contractor's expense, will be performed to determine if replaced or additional work complies with specified requirements.

### 3.13 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.
  - 4. Counterflashings.

- 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.
  - 2. Canted roof-edge fascia.
  - 3. Fascia sump.
  - 4. Downspouts.
  - 5. Splashblocks.
  - 6. Roof drain inserts.
  - 7. One-piece counterflashings.
  - 8. Two-piece counterflashings.

B. Shop Drawings: For roof specialties.

1. Include plans, elevations, expansion-joint locations, keyed details, and attachments to other work. Distinguish between plant- and field-assembled work.
2. Include details for expansion and contraction; locations of expansion joints, including direction of expansion and contraction.
3. Indicate profile and pattern of seams and layout of fasteners, cleats, clips, and other attachments.
4. Detail termination points and assemblies, including fixed points.
5. Include details of special conditions.

C. Samples for Initial Selection: For each type of roof specialty indicated with factory-applied color finishes.

D. Samples for Verification: For each type of roof specialty indicated, made from 12-inch lengths of full-size components in specified material, and including fasteners, cover joints, accessories, and attachments, as follows:

1. Copings.
2. Roof-edge specialties.
3. Roof-edge drainage systems.
4. Counterflashings.

E. 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.
- B. Furnish not less than six 12-foot-long sections of fascia covers, fascia extenders and counterflashings.



## 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 and fascia sumps.
  - 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.

- b. Three-Piece Canted Roof Edge Fascia: Three-piece fascia system with a continuous extruded aluminum anchor bar with extended vertical leg terminating in a drip edge cleat and continuous formed galvanized steel sheet canted waterdam, 0.028 inch thick (24 gage), minimum.
    - 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 2000 Canted Fascia.
      - b) Firestone Building Products Company, LLC; AnchorGard Canted Fascia.
      - c) Johns Manville; Presto-Tite Canted Fascia.
- 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 fluoropolymer.
  - c. Color: 'Dark Bronze' to match existing as selected by Architect from manufacturer's full range.
  - d. Separate colors may be selected for each building.
- 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. Radius lengths: Provide factory fabricated radius lengths as required to match radius of substrate (verify in field).
- 6. 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.
  - b. Soffit Trim: Manufactured metal trim as indicated on Drawings, of same material and finish as fascia cover.

- c. Fascia Sumps: Manufactured fascia sumps integrated into fascia system, complete with outlet tube that nests into upper end of downspout.
  - 1) Formed Aluminum: Not less than 0.050 inch thick, finished to match fascia cover.
  - 2) Size: As indicated on Drawings.
- d. 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) Formed Aluminum: Not less than 0.063 inch thick, finished to match fascia cover.
  - 2) Size: As indicated on Drawings.

## 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 fluoropolymer.

1. Surface: Smooth, flat finish.
2. Color: 'Dark Bronze' to match existing as selected by Architect from manufacturer's full range.
3. Separate colors may be selected for each building.

D. Splashblocks:

1. Precast Concrete Type: Factory-made units from a plant regularly engaged in producing precast concrete units. Provide units with minimum 5000 psi compressive strength, with reinforcement required for handling of units, edged on three sides, with one open end.
  - a. Size: Not less than 24 inches long by 12 inches wide by 3 inches high, unless otherwise indicated.
2. Rubber Type: Provide units of black recycled rubber, edged on three sides, with one open end.
  - a. Basis-of-Design Product: Subject to compliance with requirements, provide TPC (The Park and Facilities Catalog); Downspout Splash Blocks, or comparable product.
  - b. Size: Not less than 34 inches long by 12 inches wide by 3 inches high, unless otherwise indicated.

## 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, Inc: Carlisle Hercules Retrofit Insert Drain.
  - b. Firestone Building Products: Firestone Drain Insert.
  - c. Johns Manville, Inc: Hercules RetroDrain.

## 2.5 COUNTERFLASHINGS

A. One-Piece Counterflashings: Manufactured units formed of single counterflashing sections.

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 Counter Flashing 1 Pc. Reglet.
  - b. Firestone Building Products Company, LLC; 1 Piece Counter Flashing Reglet Version.
  - c. Metal-Era LLC; 1 Piece Counter Flashing Reglet Version.

2. Formed Aluminum: Not less than 0.050 inch thick.
  3. Counterflashings: Manufactured units of heights to overlap top edges of base flashings by 4 inches and in longest uniform section lengths not exceeding 12 feet and compress against base flashings with joints lapped.
    - a. Surface-Mounted Type: Provide counterflashing with slotted holes for fastening to substrate, with neoprene or other suitable weatherproofing washers, and with channel for sealant at top edge.
    - b. Reglet Type: For embedment in masonry mortar joints.
- B. Two-Piece Counterflashings: Manufactured units formed to provide secure interlocking of separate receiver and counterflashing pieces.
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 2 Pc. Counter Flashing Reglet.
    - b. Firestone Building Products Company, LLC; 2 Piece Counter Flashing Reglet Version.
    - c. Metal-Era LLC; 2 Piece Counter Flashing Reglet Version.
  2. Formed Aluminum: Not less than 0.050 inch thick.
  3. Surface-Mounted Receivers: Provide receivers with slotted holes for fastening to substrate, with neoprene or other suitable weatherproofing washers, and with channel for sealant at top edge.
  4. Embedded Receivers: For embedment in masonry mortar joints.
  5. Counterflashings: Manufactured units of heights to overlap top edges of base flashings by 4 inches and in longest uniform section lengths not exceeding 12 feet designed to snap into receiver and compress against base flashings with joints lapped.
- C. Aluminum Finish: Two-coat fluoropolymer.
1. Surface: Smooth, flat finish.
  2. Color: 'Dark Bronze' to match existing as selected by Architect from manufacturer's full range.
  3. Separate colors may be selected for each building.

## 2.6 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.

## 2.7 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.

## 2.8 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.

## PART 3 - EXECUTION

### 3.1 EXAMINATION

- A. Examine substrates, areas, and conditions, with Installer present, to verify actual locations, dimensions, and other conditions affecting performance of the Work.
- B. Examine walls, parapets, and 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, 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 isolating surfaces with adhered EPDM membrane or by other permanent separation as recommended by manufacturer.
  - 1. Underlayment: Where installing metal directly on cementitious or wood substrates, install a course of adhered EPDM membrane 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.

### 3.3 INSTALLATION OF ROOF-EDGE SPECIALITIES

- A. Install cleats, cants, and other anchoring and attachment accessories and devices with concealed fasteners over fully adhered EPDM field membrane extended vertically to bottom of fascia.
- B. Anchor roof edgings with manufacturer's required devices, fasteners, and fastener spacing to meet performance requirements.
- C. Install fascia extender cover cleat with provisions for expansion and fasteners loose in slotted holes.



- D. Strip-in cleat with adhered EPDM membrane flashing up and over cant dam, installed as indicated on Drawings prior to installation of fascia cover.

### 3.4 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. Fascia Sumps: Install Fascia sumps to match adjacent fascias in tapered sump to allow for proper drainage from roof into fascia sump.
  - 1. Provide secure watertight connection between fascia sump and downspout.
- 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. Provide elbows at base of downspouts to direct water away from building.
    - a. Install splashblocks where downspouts discharge onto roof surfaces, grade or at other locations indicated.

### 3.5 INSTALLATION OF ROOF DRAIN INSERTS

- A. Roof Drain Insert Installation:
  - 1. Prior to installation, verify existing roof drain is functioning properly. Rod, snake, clean and flush existing drain and piping as required for proper operation.
  - 2. Remove existing dome strainer, clamping ring and hardware, thoroughly hone and clean existing roof drain bowl and piping prior to roof drain insert installation.
  - 3. Install roof drain inserts according to manufacturer's written installation instructions.

### 3.6 INSTALLATION OF COUNTERFLASHINGS

- A. Coordinate installation of counterflashings with installation of base flashings.
- B. Counterflashings: Insert counterflashings into reglets or other indicated receivers; ensure that counterflashings overlap 4 inches over top edge of base flashings. Lap counterflashing joints a minimum of 4 inches and bed with butyl sealant. Fit counterflashings tightly to base flashings.
- C. Coordinate installation of two-piece counterflashings with masonry installer.

### 3.7 CLEANING AND PROTECTION

- A. Clean all surfaces, 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. Roof hatches.
  - 4. Fixed ladder safety railing systems.
  - 5. Movable safety railing systems.
  - 6. Pipe, conduit and duct supports.
  - 7. Vent pipe extensions.
  - 8. Storm collars.
  - 9. 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.
  - 1. Roof curbs.
  - 2. Equipment supports.
  - 3. Roof hatches.
  - 4. Fixed ladder safety railing systems.
  - 5. Movable safety railing systems.
  - 6. Adjustable-height roller-bearing pipe and conduit supports.
  - 7. Hanger-type pipe and conduit supports.
  - 8. Vent pipe extensions.
  - 9. Storm collars.
  - 10. Isolation barrier membrane.
- B. 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 ROOF HATCHES

- A. Roof Hatches: Thermally-broken metal roof-hatch units with insulated double-walled lids and insulated single-walled curbs, welded or mechanically fastened and sealed corner joints, continuous lid-to-curb counterflashing and weathertight perimeter gasketing, straight sides, and integrally formed deck-mounting flange at perimeter bottom.
  - 1. Products: Subject to compliance with requirements, available products that may be incorporated in the Work, include, but are not limited to:
    - a. Babcock-Davis; ThermalMAX BRHTA36X30.
    - b. Bilco Company (The); Type S-50TB.
    - c. Nystrom; ThermalMAX RHTA36X30.
- B. Type and Size: Single-leaf lid, 30 by 36 inches (verify existing opening dimensions in field).
- C. Loads: Minimum 40-lbf/sq. ft. external live load and 20-lbf/sq. ft. internal uplift load.
- D. Material: Aluminum sheet.
  - 1. Thickness: 0.090 inch.
  - 2. Finish: Mill.
- E. Construction:
  - 1. Curb and Hatch Lid Insulation: 3-inch-thick, polyisocyanurate board.
    - a. R-Value: 20.0 according to ASTM C1363.
  - 2. Hatch Lid: Opaque, insulated, and double walled, with manufacturer's standard metal liner of same material and finish as outer metal lid.

3. Fabricate curbs to minimum height of 12 inches above roofing surface unless otherwise indicated.
- F. Hardware: Spring operators, hold-open arm, galvanized steel spring latch with turn handles, stainless steel butt- or pintle-type hinge system, and padlock hasps inside and outside.
- G. Roof-Hatch Safety Railing System: Roof-hatch manufacturer's standard system including rails, clamps, fasteners, safety barrier at railing opening, and accessories required for a complete installation; attached to roof hatch and complying with OSHA requirements and authorities having jurisdiction.
1. Products: Subject to compliance with requirements, available products that may be incorporated in the Work, include, but are not limited to:
    - a. Babcock-Davis; SRBAY36X30FG.
    - b. Bilco Company (The); BIL-Guard 2.0, RL2-STB.
    - c. Nystrom; SRBAY36X30FG.
  2. Height: 42 inches above finished roof deck.
  3. Posts and Rails: Aluminum pipe, Schedule 40, 1-1/4 inches in diameter.
  4. Maximum Opening Size: System constructed to prevent passage of a sphere 21 inches in diameter.
  5. Self-Latching Gate: Fabricated of same materials and rail spacing as safety railing system. Provide manufacturer's standard hinges and self-latching mechanism.
  6. Post and Rail Tops and Ends: Weather resistant, closed or plugged with prefabricated end fittings.
  7. Provide weep holes or another means to drain entrapped water in hollow sections of handrail and railing members.
  8. Fabricate joints exposed to weather to be watertight.
  9. Fasteners: Manufacturer's standard.
  10. Finish: Powder-coat finish.
    - a. Color: Safety yellow.

## 2.5 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.

3. Bases: Cast iron with EPDM pad, with base mover/dolly.
4. Posts and Rails: Steel tube, not less than 0.064-inch-thick (16 gage), 1-5/8 inches in diameter.
5. Maximum Opening Size: System constructed to prevent passage of a sphere 21 inches in diameter.
6. Provide weep holes or another means to drain entrapped water in hollow sections of handrail and railing members.
7. Fabricate joints exposed to weather to be watertight.
8. Fasteners: Manufacturer's standard.
9. Finish: Hot dip galvanized finish.

## 2.6 FIXED LADDER SAFETY RAILING SYSTEMS

- A. Fixed Ladder Safety Railing Systems: Manufacturer's standard clamp-on system including rails, clamps, fasteners, safety gate at railing opening, 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; Ladderguard Lite 15 Fixed Ladder Guarding System, or a comparable product.
  2. Height: 42 inches above finished roof.
  3. Bases: Freestanding railing holders.
  4. Posts and Rails: Steel tube, not less than 0.064-inch-thick (16 gage), 1-5/8 inches in diameter.
  5. Spanner Brackets: Steel brackets to span gap between safety railing system and ladder rails.
  6. Maximum Opening Size: System constructed to prevent passage of a sphere 21 inches in diameter.
  7. Self-Latching Gate: Fabricated of same materials and rail spacing as safety railing system. Provide manufacturer's standard hinges and self-latching mechanism.
  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 PIPE AND CONDUIT 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 6 inch diameter pipe or conduit; with pipe guide; 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; Type PP10 with Roller for up to 6" diameter pipe.



2. Base: Molded polypropylene or polycarbonate.
  3. Maximum Height: 12 inches above roof (verify existing pipe heights in field).
- B. Hanger-Type Pipe and Conduit Supports: H-frame assembly of bases, vertical and horizontal hot-dip galvanized-steel members and hanger-type pipe supports, for penetration-free installation over roof membrane type; sized as required for load and quantity of pipe or conduit runs and sizes, and indicated clearance height above roof.
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.; Custom Hanger Supports.
    - b. PHP Systems & Design; Type PSE-Custom.
    - c. Rooftop Support Systems, a division of Eberl Iron Works, Inc.; RTS H Stands.
  2. Bases: Vulcanized rubber, molded polypropylene, or polycarbonate.
  3. Pipe Supports: Clevis hanger with continuous-thread rod.

## 2.8 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.

## 2.9 STORM COLLARS

- A. Storm Collars: Not less than 0.0188-inch-thick (26 gage), stainless-steel sheet umbrella with stainless-steel band clamp, installed with heat-resistant sealant.
1. Basis-of-Design Product: Subject to compliance with requirements, provide SBC Industries; Clamp Umbrella (Storm Collar) – Model UMB, or a comparable product.

## 2.10 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.

## 2.11 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.

## 2.12 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. Roof-Hatch Installation:
  - 1. Verify that roof hatch operates properly. Clean, lubricate, and adjust operating mechanism and hardware.
  - 2. Attach safety railing system to roof-hatch curb.

- F. Fixed Ladder Safety Railing System Installation: Assemble in place to verify that components are complete. Instruct Owner's designated personnel in properly handling, adjusting, and maintaining units.
- G. Movable Safety Railing System Installation: Assemble in place to verify that components are complete. Instruct Owner's designated personnel in properly handling, adjusting, and maintaining units.
- H. 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 and conduit supports over adhered flexible walkway pads.
- I. Vent Pipe Extension Installation: Install prefabricated vent pipe extensions according to manufacturer's written installation instructions.
- J. Storm Collar Installation: Install storm collars according to manufacturer's written installation instructions.
- K. 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 81 00 - APPLIED FIRE PROTECTION**

### **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. Sprayed fire-resistive materials (SFRM).

#### **1.3 COORDINATION**

- A. Comply with SFRM and topcoat manufacturers' written recommendations to ensure SFRM and topcoat are compatible with one another.

#### **1.4 PREINSTALLATION MEETINGS**

- A. Preinstallation Conference: Conduct conference at Project site.
  - 1. Review products, design ratings, restrained and unrestrained conditions, densities, thicknesses, bond strengths, and other performance requirements.

#### **1.5 SUBMITTALS, GENERAL**

- A. General: Submit all action submittals and informational submittals (except preconstruction test reports) required by this Section concurrently.

#### **1.6 ACTION SUBMITTALS**

- A. Product Data: For the following:
  - 1. Substrate primers.
  - 2. Bonding agent.
  - 3. Metal lath.
  - 4. Reinforcing fabric.
  - 5. Reinforcing mesh.
  - 6. Sealer.
  - 7. Topcoat.

- 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. Medium-density sprayed fire-resistive material.
  - 2. High-density sprayed fire-resistive material.
- C. Sustainable Design Submittals:
  - 1. Product Data: For paints and coatings, indicating VOC content.
- D. Shop Drawings: Framing plans or schedules, or both, indicating the following:
  - 1. Extent of fire protection for each construction and fire-resistance rating.
  - 2. Applicable fire-resistance design designations of a qualified testing and inspecting agency acceptable to authorities having jurisdiction.
  - 3. Minimum sprayed fire-resistive material thicknesses needed to achieve required fire-resistance rating of each structural component and assembly.
  - 4. Treatment of sprayed fire-resistive material after application.
- E. Samples: For each exposed product and for each color and texture specified, not less than 3 inches square in size.

#### 1.7 INFORMATIONAL SUBMITTALS

- A. Compatibility Certificates: From SFRM manufacturer, certifying compatibility of SFRM and topcoats.
- B. Product Certificates: For each type of sprayed fire-resistive material.
- C. Preconstruction Test Reports: For fire protection.
- D. Field quality-control reports.

#### 1.8 QUALITY ASSURANCE

- A. Installer Qualifications: A firm or individual certified, licensed, or otherwise qualified by sprayed fire-resistive material manufacturer as experienced and with sufficient trained staff to install manufacturer's products according to specified requirements.

#### 1.9 PRECONSTRUCTION TESTING

- A. Preconstruction Testing Service: Engage a qualified testing agency to perform preconstruction testing for fire protection.
- B. Preconstruction Adhesion and Compatibility Testing: Test for compliance with requirements for specified performance and test methods.
  - 1. Bond Strength: Test for cohesive and adhesive strength according to ASTM E736. Provide bond strength indicated in referenced fire-resistance design, but not less than minimum specified in Part 2.

2. Verify that manufacturer, through its own laboratory testing or field experience, attests that primers or coatings are compatible with sprayed fire-resistive material.
3. For materials failing tests, obtain sprayed fire-resistive material manufacturer's written instructions for corrective measures including the use of specially formulated bonding agents or primers.

#### 1.10 FIELD CONDITIONS

- A. Environmental Limitations: Do not apply fire protection when ambient and substrate temperature is 44 deg F or lower unless temporary protection and heat are provided to maintain temperature at or above this level for 24 hours before, during, and for 72 hours after product application.
- B. Ventilation: Ventilate building spaces during and after application of fire protection until sprayed fire-resistive materials are dried and cured, providing complete air exchanges according to manufacturer's written instructions. Use natural means or, if they are inadequate, forced-air circulation until fire protection dries thoroughly.

### PART 2 - PRODUCTS

#### 2.1 PERFORMANCE REQUIREMENTS

- A. Assemblies: Provide fire protection, including auxiliary materials, according to requirements of each fire-resistance design and manufacturer's written instructions.
- B. Source Limitations: Obtain fire protection and topcoat from single SFRM manufacturer or manufacturer approved by SFRM manufacturer.
- C. Fire-Resistance Design: Indicated on Drawings, tested according to ASTM E119 or UL 263; testing by a qualified testing agency.
  1. Steel members are to be considered unrestrained unless specifically noted otherwise.
- D. Material Compatibility: Materials for use within each system and topcoat shall be compatible with one another and substrates indicated, under conditions of service and application as demonstrated by manufacturer, based on testing and experience.
  1. Verify topcoats comply with required surface-burning characteristics.
    - a. Surface-Burning Characteristics: Comply with ASTM E84; testing by a qualified testing agency.
      - 1) Flame-Spread Index: 25 or less.
      - 2) Smoke-Developed Index: 200 or less.
- E. VOC Content: For field applications, coatings shall comply with VOC content limits of authorities having jurisdiction and the following VOC content limits:

1. Flat Paints and Coatings: 50 g/L.
2. Nonflat Paints and Coatings: 100 g/L.
3. Primers, Sealers, and Undercoaters: 100 g/L.

F. Asbestos: Provide products containing no detectable asbestos.

## 2.2 SPRAYED FIRE-RESISTIVE MATERIALS

A. High-Density, Exposed Sprayed Fire-Resistive Material: Manufacturer's standard, factory-mixed, lightweight, dry formulation, complying with indicated fire-resistance design, and mixed with water at Project site to form a slurry or mortar before conveyance and application.

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.; Monokote Z-146.
  - b. Isolatek International; Fendolite M-II.
2. Application: Apply to surfaces that are exposed to view when the Work is completed, or that are in mechanical rooms and other locations indicated.
3. Bond Strength: Minimum 10000-lbf/sq. ft. cohesive and adhesive strength based on field testing according to ASTM E736.
4. Density: Not less than 40 pcf and as specified in the approved fire-resistance design, according to ASTM E605.
5. Thickness: As required for fire-resistance design indicated, measured according to requirements of fire-resistance design or ASTM E605, whichever is thicker, but not less than 0.375 inch.
6. Surface-Burning Characteristics: Comply with ASTM E84; testing by a qualified testing agency. Identify products with appropriate markings of applicable testing agency.
  - a. Flame-Spread Index: 0.
  - b. Smoke-Developed Index: 0.
7. Compressive Strength: Minimum 500 lbf/sq. in. according to ASTM E761.
8. Corrosion Resistance: No evidence of corrosion according to ASTM E937.
9. Deflection: No cracking, spalling, or delamination according to ASTM E759.
10. Effect of Impact on Bonding: No cracking, spalling, or delamination according to ASTM E760.
11. Air Erosion: Maximum weight loss of 0.000 g/sq. ft. in 24 hours according to ASTM E859.
12. Finish: Spray-textured finish.



13. Topcoat: As specified herein.

## 2.3 AUXILIARY MATERIALS

- A. Provide auxiliary materials that are compatible with sprayed fire-resistive material and substrates and are approved by UL or another testing and inspecting agency acceptable to authorities having jurisdiction for use in fire-resistance designs indicated.
- B. Substrate Primers: Primers approved by sprayed fire-resistive material manufacturer and complying with one or both of the following requirements:
  - 1. Primer and substrate are identical to those tested in required fire-resistance design by UL or another testing and inspecting agency acceptable to authorities having jurisdiction.
  - 2. Primer's bond strength in required fire-resistance design complies with specified bond strength for sprayed fire-resistive material and with requirements in UL's "Fire Resistance Directory" or in the listings of another qualified testing agency acceptable to authorities having jurisdiction, based on a series of bond tests according to ASTM E736.
- C. Bonding Agent: Product approved by sprayed fire-resistive material manufacturer and complying with requirements in UL's "Fire Resistance Directory" or in the listings of another qualified testing agency acceptable to authorities having jurisdiction.
- D. Metal Lath: Expanded metal lath fabricated from material of weight, configuration, and finish required, according to fire-resistance designs indicated and sprayed fire-resistive material manufacturer's written instructions. Include clips, lathing accessories, corner beads, and other anchorage devices required to attach lath to substrates and to receive sprayed fire-resistive material.
- E. Topcoat: Complying with surface-burning characteristics performance requirements; suitable for application over sprayed fire-resistive material; of type recommended in writing by sprayed fire-resistive material manufacturer for each fire-resistance design.
  - 1. Basis-of-Design Product: Subject to compliance with requirements, provide Sherwin-Williams Company (The); ProMar 200 Zero VOC Interior Latex Eg-Shel B20-2600 Series, or comparable product.
    - a. 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 substrates and other conditions affecting performance of the Work and according to each fire-resistance design.

1. Verify that substrates are free of dirt, oil, grease, release agents, rolling compounds, mill scale, loose scale, incompatible primers, paints, and encapsulants, or other foreign substances capable of impairing bond of fire protection with substrates under conditions of normal use or fire exposure.
  2. Verify that objects penetrating fire protection, including clips, hangers, support sleeves, and similar items, are securely attached to substrates.
  3. Verify that substrates receiving fire protection are not obstructed by ducts, piping, equipment, or other suspended construction that will interfere with fire protection application.
- B. Verify that concrete work on steel deck is complete before beginning Work.
- C. Verify that roof construction, installation of rooftop HVAC equipment, and other related work are complete before beginning Work.
- D. Conduct tests according to sprayed fire-resistive material manufacturer's written instructions to verify that substrates are free of substances capable of interfering with bond.
- E. Proceed with installation only after unsatisfactory conditions have been corrected.
- F. Beginning application constitutes Contractor's acceptance of substrates and conditions.

### 3.2 PREPARATION

- A. Cover other work subject to damage from fallout or overspray of fire protection materials during application.
- B. Clean substrates of substances that could impair bond of fire protection.
- C. Prime substrates where included in fire-resistance design and where recommended in writing by sprayed fire-resistive material manufacturer unless compatible shop primer has been applied and is in satisfactory condition to receive fire protection.
- D. For applications visible on completion of Project, repair substrates to remove surface imperfections that could affect uniformity of texture and thickness in finished surface of fire protection. Remove minor projections and fill voids that would telegraph through fire-resistive products after application.

### 3.3 APPLICATION

- A. Construct fire protection assemblies that are identical to fire-resistance design indicated and products as specified, tested, and substantiated by test reports; for thickness, primers, sealers, topcoats, finishing, and other materials and procedures affecting fire protection Work.

- B. Comply with sprayed fire-resistive material manufacturer's written instructions for mixing materials, application procedures, and types of equipment used to mix, convey, and apply fire protection; as applicable to particular conditions of installation and as required to achieve fire-resistance ratings indicated.
- C. Coordinate application of fire protection with other construction to minimize need to cut or remove fire protection.
  - 1. Do not begin applying fire protection until clips, hangers, supports, sleeves, and other items penetrating fire protection are in place.
  - 2. Defer installing ducts, piping, and other items that would interfere with applying fire protection until application of fire protection is completed.
- D. Metal Decks:
  - 1. Do not apply fire protection to underside of metal deck substrates until concrete topping, if any, is completed.
  - 2. Do not apply fire protection to underside of metal roof deck until roofing is completed; prohibit roof traffic during application and drying of fire protection.
- E. Install auxiliary materials as required, as detailed, and according to fire-resistance design and sprayed fire-resistive material manufacturer's written instructions for conditions of exposure and intended use. For auxiliary materials, use attachment and anchorage devices of type recommended in writing by sprayed fire-resistive material manufacturer.
- F. Spray apply fire protection to maximum extent possible. After the spraying operation in each area, complete the coverage by trowel application or other placement method recommended in writing by sprayed fire-resistive material manufacturer.
- G. Extend fire protection in full thickness over entire area of each substrate to be protected.
- H. Install body of fire protection in a single course unless otherwise recommended in writing by sprayed fire-resistive material manufacturer.
- I. Where sealers are used, apply products that are tinted to differentiate them from fire protection over which they are applied.
- J. Provide a uniform finish complying with description indicated for each type of fire protection material and matching finish approved for required mockups.
- K. Cure fire protection according to sprayed fire-resistive material manufacturer's written instructions.
- L. Do not install enclosing or concealing construction until after fire protection has been applied, inspected, and tested and corrections have been made to deficient applications.
- M. Finishes: Where indicated, apply fire protection to produce the following finishes:
  - 1. Spray-Textured Finish: Finish left as spray applied with no further treatment.
- N. Apply topcoats according to manufacturer's written instructions.

### 3.4 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. Perform the tests and inspections of completed Work in successive stages. Do not proceed with application of fire protection for the next area until test results for previously completed applications of fire protection show compliance with requirements. Tested values must equal or exceed values as specified and as indicated and required for approved fire-resistance design.
- C. Fire protection will be considered defective if it does not pass tests and inspections.
  - 1. Remove and replace fire protection that does not pass tests and inspections, and retest.
  - 2. Apply additional fire protection, per manufacturer's written instructions, where test results indicate insufficient thickness, and retest.
- D. Prepare test and inspection reports.

### 3.5 CLEANING

- A. Cleaning: Immediately after completing spraying operations in each containable area of Project, remove material overspray and fallout from surfaces of other construction and clean exposed surfaces to remove evidence of soiling.

### 3.6 PROTECTION

- A. Protect fire protection, according to advice of manufacturer and Installer, from damage resulting from construction operations or other causes, so fire protection is without damage or deterioration at time of Substantial Completion.

### 3.7 RESTORATION

- A. As installation of other construction proceeds, inspect fire protection and restore damaged areas and fire protection removed due to work of other trades.
- B. Restore fire protection damaged by other work before concealing it with other construction.
- C. Restore fire protection by reapplying it using same method as original installation or using manufacturer's recommended trowel-applied product.

END OF SECTION 07 81 00

## **SECTION 07 81 23 - INTUMESCENT FIRE PROTECTION**

### **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. Intumescent fire-resistive materials (IFRM).

#### **1.3 COORDINATION**

- A. Comply with IFRM and topcoat manufacturers' written recommendations to ensure IFRM and topcoat are compatible with one another.

#### **1.4 PREINSTALLATION MEETINGS**

- A. Preinstallation Conference: Conduct conference at Project site.
  - 1. Review products, design ratings, restrained and unrestrained conditions, thicknesses, and other performance requirements.

#### **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 the following:
  - 1. Substrate primers.
  - 2. Topcoat.
- 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. Intumescent fire-resistive materials.

C. Sustainable Design Submittals:

1. Product Data: For paints and coatings, indicating VOC content.

D. Samples: For each exposed product and for each color and texture specified, not less than 3 inches square in size.

1.7 INFORMATIONAL SUBMITTALS

A. Compatibility Certificates: From IFRM manufacturer, certifying compatibility of IFRM and topcoats.

B. Product Certificates: For each type of intumescent fire-resistive material.

C. Field quality-control reports.

1.8 QUALITY ASSURANCE

A. Installer Qualifications: A firm or individual certified, licensed, or otherwise qualified by intumescent fire-resistive material manufacturer as experienced and with sufficient trained staff to install manufacturer's products according to specified requirements.

1.9 FIELD CONDITIONS

A. Environmental Limitations: Do not apply fire protection when ambient and substrate temperature is 50 deg F or lower unless temporary protection and heat are provided to maintain temperature at or above this level for 24 hours before, during, and for 24 hours after product application.

B. Ventilation: Ventilate building spaces during and after application of fire protection until intumescent fire-resistive materials are dried and cured, providing complete air exchanges according to manufacturer's written instructions. Use natural means or, if they are inadequate, forced-air circulation until fire protection dries thoroughly.

PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

A. Assemblies: Provide fire protection, including auxiliary materials, according to requirements of each fire-resistance design and manufacturer's written instructions.

B. Source Limitations: Obtain fire protection and topcoat from single IFRM manufacturer or manufacturer approved by IFRM manufacturer.

C. Fire-Resistance Design: Indicated on Drawings, tested according to ASTM E119 or UL 263; testing by a qualified testing agency. Identify products with appropriate markings of applicable testing agency.

1. Steel members are to be considered unrestrained unless specifically noted otherwise.

- D. Material Compatibility: Materials for use within each system and topcoat shall be compatible with one another and substrates indicated, under conditions of service and application as demonstrated by manufacturer, based on testing and experience.
  - 1. Verify topcoats comply with required surface-burning characteristics.
    - a. Surface-Burning Characteristics: Comply with ASTM E84; testing by a qualified testing agency.
      - 1) Flame-Spread Index: 25 or less.
      - 2) Smoke-Developed Index: 200 or less.
- E. VOC Content: For field applications, coatings shall comply with VOC content limits of authorities having jurisdiction and the following VOC content limits:
  - 1. Flat Paints and Coatings: 50 g/L.
  - 2. Nonflat Paints and Coatings: 100 g/L.
  - 3. Primers, Sealers, and Undercoaters: 100 g/L.
- F. Asbestos: Provide products containing no detectable asbestos.

## 2.2 INTUMESCENT FIRE-RESISTIVE MATERIALS

- A. Intumescent Fire-Resistive Material: Manufacturer's standard, factory-mixed formulation or factory-mixed, multicomponent system consisting of intumescent base coat and topcoat, and complying with indicated fire-resistance design.
  - 1. Basis-of-Design Product: Subject to compliance with requirements, provide Sherwin-Williams Company (The); Firetex FX5120, or comparable product, including, but not limited to, products by:
    - a. Carboline Company.
    - b. Isolatek International.
  - 2. Application: Designated for "interior general purpose" use by a qualified testing agency acceptable to authorities having jurisdiction.
  - 3. Thickness: As required for fire-resistance design indicated, measured according to requirements of fire-resistance design.
  - 4. Surface-Burning Characteristics: Comply with ASTM E84; 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: 50 or less.
  - 5. Hardness: Not less than 60, Type D durometer, according to ASTM D2240.
  - 6. Bond Strength: Not less than 485 psi, according to ASTM D4541.
  - 7. Finish: Rolled, spray-textured finish.

8. Topcoat: As specified herein.

## 2.3 AUXILIARY MATERIALS

- A. Provide auxiliary materials that are compatible with intumescent fire-resistive material and substrates and are approved by UL or another testing and inspecting agency acceptable to authorities having jurisdiction for use in fire-resistance designs indicated.
- B. Substrate Primers: Primers approved by intumescent fire-resistive material manufacturer and complying with required fire-resistance design by UL or another testing and inspecting agency acceptable to authorities having jurisdiction.
- C. Topcoat: Complying with surface-burning characteristics performance requirements; suitable for application over intumescent fire-resistive material; of type recommended in writing by intumescent fire-resistive material manufacturer for each fire-resistance design.
  1. Basis-of-Design Product: Subject to compliance with requirements, provide Sherwin-Williams Company (The); ProMar 200 Zero VOC Interior Latex Eg-Shel B20-2600 Series, or comparable product.
    - a. 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 substrates and other conditions affecting performance of the Work and according to each fire-resistance design.
  1. Verify that substrates are free of dirt, oil, grease, release agents, rolling compounds, mill scale, loose scale, incompatible primers, paints, and encapsulants, or other foreign substances capable of impairing bond of fire protection with substrates under conditions of normal use or fire exposure.
  2. Verify that objects penetrating fire protection, including clips, hangers, support sleeves, and similar items, are securely attached to substrates.
  3. Verify that substrates receiving fire protection are not obstructed by ducts, piping, equipment, or other suspended construction that will interfere with fire protection application.
- B. Conduct tests according to intumescent fire-resistive material manufacturer's written instructions to verify that substrates are free of substances capable of interfering with bond.
- C. Proceed with installation only after unsatisfactory conditions have been corrected.
- D. Beginning application constitutes Contractor's acceptance of substrates and conditions.



### 3.2 PREPARATION

- A. Cover other work subject to damage from fallout or overspray of fire protection materials during application.
- B. Clean substrates of substances that could impair bond of fire protection.
- C. Prime substrates where included in fire-resistance design and where recommended in writing by intumescent fire-resistive material manufacturer unless compatible shop primer has been applied and is in satisfactory condition to receive fire protection.
- D. For applications visible on completion of Project, repair substrates to remove surface imperfections that could affect uniformity of texture and thickness in finished surface of fire protection. Remove minor projections and fill voids that would telegraph through fire-resistive products after application.

### 3.3 APPLICATION

- A. Construct fire protection assemblies that are identical to fire-resistance design indicated and products as specified, tested, and substantiated by test reports; for thickness, primers, topcoats, finishing, and other materials and procedures affecting fire protection Work.
- B. Comply with intumescent fire-resistive material manufacturer's written instructions for mixing materials, application procedures, and types of equipment used to mix, convey, and apply fire protection; as applicable to particular conditions of installation and as required to achieve fire-resistance ratings indicated.
- C. Coordinate application of fire protection with other construction to minimize need to cut or remove fire protection.
  - 1. Do not begin applying fire protection until clips, hangers, supports, sleeves, and other items penetrating fire protection are in place.
  - 2. Defer installing ducts, piping, and other items that would interfere with applying fire protection until application of fire protection is completed.
- D. Install auxiliary materials as required, as detailed, and according to fire-resistance design and intumescent fire-resistive material manufacturer's written instructions for conditions of exposure and intended use. For auxiliary materials, use attachment and anchorage devices of type recommended in writing by intumescent fire-resistive material manufacturer.
- E. Spray apply fire protection to maximum extent possible. After the spraying operation in each area, complete the coverage by trowel application or other placement method recommended in writing by intumescent fire-resistive material manufacturer.
- F. Extend fire protection in full thickness over entire area of each substrate to be protected.
- G. Install body of fire protection in a single course unless otherwise recommended in writing by intumescent fire-resistive material manufacturer.

- H. Provide a uniform finish complying with description indicated for each type of fire protection material and matching finish approved for required mockups.
- I. Cure fire protection according to intumescent fire-resistive material manufacturer's written instructions.
- J. Do not install enclosing or concealing construction until after fire protection has been applied, inspected, and tested and corrections have been made to deficient applications.
- K. Finishes: Where indicated, apply fire protection to produce the following finishes:
  - 1. Rolled, Spray-Textured Finish: Even finish produced by rolling spray-applied finish with a damp paint roller to remove drippings and excessive roughness.
- L. Apply topcoats according to manufacturer's written instructions.

### 3.4 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. Perform the tests and inspections of completed Work in successive stages. Do not proceed with application of fire protection for the next area until test results for previously completed applications of fire protection show compliance with requirements. Tested values must equal or exceed values as specified and as indicated and required for approved fire-resistance design.
- C. Fire protection will be considered defective if it does not pass tests and inspections.
  - 1. Remove and replace fire protection that does not pass tests and inspections, and retest.
  - 2. Apply additional fire protection, per manufacturer's written instructions, where test results indicate insufficient thickness, and retest.
- D. Prepare test and inspection reports.

### 3.5 CLEANING

- A. Cleaning: Immediately after completing spraying operations in each containable area of Project, remove material overspray and fallout from surfaces of other construction and clean exposed surfaces to remove evidence of soiling.

### 3.6 PROTECTION

- A. Protect fire protection, according to advice of manufacturer and Installer, from damage resulting from construction operations or other causes, so fire protection is without damage or deterioration at time of Substantial Completion.

### 3.7 RESTORATION

- A. As installation of other construction proceeds, inspect fire protection and restore damaged areas and fire protection removed due to work of other trades.
- B. Restore fire protection damaged by other work before concealing it with other construction.
- C. Restore fire protection by reapplying it using same method as original installation or using manufacturer's recommended trowel-applied product.

END OF SECTION 07 81 23

## **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 horizontal assemblies.
  - 3. Penetrations in smoke barriers.

#### **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. Penetrations in fire-resistance-rated walls.
  - 2. Penetrations in horizontal assemblies.
  - 3. Penetrations in smoke barriers.
- B. Product Schedule: For each penetration firestopping system. Include type of penetration, illustration of firestopping system, and design designation of qualified testing and inspecting agency.

#### **1.5 CLOSEOUT SUBMITTALS**

- A. Installer Certificates: From Installer indicating that penetration firestopping systems have been installed in compliance with requirements and manufacturer's written instructions.

#### **1.6 QUALITY ASSURANCE**

- A. Installer Qualifications: A firm that has been approved by FM 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."

## 1.7 PROJECT CONDITIONS

- A. Environmental Limitations: Do not install penetration firestopping system when ambient or substrate temperatures are outside limits permitted by penetration firestopping system manufacturers or when substrates are wet because of rain, frost, condensation, or other causes.
- B. Install and cure penetration firestopping materials per manufacturer's written instructions using natural means of ventilations or, where this is inadequate, forced-air circulation.

## 1.8 COORDINATION

- A. Coordinate construction of openings and penetrating items to ensure that penetration firestopping systems can be installed 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 Horizontal Assemblies: Penetration firestopping systems with ratings determined per ASTM E814 or UL 1479.
  1. F-Rating: At least one hour, but not less than the fire-resistance rating of the floor penetrated.
  2. T-Rating: At least one hour, but not less than the fire-resistance rating of the floor. The following floor penetrations do not require a T-rating:
    - a. Those within the cavity of a wall.
    - b. Floor, tub, or shower drains within a concealed space.
    - c. 4-inch or smaller metal conduit penetrating directly into metal-enclosed electrical switchgear.
- D. 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.
- E. Exposed Penetration Firestopping Systems: Flame-spread and smoke-developed indexes of less than 25 and 450, respectively, per ASTM E84.
- F. 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 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.

### 3.6 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 floor and wall system below that complies with this Section and is suitable for the penetration conditions indicated for the Project.

| FLOOR<br>Firestopping Systems Listed Using the Alpha-Alpha-Numeric Identification System Published in<br>UL's <i>Fire Resistance Directory</i> , Vols. 2a - 2b |   |   |               |   |
|--|---|---|---------------|---|
| TYPE OF<br>PENETRANT   | FLOOR PENETRATION SYSTEMS<br>(First Alpha Component = C or F)   |   |               |   |
|  | Concrete Floors with<br>a Minimum Thick-<br>ness<br><br>Less Than or Equal<br>to 5 Inches (127<br>MM) | Concrete Floors with<br>a Minimum Thick-<br>ness OF MORE<br>Than 5 Inches (127<br>MM) | Framed Floors | Floor-ceiling assem-<br>blies consisting of<br>concrete with mem-<br>brane protection |
| NO PENETRATING<br>ITEMS  | C-AJ-0001-0999<br>or<br>F-A-0001-0999   | C-BJ-0001-0999<br>or<br>F-B-0001-0999   | F-C-1001-1999 |   |
| METALLIC PIPE,<br>CONDUIT, OR<br>TUBING  | C-AJ-1001-1999<br>or<br>F-A-1001-1999   | C-BJ-1001-1999,<br>C-BK-1001-1999,<br>or<br>F-B-1001-1999                             | F-C-1001-1999 | F-E-1001-1999   |
| NONMETALLIC<br>PIPE, CONDUIT,<br>OR TUBING   | C-AJ-2001-2999<br>or<br>F-A-2001-2999   | C-BJ-2001-2999,<br>C-BK-2001-2999,<br>or<br>F-B-2001-2999                             | F-C-2001-2999 | F-E-2001-2999   |
| ELECTRICAL<br>CABLES   | C-AJ-3001-3999<br>or<br>F-A-3001-3999   | C-BJ-3001-3999,<br>C-BK-3001-3999,<br>or<br>F-B-3001-3999                             | F-C-3001-3999 | F-E-3001-3999   |
| CABLE TRAYS<br>WITH ELECTRICAL<br>CABLES   | C-AJ-4001-4999<br>or<br>F-A-4001-4999   | C-BJ-4001-4999<br>or<br>F-B-4001-4999   |               |   |
| INSULATED PIPES  | C-AJ-5001-5999  | C-BJ-5001-5999,   | F-C-5001-5999 | F-E-5001-5999   |

| FLOOR<br>Firestopping Systems Listed Using the Alpha-Alpha-Numeric Identification System Published in<br>UL's <i>Fire Resistance Directory</i> , Vols. 2a - 2b |   |   |               |   |
|--|---|---|---------------|---|
| TYPE OF<br>PENETRANT   | FLOOR PENETRATION SYSTEMS<br>(First Alpha Component = C or F)   |   |               |   |
|  | Concrete Floors with<br>a Minimum Thick-<br>ness<br><br>Less Than or Equal<br>to 5 Inches (127<br>MM) | Concrete Floors with<br>a Minimum Thick-<br>ness OF MORE<br>Than 5 Inches (127<br>MM) | Framed Floors | Floor-ceiling assem-<br>blies consisting of<br>concrete with mem-<br>brane protection |
|  | or<br><br>F-A-5001-5999   | C-BK-5001-5999,<br><br>or<br><br>F-B-5001-5999  |               |   |
| MISCELLANEOUS<br>ELECTRICAL<br>PENETRANTS  | C-AJ-6001-6999<br><br>or<br><br>F-A-6001-6999   | C-BJ-6001-6999  |               |   |
| MISCELLANEOUS<br>MECHANICAL<br>PENETRANTS  | C-AJ-7001-7999<br><br>or<br><br>F-A-7001-7999   | C-BJ-7001-7999<br><br>or<br><br>F-B-7001-7999   | F-C-7001-7999 | F-E-7001-7999   |
| GROUPINGS OF<br>PENETRATIONS   | C-AJ-8001-8999<br><br>or<br><br>F-A-8001-8999   | C-BJ-8001-8999<br><br>or<br><br>F-B-8001-8999   | F-C-8001-8999 | F-E-8001-8999   |

| WALL<br>Firestopping Systems Listed Using the Alpha-Alpha-Numeric Identification System Published in<br>UL's <i>Fire Resistance Directory</i> , Vols. 2a - 2b |  |   |                |                          |
|---|--|---|----------------|--------------------------|
| TYPE OF<br>PENETRANT  | Wall PENETRATION SYSTEMS<br>(First Alpha Component = C or W)   |   |                |                          |
|   | Concrete or Masonry<br>Walls with a Mini-<br>mum Thickness Less<br>Than or Equal to 8<br>Inches (203 MM) | Concrete or Masonry<br>Walls with a Mini-<br>mum Thickness OF<br>MORE Than 8 Inch-<br>es (203 MM) | Framed Walls   | Composite panel<br>walls |
| NO PENETRATING<br>ITEMS   | C-AJ-0001-0999,<br>C-BJ-0001-0999,<br>or<br>W-J-0001-0999  |   | W-L-000-1-0999 |                          |
| METALLIC PIPE,<br>CONDUIT, OR<br>TUBING   | C-AJ-1001-1999,<br>C-BJ-1001-1999,<br>or<br>W-J-1001-1999  | C-BK-1001-1999<br>or<br>W-K-1001-1999   | W-L-1001-1999  | W-N-1001-1999            |
| NONMETALLIC<br>PIPE, CONDUIT,<br>OR TUBING  | C-AJ-2001-2999,<br>C-BJ-2001-2999,<br>or<br>W-J-2001-2999  | C-BK-2001-2999<br>or<br>W-K-2001-2999   | W-L-2001-2999  | W-N-2001-2999            |
| ELECTRICAL<br>CABLES  | C-AJ-3001-3999,<br>C-BJ-3001-3999,<br>or<br>W-J-3001-3999  | C-BK-3001-3999<br>or<br>WK-3001-3999  | W-L-3001-3999  |                          |
| CABLE TRAYS<br>WITH ELECTRICAL<br>CABLES  | C-AJ-4001-4999,<br>C-BJ-4001-4999,<br>or<br>W-J-4001-4999  | W-K-4001-4999   | W-L-4001-4999  |                          |

| WALL<br>Firestopping Systems Listed Using the Alpha-Alpha-Numeric Identification System Published in<br>UL's <i>Fire Resistance Directory</i> , Vols. 2a - 2b |  |   |               |                          |
|---|--|---|---------------|--------------------------|
| TYPE OF<br>PENETRANT  | Wall PENETRATION SYSTEMS<br>(First Alpha Component = C or W)   |   |               |                          |
|   | Concrete or Masonry<br>Walls with a Mini-<br>mum Thickness Less<br>Than or Equal to 8<br>Inches (203 MM) | Concrete or Masonry<br>Walls with a Mini-<br>mum Thickness OF<br>MORE Than 8 Inch-<br>es (203 MM) | Framed Walls  | Composite panel<br>walls |
| INSULATED PIPES   | C-AJ-5001-5999,<br>C-BJ-5001-5999,<br>or<br>W-J-5001-5999  | C-BK-5001-5999  | W-L-5001-5999 | W-N-5001-5999            |
| MISCELLANEOUS<br>ELECTRICAL<br>PENETRANTS   | C-AJ-6001-6999,<br>C-BJ-6001-6999,<br>or<br>W-BJ-6001-6999   |   | W-L-6001-6999 |                          |
| MISCELLANEOUS<br>MECHANICAL<br>PENETRANTS   | C-AJ-7001-7999,<br>C-BJ-7001-7999,<br>or<br>W-J-7001-7999  |   | W-L-7001-7999 | W-N-7001-7999            |
| GROUPINGS OF<br>PENETRATIONS  | C-AJ-8001-8999,<br>C-BJ-8001-8999,<br>or<br>W-J-8001-8999  |   | W-L-8001-8999 |                          |

END OF SECTION 07 84 13

## **SECTION 07 84 43 - JOINT 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. Joints in or between fire-resistance-rated constructions.
  - 2. Joints 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. Joints in or between fire-resistance-rated constructions.
  - 2. Joints in smoke barriers.
- B. Product Schedule: For each joint firestopping system. Include location, illustration of firestopping system, and design designation of qualified testing agency.

#### **1.6 CLOSEOUT SUBMITTALS**

- A. Installer Certificates: From Installer indicating that joint firestopping systems have been installed in compliance with requirements and manufacturer's written instructions.

## 1.7 QUALITY ASSURANCE

- A. Installer Qualifications: A firm that has been approved by FM Approvals according to FM Approvals 4991, "Approval of Firestop Contractors," or been evaluated by UL and found to comply with UL's "Qualified Firestop Contractor Program Requirements."

## 1.8 PROJECT CONDITIONS

- A. Environmental Limitations: Do not install joint firestopping systems when ambient or substrate temperatures are outside limits permitted by joint firestopping system manufacturers or when substrates are wet due to rain, frost, condensation, or other causes.
- B. Install and cure joint firestopping systems per manufacturer's written instructions using natural means of ventilation or, where this is inadequate, forced-air circulation.

## 1.9 COORDINATION

- A. Coordinate construction of joints to ensure that joint firestopping systems can be installed according to specified firestopping system design.
- B. Coordinate sizing of joints to accommodate joint 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 joint firestopping system tests by a qualified testing agency acceptable to authorities having jurisdiction.
  - 2. Test per testing standards referenced in "Joint Firestopping Systems" Article. Provide rated systems complying with the following requirements:
    - a. Joint 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."
- B. Rain/Water Resistance: For perimeter fire-barrier system applications, where inclement weather or greater-than-transient water exposure is expected, use products that dry rapidly and cure in the presence of atmospheric moisture sufficient to pass ASTM D6904 early rain-resistance test (24-hour exposure).



## 2.3 JOINT FIRESTOPPING SYSTEMS

- A. Joint Firestopping Systems: Systems that resist spread of fire, passage of smoke and other gases, and maintain original fire-resistance rating of assemblies in or between which joint firestopping systems are installed. Joint firestopping systems must accommodate building movements without impairing their ability to resist the passage of fire and hot gases.
  - 1. Joint firestopping systems that are compatible with one another, with the substrates forming openings, and with penetrating items, if any.
  - 2. Provide products that, upon curing, do not re-emulsify, dissolve, leach, breakdown, or otherwise deteriorate over time from exposure to atmospheric moisture, sweating pipes, ponding water or other forms of moisture.
  - 3. Provide firestop products that do not contain ethylene glycol.
  - 4. 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. Intumescent Gypsum Wall Framing Gaskets (Applied to Steel Tracks, Runners and Studs prior to Framing Installation): Provide products with fire, smoke, and acoustical ratings that allow movement up to 100 percent compression and/or extension in accordance with UL 2079 or ASTM E1966; have an L Rating less than 1 cfm/ft. in accordance with UL 2079; and a minimum Sound Transmission Class (STC) rating of 56 in accordance with ASTM E90 or ASTM C919.
- C. Joints in or between Fire-Resistance-Rated Construction: Provide joint firestopping systems with ratings determined per ASTM E1966 or UL 2079.
  - 1. Fire-Resistance Rating: Equal to or exceeding the fire-resistance rating of the wall, floor, or roof in or between which it is installed.
- D. Joints in Smoke Barriers: Provide joint firestopping systems with ratings determined per UL 2079 based on testing at a positive pressure differential of 0.30-inch wg.
  - 1. L-Rating: Not exceeding 5.0 cfm/ft. of joint at both ambient and elevated temperatures.
- E. Exposed Joint Firestopping Systems: Flame-spread and smoke-developed indexes of less than 25 and 450, respectively, as determined per ASTM E84.

## 2.4 ACCESSORIES

- A. Provide components of joint firestopping systems, including primers and forming materials, that are needed to install elastomeric fill materials and to maintain ratings required. Use only components specified by joint firestopping system manufacturer and approved by the qualified testing agency for conditions indicated.

## PART 3 - EXECUTION

### 3.1 EXAMINATION

- A. Examine substrates and conditions, with Installer present, for compliance with requirements for joint configurations, substrates, and other conditions affecting performance of the Work.
- B. Proceed with installation only after unsatisfactory conditions have been corrected.
- C. Beginning installation constitutes Contractor's acceptance of substrates and conditions.

### 3.2 PREPARATION

- A. Surface Cleaning: Before installing joint firestopping systems, clean joints immediately to comply with fire-resistive joint system manufacturer's written instructions and the following requirements:
  - 1. Remove from surfaces of joint substrates foreign materials that could interfere with adhesion of elastomeric fill materials or compromise fire-resistive rating.
  - 2. Clean joint substrates to produce clean, sound surfaces capable of developing optimum bond with elastomeric fill materials. Remove loose particles remaining from cleaning operation.
  - 3. Remove laitance and form-release agents from concrete.
- B. Prime substrates where recommended in writing by joint firestopping system manufacturer using that manufacturer's recommended products and methods. Confine primers to areas of bond; do not allow spillage and migration onto exposed surfaces.
- C. Apply a suitable bond-breaker to prevent three-sided adhesion in applications where this condition occurs, such as the intersection of a gypsum wall to floor or roof assembly where the joint is backed by a steel ceiling runner or track.

### 3.3 INSTALLATION

- A. General: Install joint firestopping systems to comply with manufacturer's written installation instructions and published drawings for products and applications indicated.

- B. Install forming materials and other accessories of types required to support elastomeric fill materials during their application and in position needed to produce cross-sectional shapes and depths required to achieve fire ratings indicated.
  - 1. After installing elastomeric fill materials and allowing them to fully cure, remove combustible forming materials and other accessories not indicated as permanent components of fire-resistive joint system.
- C. Install elastomeric fill materials for joint firestopping systems by proven techniques to produce the following results:
  - 1. Elastomeric fill voids and cavities formed by joints and forming materials as required to achieve fire-resistance ratings indicated.
  - 2. Apply elastomeric fill materials so they contact and adhere to substrates formed by joints.
  - 3. For elastomeric fill materials that will remain exposed after completing the Work, finish to produce smooth, uniform surfaces that are flush with adjoining finishes.

### 3.4 IDENTIFICATION

- A. Wall Identification: Permanently label walls containing 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 ft. from end of wall and at intervals not exceeding 30 ft.
- B. Joint Identification: Identify joint firestopping systems with legible metal or plastic labels. Attach labels permanently to surfaces adjacent to and within 6 inches of joint edge so labels are visible to anyone seeking to remove or joint firestopping system. 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 - Joint Firestopping - Do Not Disturb. Notify Building Management of Any Damage."
  - 2. Contractor's name, address, and phone number.
  - 3. Designation of applicable testing agency.
  - 4. Date of installation.
  - 5. Manufacturer's name.
  - 6. Installer's name.

### 3.5 FIELD QUALITY CONTROL

- A. Where deficiencies are found or joint firestopping systems are damaged or removed due to testing, repair or replace joint firestopping systems so they comply with requirements.
- B. Proceed with enclosing joint 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 elastomeric fill materials adjacent to joints as the Work progresses by methods and with cleaning materials that are approved in writing by joint firestopping system manufacturers and that do not damage materials in which joints occur.
- B. Provide final protection and maintain conditions during and after installation that ensure joint firestopping systems are without damage or deterioration at time of Substantial Completion. If damage or deterioration occurs despite such protection, cut out and remove damaged or deteriorated joint firestopping systems immediately and install new materials to produce joint firestopping systems complying with specified requirements.

### 3.7 JOINT FIRESTOPPING SYSTEM SCHEDULE

- A. Where UL-classified systems are indicated, they refer to system numbers in UL's online directory "Product iQ" under product Category XHBN.
- B. Floor-to-Floor, Joint Firestopping Systems:
  - 1. UL-Classified Systems:
    - a. FF-D- 0000-0999.
- C. Wall-to-Wall, Joint Firestopping Systems:
  - 1. UL-Classified Systems:
    - a. WW-D- 0000-0999.
- D. Floor-to-Wall, Joint Firestopping Systems:
  - 1. UL-Classified Systems:
    - a. FW-D- 0000-0999.
- E. Head-of-Wall, Fire-Resistive Joint Firestopping Systems:
  - 1. UL-Classified Systems:
    - a. HW-D- 0000-0999.

END OF SECTION 07 84 43

## **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.
  - 6. Preformed joint seals.

#### 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 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.
  - 6. Preformed joint seals.
- C. Samples for Initial Selection: Manufacturer's color charts showing the full range of colors available for each product exposed to view.

## 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) Control and expansion joints in unit masonry.
- 2) Joints in exterior insulation and finish systems.
- 3) Joints between different materials listed above.
- 4) Perimeter joints between materials listed above and frames of exterior openings.
- 5) 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, 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) Isolation and contraction joints in cast-in-place concrete slabs.
  - b. Interior Joint Locations:
    - 1) Isolation joints in cast-in-place concrete slabs.

## 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 concrete 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 PREFORMED JOINT SEALS

- A. Preformed Joint Seals: Manufacturer's standard pre-compressed, elastomeric-coated foam preformed joint seal, for non-invasive installation in joint of nominal joint width as indicated on Drawings, with plus 50 percent and minus 50 percent movement capability.
  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. EMSEAL Joint Systems, Ltd; Seismic Colorseal.



- b. Nystrom, Inc.; Seismic Compression Seal.
  - c. Watson Bowman Acme Corp.; a BASF affiliate; WaboSeismicWeatherSeal.
- 2. Joint-Seal Application: Exterior joints in vertical surfaces.
  - a. Joint Locations:
    - 1) Where indicated.

## 2.8 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.

## 2.9 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 INSTALLATION OF PREFORMED JOINT SEALS

- A. General: Comply with preformed joint seal manufacturer's written installation instructions for products and applications indicated unless more stringent requirements apply.
- B. Installation of Preformed Joint Seals:
  - 1. Install each length of seal immediately after removing protective wrapping.
  - 2. Firmly secure compressed joint seals to joint gap side to obtain full bond as recommended by manufacturer.
  - 3. Do not pull or stretch material. Produce seal continuity at splices, ends, turns, and intersections of joints.

4. For applications at low ambient temperatures, heat foam joint seal material in compliance with manufacturer's written instructions.

### 3.6 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.

### 3.7 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 07 95 13.13 - INTERIOR EXPANSION JOINT COVER 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 interior expansion joint cover assemblies.

#### **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. Include construction details, material descriptions, dimensions of individual components and profiles, accessories, and finishes for expansion joint cover assemblies.
- 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. Elastomeric-seal acoustical ceiling joint covers.

### **PART 2 - PRODUCTS**

#### **2.1 ASSEMBLY DESCRIPTION**

- A. Furnish units in longest practicable lengths to minimize field splicing.
- B. Include factory-fabricated closure materials and transition pieces, T-joints, corners, curbs, cross-connections, and other accessories as required to provide continuous expansion joint cover assemblies.
- C. Source Limitation: Obtain expansion control systems from single source from single manufacturer.

## 2.2 CEILING EXPANSION JOINT COVERS

- A. Elastomeric-Seal Acoustical Ceiling Joint Cover: Elastomeric-seal assembly designed for use in acoustical ceilings.

1. Ceiling-to-Wall Type EJ 1:

- a. Products: Subject to compliance with requirements, available products that may be incorporated in the Work include, but are not limited to:
  - 1) Balco; a CSW Industrials Company; Face Seal System, ACL-1.
  - 2) Construction Specialties, Inc.; Flush Thinline HCW-100.
- b. Nominal Joint Width: One inch.
- c. Exposed Metal:
  - 1) Aluminum: Mill.
- d. Seal: Preformed elastomeric membranes or extrusions.
  - 1) Color: White

## 2.3 MATERIALS

- A. Aluminum: ASTM B221, Alloy 6063-T5 for extrusions; ASTM B209, Alloy 6061-T6 for sheet and plate.
1. Apply manufacturer's standard protective coating on aluminum surfaces to be placed in contact with cementitious materials.
- B. Elastomeric Seals: Manufacturer's standard preformed elastomeric membranes or extrusions to be installed in metal frames.
- C. Fire Barriers: Any material or material combination, when fire tested after cycling, designated to resist the passage of flame and hot gases through a movement joint and to comply with performance criteria for required fire-resistance rating.
- D. Nonmetallic, Shrinkage-Resistant Grout: ASTM C1107/C1107M, factory-packaged, nonmetallic aggregate grout, noncorrosive, nonstaining, mixed with water to consistency suitable for application and a 30-minute working time.

## 2.4 ALUMINUM FINISHES

- A. Clear Anodic Finish: AAMA 611, AA-M12C22A31, Class II, 0.010 mm or thicker.

## PART 3 - EXECUTION

### 3.1 EXAMINATION

- A. Examine surfaces where expansion joint cover assemblies will be installed for installation tolerances and other conditions affecting performance of the Work.
- B. Notify Architect where discrepancies occur that will affect proper expansion joint cover assembly installation and performance.
- C. Proceed with installation only after unsatisfactory conditions have been corrected.
- D. Beginning installation constitutes Contractor's acceptance of substrates and conditions.

### 3.2 PREPARATION

- A. Prepare substrates according to expansion joint cover assembly manufacturer's written instructions.
- B. Coordinate and furnish anchorages, setting drawings, and instructions for installing expansion joint cover assemblies. Provide fasteners of metal, type, and size to suit type of construction indicated and to provide for secure attachment of expansion joint cover assemblies.

### 3.3 INSTALLATION

- A. Comply with manufacturer's written instructions for storing, handling, and installing expansion joint cover assemblies and materials unless more stringent requirements are indicated.
- B. Metal Frames: Perform cutting, drilling, and fitting required to install expansion joint cover assemblies.
  - 1. Install frames in continuous contact with adjacent surfaces.
    - a. Shimming is not permitted.
  - 2. Install in true alignment and proper relationship to joints and adjoining finished surfaces measured from established lines and levels.
  - 3. Adjust for differences between actual structural gap and nominal design gap due to ambient temperature at time of installation.
  - 4. Cut and fit ends to accommodate thermal expansion and contraction of metal without buckling of frames.
  - 5. Locate anchors at interval recommended by manufacturer, but not less than 3 inches from each end and not more than 24 inches o.c.
- C. Seals: Install elastomeric seals and membranes in frames to comply with manufacturer's written instructions. Install with minimum number of end joints.
  - 1. Provide in continuous lengths for straight sections.

2. Seal transitions. Vulcanize or heat-weld field-spliced joints as recommended by manufacturer.
  3. Installation: Mechanically lock seals into frames or adhere to frames with adhesive or pressure-sensitive tape as recommended by manufacturer.
- D. Install with hairline mitered corners where expansion joint cover assemblies change direction or abut other materials.
- E. Terminate exposed ends of expansion joint cover assemblies with field- or factory-fabricated termination devices.

### 3.4 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. Where deficiencies are found or fire barriers are damaged or removed due to testing, correct or replace installations to comply with requirements.
- C. Proceed with enclosing fire barriers of interior expansion joint cover assemblies only after inspection reports are issued and installations comply with requirements.

### 3.5 PROTECTION

- A. Do not remove protective covering until finish work in adjacent areas is complete. When protective covering is removed, clean exposed metal surfaces to comply with manufacturer's written instructions.
- B. Protect the installation from damage by work of other Sections. Where necessary due to heavy construction traffic, remove and properly store cover plates or seals and install temporary protection over expansion joint cover assemblies. Reinstall cover plates or seals prior to Substantial Completion.

END OF SECTION 07 95 13.13



**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 and informational 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.
  - 4. Louvers.

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.
- B. Source Limitations for Attack-Resistance-Rated Assemblies: Obtain attack-resistance-rated doors and framing from single source from single manufacturer and glazing from single manufacturer acceptable to the attack-resistant-rated door and framing manufacturer.

## 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.
- 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 if shown on Drawings: 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.
  1. Glazing for Interior Attack-Resistance-Rated Assemblies (Non-Fire-Resistance-Rated): Clear laminated-glass security glazing.
    - a. LTI Smart Glass, Inc.; SG5 by School Guard Glass (Glass Type SCL) as specified in Division 08 Section "Glazing."
  2. Glazing for Interior Attack-Resistance-Rated Assemblies (Fire-Resistance-Rated): Fire-resistance-rated laminated-glass security glazing.
    - a. Technical Glass Products; Pilkington Pyrostop laminated to LTI Smart Glass, Inc., SG5 by School Guard Glass (Glass Type SFRL) as specified in Division 08 Section "Glazing."
- H. Corrosion-Resistant Coating: Cold-applied asphalt mastic, compounded for 15-mil dry film thickness per coat. Provide inert-type noncorrosive compound free of asbestos fibers, sulfur components, and other deleterious impurities.

## 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. Grout Guards: Formed from same material as frames, not less than 0.016 inch thick (26-gage). Weld guards to frame at back of hardware mortises in frames to be grouted.
  - 4. 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.
  - 5. Terminated Stops (Hospital Stops): Where indicated, on interior door frames terminate stops 6 inches above finish floor with a 45-degree angle cut, and close open end of stop with steel sheet closure. Cover opening in extension of frame with welded-steel filler plate, with welds ground smooth and flush with frame.
- 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.
  - 3. Attack-Resistance-Rated Door Assemblies: Comply with hollow-metal manufacturer's requirements.
- 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.
  - a. For attack-resistance-rated door assemblies, provide fasteners spaced in accordance with door and glazing manufacturers' written instructions.

## 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.

## 2.9 LOUVERS

- A. Provide louvers for interior doors, where indicated, which comply with SDI 111, with blades or baffles formed of 0.042-inch-thick (18-gage), cold-rolled steel sheet set into 0.042-inch-thick (18-gage) steel frame.
  1. Sightproof Louver: Stationary louvers constructed with inverted-V or inverted-Y blades.
- B. Form corners of moldings with hairline joints. Provide fixed frame moldings on outside of exterior and on secure side of interior doors and frames.

## 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.
    - c. Field apply corrosion-resistant coating to backs of frames that will be filled with grout containing antifreezing agents.
    - d. Install door silencers in frames before grouting.
  - 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. Concrete Walls: Solidly fill space between frames and concrete with mineral-fiber insulation.
  - 6. In-Place Concrete or Masonry Construction: Secure frames in place with postinstalled expansion anchors. Countersink anchors, and fill and make smooth, flush, and invisible on exposed faces.
  - 7. 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.

### 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.
- C. Metallic-Coated Surface Touchup: Clean abraded areas and restore with galvanizing touch-up paint according to manufacturer's written instructions.

END OF SECTION 08 11 13

## **SECTION 08 14 16 - FLUSH WOOD 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. Five-ply flush wood veneer-faced doors for transparent finish.
  - 2. Factory finishing flush wood doors.
  - 3. Factory fitting flush wood doors to frames and factory machining for hardware.

#### **1.3 SUBMITTALS, GENERAL**

- A. General: Submit all action submittals required by this Section and by Division 08 Sections "Door Hardware" and "Glazing" concurrently.

#### **1.4 ACTION SUBMITTALS**

- A. Product Data: For each type of product, including the following:
  - 1. Door core materials and construction.
  - 2. Door edge construction.
  - 3. Door face type and characteristics.
  - 4. Door louvers.
  - 5. Door trim for openings.
  - 6. Factory-finishing specifications.
- B. Shop Drawings: Indicate location, size, and hand of each door; elevation of each type of door; construction details not covered in Product Data; and the following:
  - 1. Door schedule indicating door location, type, size, fire protection rating, and swing.
  - 2. Door elevations, dimension and locations of hardware, light and louver cutouts, and glazing thicknesses.
  - 3. Dimensions and locations of blocking for hardware attachment.
  - 4. Dimensions and locations of mortises and holes for hardware.
  - 5. Clearances and undercuts.
  - 6. Requirements for veneer matching.
  - 7. Doors to be factory finished and application requirements.

C. Samples:

1. Factory finishes applied to actual door face materials, approximately 8 by 10 inches, for each material and finish. For each wood species and transparent finish, provide set of three Samples showing typical range of color and grain to be expected in finished Work.

D. Sample Warranty: For special warranty.

1.5 INFORMATIONAL SUBMITTALS

- A. Field quality-control reports.

1.6 CLOSEOUT SUBMITTALS

- A. Special warranties.
- B. Record Documents: For fire-rated doors, list of door numbers and applicable room name and number to which door accesses.

1.7 DELIVERY, STORAGE, AND HANDLING

- A. Comply with requirements of referenced standard and manufacturer's written instructions.
- B. Package doors individually in plastic bags or cardboard cartons.
- C. Mark each door on bottom rail with opening number used on Shop Drawings.

1.8 FIELD CONDITIONS

- A. Environmental Limitations: Do not deliver or install doors until spaces are enclosed and weathertight, wet-work in spaces is complete and dry, and temperature and relative humidity are maintained at levels designed for building occupants for the remainder of construction period.

1.9 WARRANTY

- A. Special Warranty: Manufacturer agrees to correct or replace doors that fail in materials or workmanship within specified warranty period.

1. Failures include, but are not limited to, the following:
  - a. Delamination of veneer.
  - b. Warping (bow, cup, or twist) more than 1/4 inch in a 42-by-84-inch section.
  - c. Telegraphing of core construction in face veneers exceeding 0.01 inch in a 3-inch span.
2. Warranty shall also include installation and finishing that may be required due to correction or replacement of defective doors.
3. Warranty Period for Solid-Core Interior Doors: Life of installation.

## PART 2 - PRODUCTS

### 2.1 PERFORMANCE REQUIREMENTS

- A. Fire-Rated Wood 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 and temperature-rise limits indicated on Drawings, based on testing at positive pressure in accordance with UL 10C or NFPA 252.
- B. 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 in accordance with UL 1784 and installed in compliance with NFPA 105.

### 2.2 FLUSH WOOD DOORS, GENERAL

- A. Quality Standard: In addition to requirements specified, comply with ANSI/WDMA I.S. 1A.
  - 1. The Contract Documents contain requirements that may be more stringent than the referenced quality standard. Comply with the Contract Documents in addition to those of the referenced quality standard.

### 2.3 SOLID-CORE FIVE-PLY FLUSH WOOD VENEER-FACED DOORS FOR TRANSPARENT FINISH

- A. Interior Doors:
  - 1. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to:
    - a. Marshfield-Algoma by Masonite Architectural.
    - b. Oshkosh Door Company.
    - c. VT Industries, Inc.
  - 2. Performance Grade: ANSI/WDMA I.S. 1A Extra Heavy Duty.
  - 3. ANSI/WDMA I.S. 1A Grade: Custom.
  - 4. Faces: Single-ply, wood veneer not less than 1/50 inch thick.
    - a. Species: Red oak.
    - b. Cut: Plain sliced (flat sliced).
    - c. Match between Veneer Leaves: Book match.
    - d. Assembly of Veneer Leaves on Door Faces: Running match.
    - e. Pair and Set Match: Provide for doors hung in same opening or separated only by mullions.
  - 5. Exposed Vertical and Top Edges: Same species as faces - Architectural Woodwork Standards edge Type A.

- a. Fire-Rated Single Doors: Provide edge construction with intumescent seals concealed by outer stile. Comply with specified requirements for exposed vertical edges.
  - b. Fire-Rated Pairs of Doors: Provide fire-retardant stiles that are listed and labeled for applications indicated without formed-steel edges and astragals. Provide stiles with concealed intumescent seals. Comply with specified requirements for exposed edges.
  - c. Mineral-Core Doors: At hinge stiles, provide laminated-edge construction with improved screw-holding capability and split resistance. Comply with specified requirements for exposed edges.
    - 1) Screw-Holding Capability: 550 lbf in accordance with WDMA T.M. 10.
6. Core for Non-Fire-Rated Doors:
- a. WDMA I.S. 10 structural composite lumber.
    - 1) Screw Withdrawal, Door Face: 550 lbf.
    - 2) Screw Withdrawal, Vertical Door Edge: 550 lbf.
7. Core for Fire-Rated Doors: As required to achieve fire-protection rating indicated on Drawings.
- a. Blocking for Mineral-Core Doors: Provide composite blocking with improved screw-holding capability approved for use in doors of fire-protection ratings indicated on Drawings as needed to eliminate through-bolting hardware.
8. Construction: Five plies, hot-pressed bonded (vertical and horizontal edging is bonded to core), with entire unit abrasive planed before veneering.

## 2.4 LIGHT FRAMES AND LOUVERS

- A. Metal Frames for Light Openings in Fire-Rated and Non-Fire-Rated Doors: Manufacturer's standard frame formed of 0.036-inch-thick (20 gage), cold-rolled steel sheet; with baked-enamel- or powder-coated finish; and for fire-rated doors, approved for use in doors of fire-protection rating indicated on Drawings.
- B. Metal Louvers (as noted on Drawings):
  - 1. Blade Type: Vision-proof, inverted split Y.
    - a. Metal and Finish: Hot-dip galvanized steel, 0.052-inch-thick (18 gage) frame and blades, with baked-enamel- or powder-coated finish.

## 2.5 FABRICATION

- A. Factory fit doors to suit frame-opening sizes indicated.
  - 1. Comply with clearance requirements of referenced quality standard for fitting unless otherwise indicated.
  - 2. Comply with NFPA 80 requirements for fire-rated doors.
- B. Factory machine doors for hardware that is not surface applied.
  - 1. Locate hardware to comply with DHI-WDHS-3.
  - 2. Comply with final hardware schedules, door frame Shop Drawings, ANSI/BHMA-156.115-W, and hardware templates.
  - 3. Coordinate with hardware mortises in metal frames, to verify dimensions and alignment before factory machining.
  - 4. For doors scheduled to receive electrified locksets, provide factory-installed raceway and wiring to accommodate specified hardware.
- C. Openings: Factory cut and trim openings through doors.
  - 1. Light Openings: Trim openings with moldings of material and profile indicated.
  - 2. Glazing: Factory install glazing in doors indicated to be factory finished. Comply with applicable requirements in Division 08 Section "Glazing."
  - 3. Louvers: Factory install louvers in prepared openings.

## 2.6 FACTORY FINISHING

- A. Comply with referenced quality standard for factory finishing.
  - 1. Complete fabrication, including fitting doors for openings and machining for hardware that is not surface applied, before finishing.
  - 2. Finish faces, all four edges, edges of cutouts, and mortises.
  - 3. Stains and fillers may be omitted on bottom edges, edges of cutouts, and mortises.
- B. Factory finish doors.
- C. Transparent Finish:
  - 1. ANSI/WDMA I.S. 1A Grade: Custom.
  - 2. Finish: ANSI/WDMA I.S. 1A TR-8 UV Cured Acrylated Polyester/Urethane
  - 3. Staining: As selected by Architect from manufacturer's full range.
  - 4. Effect: Semifilled finish, produced by applying an additional finish coat to partially fill the wood pores.
  - 5. Sheen: Satin.

## PART 3 - EXECUTION

### 3.1 EXAMINATION

- A. Examine doors and installed door frames, with Installer present, before hanging doors.
  - 1. Verify that installed frames comply with indicated requirements for type, size, location, and swing characteristics and have been installed with level heads and plumb jambs.
  - 2. Reject doors with defects.
- 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. Hardware: For installation, see Division 08 Section "Door Hardware."
- B. Install doors to comply with manufacturer's written instructions and referenced quality standard, and as indicated.
  - 1. Install fire-rated doors in accordance with NFPA 80.
  - 2. Install smoke- and draft-control doors in accordance with NFPA 105.
- C. Factory-Fitted Doors: Align in frames for uniform clearance at each edge.
- D. Factory-Finished Doors: Restore finish before installation if fitting or machining is required at Project site.

### 3.3 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 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 ADJUSTING

- A. Operation: Rehang or replace doors that do not swing or operate freely.
- B. Finished Doors: Replace doors that are damaged or that do not comply with requirements. Doors may be corrected or refinished if Work complies with requirements and shows no evidence of correction or refinishing.

END OF SECTION 08 14 16



## **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, fire ratings, 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.
  - 4. Fire-rated, flush access doors with exposed flanges.
  - 5. Stainless-steel, fire-rated, flush access doors with exposed flanges.
- C. Product Schedule: For access doors and frames. Use same designations indicated on Drawings.

#### 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 PERFORMANCE REQUIREMENTS

- A. Fire-Rated Access Doors and Frames: Assemblies complying with NFPA 80 that are listed and labeled by a qualified testing agency, for fire-protection and temperature-rise limit ratings indicated, according to NFPA 252 or UL 10B.

### 2.2 ACCESS DOORS AND FRAMES

- A. Flush Access Doors with Exposed Flanges AD1:
  - 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. In painted CMU exposed to view.
    - b. In ceramic tile exposed to view.
  - 4. Door Size: 12"x12"
  - 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.

### 2.3 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.

## 2.4 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. Recessed Access Doors: Form face of panel to provide recess for application of applied finish. Reinforce panel as required to prevent buckling. Provide access sleeves for each latch operator and install in holes cut through finish.
- E. Latch and Lock Hardware:
  - 1. Quantity: Furnish number of latches and locks required to hold doors tightly closed.
  - 2. Keys: Furnish two keys per lock and key all locks alike.

## 2.5 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. Intermediate Polished Finish: ASTM A480/A480M No. 3.
  - 3. 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 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 access 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 access door indicating compliance with each item listed in NFPA 80.

#### 3.4 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 or replaceable fusible links 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.

- 1. Include Samples of laminate-clad counter panel product for each type, color, pattern, and surface finish.

- 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.
- C. Seismic Performance: Overhead coiling counter doors shall withstand the effects of earthquake motions determined according to ASCE/SEI 7.
  - 1. Component Importance Factor: **1.0**.

## 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 10,000 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 with smoke control.
- 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: Match curtain material and finish
  - 1. Mounting: Face of wall.

- H. Sill Configuration: Fire-rated, laminate counter.
  - 1. High-Pressure Decorative Laminate: Color, pattern and finish. 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 cylinders.
- 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: Concealed tubular As indicated on Drawings.
  - 3. Motor Exposure: Interior.
  - 4. Motor Electrical Characteristics:
    - a. Horsepower: As recommended by manufacturer for size of opening.
    - b. Voltage: 115-V ac, single phase, 60 Hz.
  - 5. Auxiliary Manual Operation: Push-up type.
  - 6. Control Station(s): Wall mounted on inside of door.
  - 7. Other Equipment: Audible and visual signals.
- K. Curtain Accessories: Equip door with smoke seals, automatic closing device astragal and push/pull handles.
- L. Door Finish:
  - 1. Powder-Coated Finish: Color as selected by Architect from manufacturer's full range.
  - 2. Factory Prime Finish: Manufacturer's standard color.

## 2.4 MATERIALS, GENERAL

- A. Electrical Components, Devices, and Accessories: Listed and labeled as defined in NFPA 70, by a qualified testing agency, and marked for intended location and application.

## 2.5 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.

## 2.6 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.

## 2.7 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 specified in Division 08 Section "Door Hardware" and keyed to building keying system.
  2. Keys: Two for each cylinder.
- B. Safety Interlock Switch: Equip power-operated doors with safety interlock switch to disengage power supply when door is locked.

## 2.8 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.

## 2.9 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.

## 2.10 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. Concealed Tubular: Operator is mounted within hood.

- 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 fire-rated doors, activation delays closing.
1. Electric Sensor Edge: Automatic safety sensor edge, located within astragal 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. Type: 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 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.
- 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 coiling counter doors.

END OF SECTION 08 33 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 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.

#### 1.4 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. 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.

#### 1.5 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.

#### 1.6 CLOSEOUT SUBMITTALS

- A. Maintenance Data: For aluminum-framed entrances and storefronts to include in maintenance manuals.
- 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. 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.

#### 1.8 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: **10** 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.

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. Seismic Performance: Aluminum-framed entrances and storefronts shall withstand the effects of earthquake motions determined in accordance with ASCE/SEI 7.

1. Seismic Drift Causing Glass Fallout: Complying with criteria for passing based on building occupancy type when tested in accordance with AAMA 501.6 at design displacement and 1.5 times the design displacement.

H. 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. Thermal and 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.
  - b. Thermal Entrance Doors: CRF of not less than 40 as determined in accordance with AAMA 1503.
- I. Windborne-Debris Impact Resistance: Passes ASTM E1886 missile-impact and cyclic-pressure tests in accordance with ASTM E1996 for Wind Loading noted on Structural drawings. for basic protection.
  - 1. Large-Missile Test: For glazing located within 30 feet of grade.
  - 2. Small-Missile Test: For glazing located between 30 feet above grade.
- J. 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 and Color 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 glazed and flush entrance doors for manual-swing operation.
- B. Door Construction:
1. Thermal Entrance Door Construction: Glazed entrance doors with extruded-aluminum tubular rail and stile members. Mechanically fasten corners with reinforcing brackets that are deeply penetrated and fillet welded or that incorporate concealed tie rods.
    - a. Thermal Construction: High-performance plastic connectors separate aluminum members exposed to the exterior from members exposed to the interior.
  2. 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 sandstone-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.
- 3. Glazing Stops and Gaskets: Square, snap-on, extruded-aluminum stops and preformed gaskets.
  - a. Provide nonremovable glazing stops on outside of door.
- 4. Finish: Match adjacent storefront framing finish, unless otherwise indicated.

## 2.7 ENTRANCE DOOR TYPES

- A. Types: Provide the following entrance door types in locations indicated on Drawings:
  - 1. Thermal entrance doors.

## 2.8 THERMAL 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. EFCO Corporation; Series D302 Medium Stile ThermaStile Entrances.
  - 2. Kawneer; 350T Insulpour Thermal Entrances.
  - 3. YKK AP America Inc.; MegaTherm 35XT Medium Stile Entrances.
- B. Depth: 2- to 2-3/8-inch.
- C. Door Design: Medium stile, 3-1/2-inch nominal width.
- D. Bottom Rail: Height to comply with accessibility requirements.

## 2.9 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-20 Sandstone Texture FRP/Aluminum Hybrid Door.

B. Depth: 1-3/4-inch.

C. Color: As selected by Architect from manufacturer's full range.

## 2.10 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. Thresholds: BHMA A156.21 raised thresholds beveled with a slope of not more than 1:2, with maximum height of 1/2 inch.

## 2.11 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.

## 2.12 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.

## 2.13 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 A123/A123M or ASTM A153/A153M requirements.

C. Concealed Flashing: Manufacturer's standard corrosion-resistant, nonstaining, nonbleeding flashing compatible with adjacent materials.

D. Bituminous Paint: Cold-applied asphalt-mastic paint containing no asbestos, formulated for 30-mil thickness per coat.

## 2.14 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.
  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.

## 2.15 ALUMINUM FINISHES

- A. Clear Anodic Finish: AAMA 611, AA-M12C22A41, Class I, 0.018 mm or thicker.
- B. Color Anodic Finish: AAMA 611, AA-M12C22A42/A44, Class I, 0.018 mm or thicker.
1. Color: As selected by Architect from full range of industry colors and color densities.

## 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 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-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 "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. 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-resistance-rated storefront systems, 60-minute, interior.
- C. Shop Drawings: For fire-rated glazed opening assemblies. Include plans, elevations, sections, full-size details, and attachments to other work.
- 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 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.
  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.

C. Structural Loads:

1. Wind Loads: As indicated on Drawings.
2. Other Design Loads: As indicated on Drawings.

D. Deflection of Framing Members: At design wind pressure, 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.

E. Structural: Test according to ASTM E 330/E 330M as follows:

1. When tested at positive and negative wind-load design pressures, assemblies do not evidence deflection exceeding specified limits.
2. When tested at 150 percent of positive and negative wind-load design pressures, assemblies, including 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. Seismic Performance: Fire-rated glazed opening assemblies shall withstand the effects of earthquake motions determined according to ASCE/SEI 7.

1. Seismic Drift Causing Glass Fallout: Complying with criteria for passing based on building occupancy type when tested according to AAMA 501.6 at design displacement and 1.5 times the design displacement.

G. 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.

H. 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: 60-minute, interior, fire-resistance-rated storefront systems. Provide one of 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) Safti First Fire Rated Glazing Solutions; GPX Architectural Series Fire Resistive Framing.
    - a) Glazing for Interior Units: Safti First Fire Rated Glazing Solutions; SuperLite II-XL 60 (Glass Type FRD) as specified in Division 08 Section "Glazing."
    - b) Finish: Clear anodic finish.
  - 2) Technical Glass Products; Fireframes Aluminum Series with extruded aluminum cover caps.
    - a) Glazing for Interior Units: Technical Glass Products; Pilkington Pyrostop (Glass Type FRI) as specified in Division 08 Section "Glazing."
    - b) Finish: Clear anodic finish.

2.4 GLAZING

- A. Glazing: Comply with Division 08 Section "Glazing."
- B. Glazing Gaskets: As recommended by manufacturer.
- C. Glazing Sealants: As recommended by manufacturer.

2.5 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.

## 2.6 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.
- C. Concealed Flashing: Manufacturer's standard corrosion-resistant, nonstaining, nonbleeding flashing compatible with adjacent materials.
- D. Bituminous Paint: Cold-applied asphalt-mastic paint containing no asbestos, formulated for 30-mil thickness per coat.

## 2.7 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. After fabrication, clearly mark components to identify their locations in Project according to Shop Drawings

## 2.8 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.

## 2.9 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 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.
  - 6. Seal perimeter and other joints watertight unless otherwise indicated.
- B. Metal Protection:
  - 1. Where aluminum is in contact with dissimilar metals, protect against galvanic action by painting contact surfaces with materials recommended by manufacturer for this purpose or by installing nonconductive spacers.
  - 2. Where aluminum is in contact with concrete or masonry, protect against corrosion by painting contact surfaces with bituminous paint.
- C. Set continuous sill members and flashing in full sealant bed, as specified in Division 07 Section "Joint Sealants," to produce weathertight installation.
- D. Install components plumb and true in alignment with established lines and grades.
- E. Install glazing as specified in Division 08 Section "Glazing."



### 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. Correct or remove and replace installations where inspections indicate that they do not comply with specified requirements.
- C. Reinspect corrected or replaced installations to determine if replaced or corrected door assembly installations comply with specified requirements.

### 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.

END OF SECTION 08 46 00

## SECTION 087100 - DOOR HARDWARE

### PART 1 - GENERAL

#### 1.01 SUMMARY

A. Section includes:

1. Mechanical and electrified door hardware
2. Electronic access control system components

B. Section excludes:

1. Windows
2. Cabinets (casework), including locks in cabinets
3. Signage
4. Toilet accessories
5. Overhead doors

C. Related Sections:

1. Division 01 Section "Alternates" for alternates affecting this section.
2. Division 06 Section "Rough Carpentry"
3. Division 06 Section "Finish Carpentry"
4. Division 07 Section "Joint Sealants" for sealant requirements applicable to threshold installation specified in this section.
5. Division 08 Sections:
  - a. "Metal Doors and Frames"
  - b. "Flush Wood Doors"
  - c. "Stile and Rail Wood Doors"
  - d. "Aluminum-Framed Entrances and Storefronts"
6. Division 26 "Electrical" sections for connections to electrical power system and for low-voltage wiring.
7. Division 28 "Electronic Safety and Security" sections for coordination with other components of electronic access control system and fire alarm system.

#### 1.02 REFERENCES

A. UL LLC

1. UL 10B - Fire Test of Door Assemblies
2. UL 10C - Positive Pressure Test of Fire Door Assemblies
3. UL 1784 - Air Leakage Tests of Door Assemblies
4. UL 305 - Panic Hardware

B. DHI - Door and Hardware Institute

1. Sequence and Format for the Hardware Schedule
2. Recommended Locations for Builders Hardware
3. Keying Systems and Nomenclature
4. Installation Guide for Doors and Hardware

C. NFPA – National Fire Protection Association

1. NFPA 70 – National Electric Code
2. NFPA 80 – 2016 Edition – Standard for Fire Doors and Other Opening Protectives
3. NFPA 101 – Life Safety Code
4. NFPA 105 – Smoke and Draft Control Door Assemblies
5. NFPA 252 – Fire Tests of Door Assemblies

D. ANSI - American National Standards Institute

1. ANSI A117.1 – 2017 Edition – Accessible and Usable Buildings and Facilities
2. ANSI/BHMA A156.1 - A156.29, and ANSI/BHMA A156.31 - Standards for Hardware and Specialties
3. ANSI/BHMA A156.28 - Recommended Practices for Keying Systems
4. ANSI/WDMA I.S. 1A - Interior Architectural Wood Flush Doors
5. ANSI/SDI A250.8 - Standard Steel Doors and Frames

1.03 SUBMITTALS

A. General:

1. Submit in accordance with Conditions of Contract and Division 01 Submittal Procedures.
2. Prior to forwarding submittal:
  - a. Review drawings and Sections from related trades to verify compatibility with specified hardware.
  - b. Highlight, encircle, or otherwise specifically identify on submittals: deviations from Contract Documents, issues of incompatibility or other issues which may detrimentally affect the Work.

B. Action Submittals:

1. Product Data: Submit technical product data for each item of door hardware, installation instructions, maintenance of operating parts and finish, and other information necessary to show compliance with requirements.
2. Riser and Wiring Diagrams: After final approval of hardware schedule, submit details of electrified door hardware, indicating:
  - a. Wiring Diagrams: For power, signal, and control wiring and including:
    - 1) Details of interface of electrified door hardware and building safety and security systems.
    - 2) Schematic diagram of systems that interface with electrified door hardware.

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- 3) Point-to-point wiring.
  - 4) Risers.
3. Samples for Verification: If requested by Architect, submit production sample of requested door hardware unit in finish indicated and tagged with full description for coordination with schedule.
  - a. Samples will be returned to supplier. Units that are acceptable to Architect may, after final check of operations, be incorporated into Work, within limitations of key coordination requirements.
4. Door Hardware Schedule:
  - a. Submit concurrent with submissions of Product Data, Samples, and Shop Drawings. Coordinate submission of door hardware schedule with scheduling requirements of other work to facilitate fabrication of other work critical in Project construction schedule.
  - b. Submit under direct supervision of a Door Hardware Institute (DHI) certified Architectural Hardware Consultant (AHC) or Door Hardware Consultant (DHC) with hardware sets in vertical format as illustrated by Sequence of Format for the Hardware Schedule published by DHI.
  - c. Indicate complete designations of each item required for each opening, include:
    - 1) Door Index: door number, heading number, and Architect's hardware set number.
    - 2) Quantity, type, style, function, size, and finish of each hardware item.
    - 3) Name and manufacturer of each item.
    - 4) Fastenings and other pertinent information.
    - 5) Location of each hardware set cross-referenced to indications on Drawings.
    - 6) Explanation of all abbreviations, symbols, and codes contained in schedule.
    - 7) Mounting locations for hardware.
    - 8) Door and frame sizes and materials.
    - 9) Degree of door swing and handing.
    - 10) Operational Description of openings with electrified hardware covering egress, ingress (access), and fire/smoke alarm connections.
- C. Informational Submittals:
  1. Provide Qualification Data for Supplier, Installer and Architectural Hardware Consultant.
  2. Provide Product Data:
    - a. Certify that door hardware approved for use on types and sizes of labeled fire-rated doors complies with listed fire-rated door assemblies.
    - b. Include warranties for specified door hardware.
- D. Closeout Submittals:
  1. Operations and Maintenance Data: Provide in accordance with Division 01 and include:
    - a. Complete information on care, maintenance, and adjustment; data on repair and replacement parts, and information on preservation of finishes.
    - b. Catalog pages for each product.
    - c. Final approved hardware schedule edited to reflect conditions as installed.

- d. Final keying schedule
- e. Copy of warranties including appropriate reference numbers for manufacturers to identify project.
- f. As-installed wiring diagrams for each opening connected to power, both low voltage and 110 volts.

E. Inspection and Testing:

- 1. Submit written reports to the Owner and Authority Having Jurisdiction (AHJ) of the results of functional testing and inspection for:
  - a. Fire door assemblies, in compliance with NFPA 80.
  - b. Required egress door assemblies, in compliance with NFPA 101.

1.04 QUALITY ASSURANCE

A. Qualifications and Responsibilities:

- 1. Supplier: Recognized architectural hardware supplier with a minimum of 5 years documented experience supplying both mechanical and electromechanical door hardware similar in quantity, type, and quality to that indicated for this Project. Supplier to be recognized as a factory direct distributor by the manufacturer of the primary materials with a warehousing facility in the Project's vicinity. Supplier to have on staff, a certified Architectural Hardware Consultant (AHC) or Door Hardware Consultant (DHC) available to Owner, Architect, and Contractor, at reasonable times during the Work for consultation.
- 2. Installer: Qualified tradesperson skilled in the application of commercial grade hardware with experience installing door hardware similar in quantity, type, and quality as indicated for this Project.
- 3. Architectural Hardware Consultant: 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 meets these requirements:
  - a. For door hardware: DHI certified AHC or DHC.
  - b. Can provide installation and technical data to Architect and other related subcontractors.
  - c. Can inspect and verify components are in working order upon completion of installation.
  - d. Capable of producing wiring diagram and coordinating installation of electrified hardware with Architect and electrical engineers.
- 4. Single Source Responsibility: Obtain each type of door hardware from single manufacturer.

B. Certifications:

- 1. Fire-Rated Door Openings:
  - a. Provide door hardware for fire-rated openings that complies with NFPA 80 and requirements of authorities having jurisdiction.

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- b. Provide only items of door hardware that are listed products tested by UL LLC, Intertek Testing Services, or other testing and inspecting organizations acceptable to authorities having jurisdiction for use on types and sizes of doors indicated, based on testing at positive pressure and according to NFPA 252 or UL 10C and in compliance with requirements of fire-rated door and door frame labels.

### 2. Smoke and Draft Control Door Assemblies:

- a. Provide door hardware that meets requirements of assemblies tested according to UL 1784 and installed in compliance with NFPA 105
- b. Comply with the maximum air leakage of 0.3 cfm/sq. ft. (3 cu. m per minute/sq. m) at tested pressure differential of 0.3-inch wg (75 Pa) of water.

### 3. Electrified Door Hardware

- a. Listed and labeled as defined in NFPA 70, Article 100, by testing agency acceptable to authorities having jurisdiction.

### 4. Accessibility Requirements:

- a. Comply with governing accessibility regulations cited in "REFERENCES" article 087100, 1.02.D3 herein for door hardware on doors in an accessible route. This project must comply with all Federal Americans with Disability Act regulations and all Local Accessibility Regulations.

## C. Pre-Installation Meetings

### 1. Keying Conference

- a. Incorporate keying conference decisions into final keying schedule after reviewing door hardware keying system including:
  - 1) Function of building, flow of traffic, purpose of each area, degree of security required, and plans for future expansion.
  - 2) Preliminary key system schematic diagram.
  - 3) Requirements for key control system.
  - 4) Requirements for access control.
  - 5) Address for delivery of keys.

### 2. Pre-installation Conference

- a. Review and finalize construction schedule and verify availability of materials, Installer's personnel, equipment, and facilities needed to make progress and avoid delays.
- b. Inspect and discuss preparatory work performed by other trades.
- c. Inspect and discuss electrical roughing-in for electrified door hardware.
- d. Review sequence of operation for each type of electrified door hardware.
- e. Review required testing, inspecting, and certifying procedures.
- f. Review questions or concerns related to proper installation and adjustment of door hardware.

### 3. Electrified Hardware Coordination Conference:

- a. Prior to ordering electrified hardware, schedule and hold meeting to coordinate door hardware with security, electrical, doors and frames, and other related suppliers.

#### 1.05 DELIVERY, STORAGE, AND HANDLING

- A. Inventory door hardware on receipt and provide secure lock-up for hardware delivered to Project site. Promptly replace products damaged during shipping.
- B. Tag each item or package separately with identification coordinated with final door hardware schedule, and include installation instructions, templates, and necessary fasteners with each item or package. Deliver each article of hardware in manufacturer's original packaging.
- C. Maintain manufacturer-recommended environmental conditions throughout storage and installation periods.
- D. Provide secure lock-up for door hardware delivered to Project. Control handling and installation of hardware items so that completion of Work will not be delayed by hardware losses both before and after installation.
- E. Handle hardware in manner to avoid damage, marring, or scratching. Correct, replace or repair products damaged during Work. Protect products against malfunction due to paint, solvent, cleanser, or any chemical agent.
- F. Deliver keys to manufacturer of key control system for subsequent delivery to Owner.

#### 1.06 COORDINATION

- A. Coordinate layout and installation of floor-recessed door hardware with floor construction. Cast anchoring inserts into concrete.
- B. Installation Templates: Distribute for doors, frames, and other work specified to be factory or shop 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.
- C. Security: Coordinate installation of door hardware, keying, and access control with Owner's security consultant.
- D. Electrical System Roughing-In: Coordinate layout and installation of electrified door hardware with connections to power supplies and building safety and security systems.

#### 1.07 WARRANTY

- A. Manufacturer's standard form in which manufacturer agrees to repair or replace components of door hardware that fail in materials or workmanship within published warranty period.
  - 1. Warranty does not cover damage or faulty operation due to improper installation, improper use or abuse.
  - 2. Warranty Period: Beginning from date of Substantial Completion, for durations indicated in manufacturer's published listings.
    - a. Mechanical Warranty
      - 1) Locks
        - a) Falcon: 10 years

- 2) Exit Devices
  - a) Von Duprin: 3 years
- 3) Closers
  - a) LCN 4050 Series: 25 years
- b. Electrical Warranty
  - 1) Locks
    - a) Falcon: 1 year
  - 2) Exit Devices
    - a) Von Duprin: 1 year
  - 3) Closers
    - a) LCN: 2 years

#### 1.08 MAINTENANCE

- A. Furnish complete set of special tools required for maintenance and adjustment of hardware, including changing of cylinders.
- B. Turn over unused materials to Owner for maintenance purposes.

### PART 2 - PRODUCTS

#### 2.01 MANUFACTURERS

- A. Approval of manufacturers and/or products other than those listed as "Scheduled Manufacturer" or "Acceptable Manufacturers" in the individual article for the product category shall be in accordance with QUALITY ASSURANCE article, herein.
- B. Approval of products from manufacturers indicated in "Acceptable Manufacturers" is contingent upon those products providing all functions and features and meeting all requirements of scheduled manufacturer's product.
- C. Where specified hardware is not adaptable to finished shape or size of members requiring hardware, furnish suitable types having same operation and quality as type specified, subject to Architect's approval.

#### 2.02 MATERIALS

- A. Fabrication
  - 1. Provide door hardware manufactured to comply with published templates generally prepared for machine, wood, and sheet metal screws. provide screws according to manufacturer's recognized installation standards for application intended.



2. Finish exposed screws to match hardware finish, or, if exposed in surfaces of other work, to match finish of this other work including prepared for paint surfaces to receive painted finish.
  3. Provide concealed fasteners wherever possible for hardware units exposed when door is closed. Coordinate with "Metal Doors and Frames", "Flush Wood Doors", "Stile and Rail Wood Doors" to ensure proper reinforcements. Advise the Architect where visible fasteners, such as thru bolts, are required.
- B. Provide screws, bolts, expansion shields, drop plates and other devices necessary for hardware installation.
1. Where fasteners are exposed to view: Finish to match adjacent door hardware material.

## 2.03 HINGES

### A. Manufacturers and Products:

1. Scheduled Manufacturer and Product:
  - a. Ives 5BB series
2. Acceptable Manufacturers and Products:
  - a. Hager BB1191/1279 series
  - b. McKinney TB series

### B. Requirements:

1. Provide hinges conforming to ANSI/BHMA A156.1.
2. Provide five knuckle, ball bearing hinges.
3. 1-3/4 inch (44 mm) thick doors, up to and including 36 inches (914 mm) wide:
  - a. Exterior: Standard weight, bronze or stainless steel, 4-1/2 inches (114 mm) high
  - b. Interior: Standard weight, steel, 4-1/2 inches (114 mm) high
4. 1-3/4 inch (44 mm) thick doors over 36 inches (914 mm) wide:
  - a. Exterior: Heavy weight, bronze/stainless steel, 5 inches (127 mm) high
  - b. Interior: Heavy weight, steel, 5 inches (127 mm) high
5. 2 inches or thicker doors:
  - a. Exterior: Heavy weight, bronze or stainless steel, 5 inches (127 mm) high
  - b. Interior: Heavy weight, steel, 5 inches (127 mm) high
6. Adjust hinge width for door, frame, and wall conditions to allow proper degree of opening.
7. Provide three hinges per door leaf for doors 90 inches (2286 mm) or less in height, and one additional hinge for each 30 inches (762 mm) of additional door height.

8. Hinge Pins: Except as otherwise indicated, provide hinge pins as follows:
  - a. Steel Hinges: Steel pins
  - b. Non-Ferrous Hinges: Stainless steel pins
  - c. Out-Swinging Exterior Doors: Non-removable pins
  - d. Out-Swinging Interior Lockable Doors: Non-removable pins
  - e. Interior Non-lockable Doors: Non-rising pins
9. Provide hinges with electrified options as scheduled in the hardware sets. Provide with number and gage of wires enough to accommodate electric function of specified hardware. Locate electric hinge at second hinge from bottom or nearest to electrified locking component. Provide mortar guard for each electrified hinge specified.

## 2.04 CONTINUOUS HINGES

### A. Manufacturers:

1. Scheduled Manufacturer:
  - a. Ives
2. Acceptable Manufacturers:
  - a. Select
  - b. Roton

### B. Requirements:

1. Provide aluminum geared continuous hinges conforming to ANSI/BHMA A156.26, Grade 1.
2. Provide aluminum geared continuous hinges, where specified in the hardware sets, fabricated from 6063-T6 aluminum.
3. Provide split nylon bearings at each hinge knuckle for quiet, smooth, self-lubricating operation.
4. Provide hinges capable of supporting door weights up to 450 pounds, and successfully tested for 1,500,000 cycles.
5. On fire-rated doors, provide aluminum geared continuous hinges classified for use on rated doors by testing agency acceptable to authority having jurisdiction.
6. Provide aluminum geared continuous hinges with electrified option scheduled in the hardware sets. Provide with number and gage of wires enough to accommodate electric function of specified hardware.
7. Provide hinges 1 inch (25 mm) shorter in length than nominal height of door, unless otherwise noted or door details require shorter length and with symmetrical hole pattern.

## 2.05 ELECTRIC POWER TRANSFER

### A. Manufacturers:

1. Scheduled Manufacturer and Product:
  - a. Von Duprin EPT-10
2. Acceptable Manufacturers and Products:
  - a. Securitron CEPT-10
  - b. Security Door Controls PTM

### B. Requirements:

1. Provide power transfer with electrified options as scheduled in the hardware sets. Provide with number and gage of wires enough to accommodate electric function of specified hardware.
2. Locate electric power transfer per manufacturer's template and UL requirements, unless interference with operation of door or other hardware items.

## 2.06 CYLINDRICAL LOCKS – GRADE 1

### A. Manufacturers and Products:

1. Scheduled Manufacturer and Product:
  - a. Falcon T series
2. Acceptable Manufacturers and Products:
  - a. Sargent 10-Line
  - b. Schlage ND series

### B. Requirements:

1. Provide cylindrical locks conforming to ANSI/BHMA A156.2 Series 4000, Grade 1, and UL Listed for 3-hour fire doors.
2. Cylinders: Refer to "KEYING" article, herein.
3. Provide locks with standard 2-3/4 inches (70 mm) backset, unless noted otherwise, with 1/2-inch latch throw. Provide proper latch throw for UL listing at pairs.
4. Provide locksets with separate anti-rotation thru-bolts, and no exposed screws.
5. Provide independently operating levers with two external return spring cassettes mounted under roses to prevent lever sag.
6. Provide standard ASA strikes unless extended lip strikes are necessary to protect trim.
7. Provide electrified options as scheduled in the hardware sets.

8. Lever Trim: Solid cast levers without plastic inserts and wrought roses on both sides.
  - a. Lever Design: Dane.

## 2.07 EXIT DEVICES

### A. Manufacturers and Products:

1. Scheduled Manufacturer and Product:
  - a. Von Duprin 99/33A series
2. Acceptable Manufacturers and Products:
  - a. Detex Advantex series
  - b. Sargent 19-43-GL-80 series

### B. Requirements:

1. Provide exit devices tested to ANSI/BHMA A156.3 Grade 1 and UL listed for Panic Exit or Fire Exit Hardware.
2. Cylinders: Refer to "KEYING" article, herein.
3. Provide grooved touchpad type exit devices, fabricated of brass, bronze, stainless steel, or aluminum, plated to standard architectural finishes to match balance of door hardware.
4. Touchpad must extend a minimum of one half of door width. No plastic inserts are allowed in touchpads.
5. Provide exit devices with deadlatching feature for security and for future addition of alarm kits and/or other electrified requirements.
6. Provide exit devices with weather resistant components that can withstand harsh conditions of various climates and corrosive cleaners used in outdoor pool environments.
7. Provide flush end caps for exit devices.
8. Provide exit devices with manufacturer's approved strikes.
9. Provide exit devices cut to door width and height. Install exit devices at height recommended by exit device manufacturer, allowable by governing building codes, and approved by Architect.
10. Mount mechanism case flush on face of doors or provide spacers to fill gaps behind devices. Where glass trim or molding projects off face of door, provide glass bead kits.
11. Provide cylinder or hex-key dogging as specified at non fire-rated openings.
12. Removable Mullions: 2 inches (51 mm) x 3 inches (76 mm) steel tube. Where scheduled as keyed removable mullion, provide type that can be removed by use of a keyed cylinder, which is self-locking when re-installed.

13. Provide factory drilled weep holes for exit devices used in full exterior application, highly corrosive areas, and where noted in hardware sets.
14. Provide electrified options as scheduled.
15. Top latch mounting: double- or single-tab mount for steel doors, face mount for aluminum doors eliminating requirement of tabs, and double tab mount for wood doors.
16. Provide exit devices with optional trim designs to match other lever and pull designs used on the project.
17. Special Options:
  - a. SI
    - 1) Provide dogging indicators for visible indication of dogging status.

## 2.08 POWER SUPPLIES

### A. Manufacturers and Products:

1. Scheduled Manufacturer and Product:
  - a. Schlage/Von Duprin PS900 Series
2. Acceptable Manufacturers and Products:
  - a. Sargent 3500 series
  - b. Securitron BPS series

### B. Requirements:

1. Provide power supplies approved by manufacturer of supplied electrified hardware.
2. Provide appropriate quantity of power supplies necessary for proper operation of electrified locking components as recommended by manufacturer of electrified locking components with consideration for each electrified component using power supply, location of power supply, and approved wiring diagrams. Locate power supplies as directed by Architect.
3. Provide regulated and filtered 24 VDC power supply, and UL class 2 listed.
4. Provide power supplies with the following features:
  - a. 12/24 VDC Output, field selectable.
  - b. Class 2 Rated power limited output.
  - c. Universal 120-240 VAC input.
  - d. Low voltage DC, regulated and filtered.
  - e. Polarized connector for distribution boards.
  - f. Fused primary input.
  - g. AC input and DC output monitoring circuit w/LED indicators.
  - h. Cover mounted AC Input indication.
  - i. Tested and certified to meet UL294.
  - j. NEMA 1 enclosure.

- k. Hinged cover w/lock down screws.
- l. High voltage protective cover.

## 2.09 CYLINDERS

### A. Manufacturers and Products:

- 1. Scheduled Manufacturer:
  - a. Falcon
- 2. Acceptable Manufacturers and Products:
  - a. Best
  - b. Schlage

### B. Requirements:

- 1. Provide cylinders/cores compliant with ANSI/BHMA A156.5; latest revision; cylinder face finished to match lockset; manufacturer's series as indicated. Refer to "KEYING" article, herein.
- 2. Provide cylinders in the below-listed configuration(s), distributed throughout the Project as indicated.
  - a. Conventional Open: cylinder with small format interchangeable core (SFIC) core.
  - b. Permanent cores by Owner.

## 2.10 KEYING

### A. Scheduled System:

- 1. Best
  - a. Permanent keys, keying by Owner

### B. Requirements:

- 1. Construction Keying:
  - a. Replaceable Construction Cores.
    - 1) Provide temporary construction cores replaceable by permanent cores, furnished in accordance with the following requirements.
      - a) 3 construction control keys
      - b) 12 construction change (day) keys.
    - 2) Owner or Owner's Representative will replace temporary construction cores with permanent cores.

## 2.11 DOOR CLOSERS

### A. Manufacturers and Products:

1. Scheduled Manufacturer and Product:
  - a. LCN 4050A series
2. Acceptable Manufacturers and Products:
  - a. No Substitute
  - b. Falcon SC70A series
  - c. Norton 7500 series

### B. Requirements:

1. Provide door closers conforming to ANSI/BHMA A156.4 Grade 1 requirements by BHMA certified independent testing laboratory. ISO 9000 certify closers. Stamp units with date of manufacture code.
2. Provide door closers with fully hydraulic, full rack and pinion action with cast aluminum cylinder.
3. Closer Body: 1-1/2-inch (38 mm) diameter with 11/16-inch (17 mm) diameter heat-treated pinion journal and full complement bearings.
4. Hydraulic Fluid: Fireproof, passing requirements of UL10C, and all weather requiring no seasonal closer adjustment for temperatures ranging from 120 degrees F to -30 degrees F.
5. Spring Power: Continuously adjustable over full range of closer sizes, and providing reduced opening force as required by accessibility codes and standards.
6. Hydraulic Regulation: By tamper-proof, non-critical valves, with separate adjustment for latch speed, general speed, and back check.
7. Pressure Relief Valve (PRV) Technology: Not permitted.
8. Provide stick on templates, special templates, drop plates, mounting brackets, or adapters for arms as required for details, overhead stops, and other door hardware items interfering with closer mounting.

## 2.12 DOOR TRIM

### A. Manufacturers:

1. Scheduled Manufacturer:
  - a. Ives
2. Acceptable Manufacturers:
  - a. Trimco
  - b. Burns

B. Requirements:

1. Provide push plates, push bars, pull plates, pulls, and hands-free reversible door pulls with diameter and length as scheduled.

2.13 PROTECTION PLATES

A. Manufacturers:

1. Scheduled Manufacturer:
  - a. Ives
2. Acceptable Manufacturers:
  - a. Burns
  - b. Trimco

B. Requirements:

1. Provide protection plates with a minimum of 0.050 inch (1 mm) thick, beveled four edges as scheduled. Furnish with sheet metal or wood screws, finished to match plates.
2. Sizes plates 1 1/2 inches (38 mm) less width of door on single doors, pairs of doors with a mullion, and doors with edge guards. Size plates 1 inch (25 mm) less width of door on pairs without a mullion or edge guards.
3. At fire rated doors, provide protection plates over 16 inches high with UL label.

2.14 OVERHEAD STOPS AND OVERHEAD STOP/HOLDERS

A. Manufacturers:

1. Scheduled Manufacturers:
  - a. Glynn-Johnson
2. Acceptable Manufacturers:
  - a. Rixson
  - b. Sargent

B. Requirements:

1. Provide overhead stop at any door where conditions do not allow for a wall stop or floor stop presents tripping hazard.
2. Provide friction type at doors without closer and positive type at doors with closer.



## 2.15 DOOR STOPS AND HOLDERS

### A. Manufacturers:

1. Scheduled Manufacturer:
  - a. Ives
2. Acceptable Manufacturers:
  - a. Trimco
  - b. Burns

### B. Provide door stops at each door leaf:

1. Provide wall stops wherever possible. Provide concave type where lockset has a push button or thumbturn.
2. Where a wall stop cannot be used, provide universal floor stops.
3. Where wall or floor stop cannot be used, provide overhead stop.
4. Provide roller bumper where doors open into each other and overhead stop cannot be used.

## 2.16 THRESHOLDS, SEALS, DOOR SWEEPS, AUTOMATIC DOOR BOTTOMS, AND GASKETING

### A. Manufacturers:

1. Scheduled Manufacturer:
  - a. Zero International
2. Acceptable Manufacturers:
  - a. National Guard
  - b. Reese

### B. Requirements:

1. Provide thresholds, weather-stripping, and gasketing systems as specified and per architectural details. Match finish of other items.
2. Smoke- and Draft-Control Door Assemblies: Where smoke- and draft-control door assemblies are required, provide door hardware that meets requirements of assemblies tested according to UL 1784 and installed in compliance with NFPA 105.
3. Provide door sweeps, seals, astragals, and auto door bottoms only of type where resilient or flexible seal strip is easily replaceable and readily available.
4. Size thresholds 1/2 inch (13 mm) high by 5 inches (127 mm) wide by door width unless otherwise specified in the hardware sets or detailed in the drawings.

## 2.17 SILENCERS

### A. Manufacturers:

#### 1. Scheduled Manufacturer:

- a. Ives

#### 2. Acceptable Manufacturers:

- a. Burns
- b. Trimco

### B. Requirements:

1. Provide "push-in" type silencers for hollow metal or wood frames.
2. Provide one silencer per 30 inches (762 mm) of height on each single frame, and two for each pair frame.
3. Omit where gasketing is specified.

## 2.18 FINISHES

### A. FINISH: As listed in hardware sets

## PART 3 - EXECUTION

### 3.01 EXAMINATION

- A. Prior to installation of hardware, 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. Verify doors, frames, and walls have been properly reinforced for hardware installation.
- B. Examine roughing-in for electrical power systems to verify actual locations of wiring connections before electrified door hardware installation.
- C. Submit a list of deficiencies in writing and proceed with installation only after unsatisfactory conditions have been corrected.

### 3.02 INSTALLATION

- A. Mount door hardware units at heights to comply with the following, unless otherwise indicated or required to comply with governing regulations.
  1. Standard Steel Doors and Frames: ANSI/SDI A250.8.
  2. Interior Architectural Wood Flush Doors: ANSI/WDMA I.S. 1A
  3. Installation Guide for Doors and Hardware: DHI TDH-007-20
- B. Install door hardware in accordance with NFPA 80, NFPA 101 and provide post-install inspection, testing as specified in section 1.03.E unless otherwise required to comply with governing regulations.

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- C. Install each hardware item in compliance with manufacturer's instructions and recommendations, using only fasteners provided by manufacturer.
- D. Do not install surface mounted items until finishes have been completed on substrate. Protect all installed hardware during painting.
- E. Set units level, plumb and true to line and location. Adjust and reinforce attachment substrate as necessary for proper installation and operation.
- F. Drill and countersink units that are not factory prepared for anchorage fasteners. Space fasteners and anchors according to industry standards.
- G. Install operating parts so they move freely and smoothly without binding, sticking, or excessive clearance.
- H. Hinges: Install types and in quantities indicated in door hardware schedule but not fewer than quantity recommended by manufacturer for application indicated.
- I. Lock Cylinders:
  - 1. Install construction cores to secure building and areas during construction period.
  - 2. Replace construction cores with permanent cores as indicated in keying section.
  - 3. Furnish permanent cores to Owner for installation.
- J. Wiring: Coordinate with Division 26, ELECTRICAL and Division 28 ELECTRONIC SAFETY AND SECURITY sections for:
  - 1. Conduit, junction boxes and wire pulls.
  - 2. Connections to and from power supplies to electrified hardware.
  - 3. Connections to fire/smoke alarm system and smoke evacuation system.
  - 4. Connection of wire to door position switches and wire runs to central room or area, as directed by Architect.
  - 5. Connections to panel interface modules, controllers, and gateways.
  - 6. Testing and labeling wires with Architect's opening number.
- K. Key Control System: Tag keys and place them on markers and hooks in key control system cabinet, as determined by final keying schedule.
- L. Door Closers: Mount closers on room side of corridor doors, inside of exterior doors, and stair side of stairway doors from corridors. Mount closers so they are not visible in corridors, lobbies and other public spaces unless approved by Architect.
- M. Closer/Holders: Mount closer/holders on room side of corridor doors, inside of exterior doors, and stair side of stairway doors.
- N. Power Supplies: Locate power supplies as indicated or, if not indicated, above accessible ceilings or in equipment room, or alternate location as directed by Architect.
- O. Thresholds: Set thresholds in full bed of sealant complying with requirements specified in Division 07 Section "Joint Sealants."
- P. Stops: Provide floor stops for doors unless wall or other type stops are indicated in door hardware schedule. Do not mount floor stops where they may impede traffic or present tripping hazard.
- Q. Perimeter Gasketing: Apply to head and jamb, forming seal between door and frame.

- R. Meeting Stile Gasketing: Fasten to meeting stiles, forming seal when doors are closed.
- S. Door Bottoms and Sweeps: Apply to bottom of door, forming seal with threshold when door is closed.

### 3.03 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. Spring Hinges: Adjust to achieve positive latching when door can close freely from an open position of 30 degrees.
  - 2. Electric Strikes: Adjust horizontal and vertical alignment of keeper to properly engage lock bolt.
  - 3. Door Closers: Adjust sweep period to comply with accessibility requirements and requirements of authorities having jurisdiction.
- B. Occupancy Adjustment: Approximately three to six months after date of Substantial Completion, examine and readjust each item of door hardware, including adjusting operating forces, as necessary to ensure function of doors and door hardware.

### 3.04 CLEANING AND PROTECTION

- A. Clean adjacent surfaces soiled by door hardware installation.
- B. Clean operating items per manufacturer's instructions to restore proper function and finish.
- C. Provide final protection and maintain conditions that ensure door hardware is without damage or deterioration at time of Substantial Completion.

### 3.05 DOOR HARDWARE SCHEDULE

- A. The intent of the hardware specification is to specify the hardware for interior and exterior doors, and to establish a type, continuity, and standard of quality. However, it is the door hardware supplier's responsibility to thoroughly review existing conditions, schedules, specifications, drawings, and other Contract Documents to verify the suitability of the hardware specified.
- B. Discrepancies, conflicting hardware, and missing items are to be brought to the attention of the architect with corrections made prior to the bidding process. Omitted items not included in a hardware set should be scheduled with the appropriate additional hardware required for proper application.
- C. Hardware items are referenced in the following hardware schedule. Refer to the above specifications for special features, options, cylinders/keying, and other requirements.
- D. Hardware Sets:

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## Legend:







-  Link to catalog cut sheet
-  Electrified Opening

## Hardware Group No. 01

For use on Door #(s):

6-1 (Sargent)      6-2 (Sargent)      A108-1 (Rombout)      A110-1 (Rombout)      F159a-1 (Rombout)

Provide each SGL door(s) with the following:







| QTY |    | DESCRIPTION        | CATALOG NUMBER             |   | FINISH | MFR |
|-----|----|--------------------|----------------------------|---|--------|-----|
| 3   | EA | HINGE              | 5BB1 4.5 X 4.5 NRP         |  | 652    | IVE |
| 1   | EA | FIRE EXIT HARDWARE | 99-L-F-2SI-06-499F         |  | 626    | VON |
| 2   | EA | SFIC CYLINDER      | AS REQUIRED                |   | 626    |     |
| 2   | EA | PERMANENT CORE     | BY OWNER                   |   | 626    | BES |
| 1   | EA | SURFACE CLOSER     | 4050A EDA                  |  | 689    | LCN |
| 1   | EA | KICK PLATE         | 8400 10" X 1 1/2" LDW B-CS |  | 630    | IVE |
| 1   | EA | WALL STOP          | WS406/407CVX               |  | 630    | IVE |
| 1   | EA | GASKETING          | 488SBK PSA                 |  | BK     | ZER |

## Hardware Group No. 02

For use on Door #(s):

6-3  
(Sargent)

Provide each SGL door(s) with the following:





| QTY |    | DESCRIPTION        | CATALOG NUMBER             |   | FINISH | MFR |
|-----|----|--------------------|----------------------------|---|--------|-----|
| 3   | EA | HINGE              | 5BB1 4.5 X 4.5             |  | 652    | IVE |
| 1   | EA | CLASSROOM SEC LOCK | T381BDC DAN                |  | 626    | FAL |
| 2   | EA | PERMANENT CORE     | BY OWNER                   |   | 626    | BES |
| 1   | EA | SURFACE CLOSER     | 4050A REG                  |  | 689    | LCN |
| 1   | EA | KICK PLATE         | 8400 10" X 1 1/2" LDW B-CS |  | 630    | IVE |
| 1   | EA | WALL STOP          | WS406/407CVX               |  | 630    | IVE |
| 1   | EA | GASKETING          | 488SBK PSA                 |  | BK     | ZER |

## Hardware Group No. 03

For use on Door #(s):

6A-1 (Sargent)      E6-1 (Glenham)

Provide each SGL door(s) with the following:

| QTY |    | DESCRIPTION         | CATALOG NUMBER |   | FINISH | MFR |
|-----|----|---------------------|----------------|---|--------|-----|
| 3   | EA | HINGE               | 5BB1 4.5 X 4.5 |  | 652    | IVE |
| 1   | EA | ENTRY / OFFICE LOCK | T511BDC DAN    |  | 626    | FAL |
| 1   | EA | PERMANENT CORE      | BY OWNER       |   | 626    | BES |
| 1   | EA | WALL STOP           | WS406/407CCV   |  | 630    | IVE |
| 3   | EA | SILENCER            | SR64           |  | GRY    | IVE |





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## Hardware Group No. 04

For use on Door #(s):

|                      |                      |                |                     |                     |                |
|----------------------|----------------------|----------------|---------------------|---------------------|----------------|
| B119A-2<br>(Rombout) | B121B-2<br>(Rombout) | A208-3<br>(HS) | B119-2<br>(Rombout) | B121-2<br>(Rombout) | A207-1<br>(HS) |
|----------------------|----------------------|----------------|---------------------|---------------------|----------------|

Provide each SGL door(s) with the following:

| QTY |    | DESCRIPTION    | CATALOG NUMBER |   | FINISH | MFR |
|-----|----|----------------|----------------|---|--------|-----|
| 3   | EA | HINGE          | 5BB1 4.5 X 4.5 |  | 652    | IVE |
| 1   | EA | CLASSROOM LOCK | T561BDC DAN    |  | 626    | FAL |
| 1   | EA | PERMANENT CORE | BY OWNER       |   | 626    | BES |
| 1   | EA | WALL STOP      | WS406/407CVX   |  | 630    | IVE |
| 3   | EA | SILENCER       | SR64           |  | GRY    | IVE |

## Hardware Group No. 05

For use on Door #(s):

|                      |                      |
|----------------------|----------------------|
| B119A-1<br>(Rombout) | B121B-1<br>(Rombout) |
|----------------------|----------------------|

Provide each CO door(s) with the following:





| QTY |    | DESCRIPTION | CATALOG NUMBER       |  | FINISH | MFR |
|-----|----|-------------|----------------------|--|--------|-----|
| 1   | EA | NOTE        | NO HARDWARE REQUIRED |  |        |     |

## Hardware Group No. 06

For use on Door #(s):

|                     |                     |
|---------------------|---------------------|
| A108-2<br>(Rombout) | A110-2<br>(Rombout) |
|---------------------|---------------------|

Provide each SGL door(s) with the following:

| QTY |    | DESCRIPTION    | CATALOG NUMBER |   | FINISH | MFR |
|-----|----|----------------|----------------|---|--------|-----|
| 3   | EA | HINGE          | 5BB1 4.5 X 4.5 |  | 652    | IVE |
| 1   | EA | CLASSROOM LOCK | T561BDC DAN    |  | 626    | FAL |
| 1   | EA | PERMANENT CORE | BY OWNER       |   | 626    | BES |
| 1   | EA | SURFACE CLOSER | 4031 CUSH WMS  |  | 689    | LCN |
| 1   | EA | GASKETING      | 488SBK PSA     |  | BK     | ZER |








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## Hardware Group No. 07

For use on Door #(s):

A108-3  
(Rombout)

Provide each PR door(s) with the following:





| QTY |     | DESCRIPTION                     | CATALOG NUMBER                |   | FINISH | MFR |
|-----|-----|---------------------------------|-------------------------------|---|--------|-----|
| 2   | EA  | CONT. HINGE                     | 112HD                         |  | 628    | IVE |
| 1   | EA  | REMOVABLE MULLION               | KR4954 STAB                   |  | 689    | VON |
| 1   | EA  | PANIC HARDWARE                  | CD-99-DT                      |  | 626    | VON |
| 1   | EA  | PANIC HARDWARE                  | CD-99-NL                      |  | 626    | VON |
| 4   | EA  | SFIC CYLINDER                   | AS REQUIRED                   |   | 626    |     |
| 4   | EA  | PERMANENT CORE                  | BY OWNER                      |   | 626    | BES |
| 2   | EA  | SURFACE CLOSER                  | 4050A SCUSH                   |  | 689    | LCN |
| 1   | EA  | MULLION SEAL                    | 8780NBK PSA                   |  | BK     | ZER |
| 1   | SET | INTEGRAL GASKETING              | BY DOOR AND FRAME MFR.        |   |        |     |
| 2   | EA  | RECESSED ADJUSTABLE DOOR BOTTOM | PROVIDED BY DOOR MANUFACTURER |   |        |     |
| 1   | EA  | THRESHOLD                       | 625A-223                      |  | A      | ZER |

## Hardware Group No. 08

For use on Door #(s):

A108-4      A110-4  
(Rombout)      (Rombout)

Provide each SGL door(s) with the following:

| QTY |    | DESCRIPTION    | CATALOG NUMBER |   | FINISH | MFR |
|-----|----|----------------|----------------|---|--------|-----|
| 3   | EA | HINGE          | 5BB1 4.5 X 4.5 |  | 652    | IVE |
| 1   | EA | CLASSROOM LOCK | T561BDC DAN    |  | 626    | FAL |
| 1   | EA | PERMANENT CORE | BY OWNER       |   | 626    | BES |
| 1   | EA | OH STOP        | 450S           |  | 630    | GLY |
| 3   | EA | SILENCER       | SR64           |  | GRY    | IVE |





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## Hardware Group No. 09

For use on Door #(s):

A110-3  
(Rombout)

Provide each SGL door(s) with the following:






| QTY |     | DESCRIPTION                     | CATALOG NUMBER                |   | FINISH | MFR |
|-----|-----|---------------------------------|-------------------------------|---|--------|-----|
| 1   | EA  | CONT. HINGE                     | 112HD                         |  | 628    | IVE |
| 1   | EA  | PANIC HARDWARE                  | CD-99-NL                      |  | 626    | VON |
| 2   | EA  | SFIC CYLINDER                   | AS REQUIRED                   |   | 626    |     |
| 2   | EA  | PERMANENT CORE                  | BY OWNER                      |   | 626    | BES |
| 1   | EA  | SURFACE CLOSER                  | 4050A SCUSH                   |  | 689    | LCN |
| 1   | SET | INTEGRAL GASKETING              | BY DOOR AND FRAME MFR.        |   |        |     |
| 1   | EA  | RECESSED ADJUSTABLE DOOR BOTTOM | PROVIDED BY DOOR MANUFACTURER |   |        |     |
| 1   | EA  | THRESHOLD                       | 625A-223                      |  | A      | ZER |

## Hardware Group No. 10

For use on Door #(s):

A208-1      B119-1      B121-1  
(HS)      (Rombout)      (Rombout)

Provide each SGL door(s) with the following:

| QTY |    | DESCRIPTION        | CATALOG NUMBER             |   | FINISH | MFR |
|-----|----|--------------------|----------------------------|---|--------|-----|
| 3   | EA | HINGE              | 5BB1 4.5 X 4.5 NRP         |  | 652    | IVE |
| 1   | EA | CLASSROOM SEC LOCK | T381BDC DAN                |  | 626    | FAL |
| 2   | EA | SFIC CYLINDER      | AS REQUIRED                |   | 626    |     |
| 1   | EA | PERMANENT CORE     | BY OWNER                   |   | 626    | BES |
| 1   | EA | SURFACE CLOSER     | 4050A CUSH                 |  | 689    | LCN |
| 1   | EA | KICK PLATE         | 8400 10" X 1 1/2" LDW B-CS |  | 630    | IVE |
| 1   | EA | GASKETING          | 488SBK PSA                 |  | BK     | ZER |



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## Hardware Group No. 11

For use on Door #(s):

A208-2

(HS)

Provide each SGL door(s) with the following:

| QTY |     | DESCRIPTION      | CATALOG NUMBER             |   | FINISH | MFR |
|-----|-----|------------------|----------------------------|---|--------|-----|
| 3   | EA  | HINGE            | 5BB1 4.5 X 4.5             |  | 652    | IVE |
| 1   | EA  | CLASSROOM LOCK   | T561BDC DAN                |  | 626    | FAL |
| 1   | EA  | PERMANENT CORE   | BY OWNER                   |   | 626    | BES |
| 1   | EA  | SURFACE CLOSER   | 4050A CUSH                 |  | 689    | LCN |
| 1   | EA  | KICK PLATE       | 8400 10" X 1 1/2" LDW B-CS |  | 630    | IVE |
| 1   | SET | GASKETING        | 870AA-S                    |  | AA     | ZER |
| 1   | EA  | DOOR BOTTOM      | 360AA                      |  | AA     | ZER |
| 1   | EA  | THRESHOLD        | 164A-223                   |  | A      | ZER |
| 1   | EA  | MOUNTING BRACKET | 870SPB                     |  |        | ZER |

## Hardware Group No. 12

For use on Door #(s):

E2-1

(Glenham)

Provide each BL door(s) with the following:

| QTY |    | DESCRIPTION | CATALOG NUMBER       |  | FINISH | MFR |
|-----|----|-------------|----------------------|--|--------|-----|
|     | EA | NOTE        | NO HARDWARE REQUIRED |  |        |     |

## Hardware Group No. 13

For use on Door #(s):

E6-2

(Glenham)

Provide each SL door(s) with the following:

| QTY |    | DESCRIPTION | CATALOG NUMBER       |  | FINISH | MFR |
|-----|----|-------------|----------------------|--|--------|-----|
|     | EA | NOTE        | NO HARDWARE REQUIRED |  |        |     |







# Beacon CSD CIP-21 Project D

## Hardware Group No. 14

For use on Door #(s):

T12A-1 T12B-1  
(Glenham) (Glenham)

Provide each SGL door(s) with the following:





| QTY |    | DESCRIPTION    | CATALOG NUMBER             |   | FINISH | MFR |
|-----|----|----------------|----------------------------|---|--------|-----|
| 3   | EA | HINGE          | 5BB1 4.5 X 4.5             |  | 652    | IVE |
| 1   | EA | CLASSROOM LOCK | T561BDC DAN                |  | 626    | FAL |
| 1   | EA | PERMANENT CORE | BY OWNER                   |   | 626    | BES |
| 1   | EA | SURFACE CLOSER | 4050A REG                  |  | 689    | LCN |
| 1   | EA | KICK PLATE     | 8400 10" X 1 1/2" LDW B-CS |  | 630    | IVE |
| 1   | EA | WALL STOP      | WS406/407CVX               |  | 630    | IVE |
| 1   | EA | GASKETING      | 488SBK PSA                 |  | BK     | ZER |

## Hardware Group No. 15

For use on Door #(s):

E08-1  
(South Ave)

Provide each SGL door(s) with the following:

| QTY |     | DESCRIPTION                     | CATALOG NUMBER                |   | FINISH | MFR |
|-----|-----|---------------------------------|-------------------------------|---|--------|-----|
| 1   | EA  | CONT. HINGE                     | 112HD                         |    | 628    | IVE |
| 1   | EA  | EXIT X BLANK OUTSIDE            | ND25D RHO                     |   | 626    | SCH |
| 1   | EA  | LOCK GUARD                      | LG1                           |  | 630    | IVE |
| 1   | EA  | OH STOP                         | 90S                           |  | 630    | GLY |
| 1   | SET | INTEGRAL GASKETING              | BY DOOR AND FRAME MFR.        |   |        |     |
| 1   | EA  | RECESSED ADJUSTABLE DOOR BOTTOM | PROVIDED BY DOOR MANUFACTURER |   |        |     |
| 1   | EA  | 10" THRESHOLD ASSEMBLY          | 268 x 678 x 269 x 268         |   | AL     | ZER |

## Hardware Group No. 16 – NOT USED

Beacon CSD CIP-21 Project D

Hardware Group No. E17

For use on Door #(s):

V1-1

(Glenham)

Provide each SGL door(s) with the following:

| QTY  |     | DESCRIPTION                     | CATALOG NUMBER                  |              | FINISH  | MFR                                  |
|--|-----|---------------------------------|---------------------------------|--------------|---------|--------------------------------------|
| 1  | EA  | CONT. HINGE                     | 112HD EPT                       |              | 628     | IVE                                  |
| 1  | EA  | POWER TRANSFER                  | EPT10                           |              | 689     | VON                                  |
| 1  | EA  | ELEC PANIC HARDWARE             | RX-QEL-99-NL-OP-110MD VDC       | 24           | 626     | VON                                  |
| 1  | EA  | SFIC CYLINDER                   | AS REQUIRED                     |              | 626     |                                      |
| 1  | EA  | PERMANENT CORE                  | BY OWNER                        |              | 626     | BES                                  |
| 1  | EA  | 90 DEG OFFSET PULL              | 8190EZHD 10" STD                |              | 630-316 | IVE                                  |
| 1  | EA  | OH STOP                         | 100S                            |              | 630     | GLY                                  |
| 1  | EA  | SURFACE CLOSER                  | 4050A EDA                       |              | 689     | LCN                                  |
| 1  | EA  | BLADE STOP SPACER               | 4050A-61 SRT                    |              | 689     | LCN                                  |
| 1  | SET | INTEGRAL GASKETING              | BY DOOR AND FRAME MFR.          |              |         |                                      |
| 1  | EA  | RECESSED ADJUSTABLE DOOR BOTTOM | PROVIDED BY DOOR MANUFACTURER   |              |         |                                      |
| 1  | EA  | THRESHOLD                       | 625A-223                        |              | A       | ZER                                  |
| 1  | EA  | CREDENTIAL READER               | BY SECURITY INTEGRATOR          |              |         |                                      |
| 1  | EA  | DOOR POSITION SWITCH            | BY SECURITY INTEGRATOR          |              |         |                                      |
| 1  | EA  | POWER SUPPLY                    | PS902 900-2RS 120/240 VAC       |              |         | VON                                  |
| POWER THEORY DOOR PROPER FREE DOOR REMAINS LOCKED UPON LOSS OF POWER (FAIL SECURE) |     |                                 |                                 |              |         |                                      |
|  |     | SUPPLY                          | SHARED OF NORMALLY TO READER AT | WITH         | DR.     | V1-2 OPERATION: LOCKED. LATCH TIMES. |
|  |     | CREDENTIAL EGRESS               |                                 | RETRACTS ALL |         |                                      |

Beacon CSD CIP-21 Project D








Hardware Group No. E18

For use on Door #(s):

V1-2

(Glenham)

Provide each SGL door(s) with the following:

| QTY  |     | DESCRIPTION                     | CATALOG NUMBER                  |  | FINISH           | MFR                                   |
|--|-----|---------------------------------|---------------------------------|--|------------------|---------------------------------------|
| 1  | EA  | CONT. HINGE                     | 112HD EPT                       |     | 628              | IVE                                   |
| 1  | EA  | POWER TRANSFER                  | EPT10                           |     | ✓ 689            | VON                                   |
| 1  | EA  | ELEC PANIC HARDWARE             | RX-QEL-99-NL-OP-110MD VDC       | 24  | ✓ 626            | VON                                   |
| 1  | EA  | SFIC CYLINDER                   | AS REQUIRED                     |  | 626              |                                       |
| 1  | EA  | PERMANENT CORE                  | BY OWNER                        |  | 626              | BES                                   |
| 1  | EA  | 90 DEG OFFSET PULL              | 8190EZHD 10" STD                |     | 630-316          | IVE                                   |
| 1  | EA  | OH STOP                         | 100S                            |     | 630              | GLY                                   |
| 1  | EA  | SURFACE CLOSER                  | 4050A EDA                       |     | 689              | LCN                                   |
| 1  | EA  | BLADE STOP SPACER               | 4050A-61 SRT                    |     | 689              | LCN                                   |
| 1  | SET | INTEGRAL GASKETING              | BY DOOR AND FRAME MFR.          |  |                  |                                       |
| 1  | EA  | RECESSED ADJUSTABLE DOOR BOTTOM | PROVIDED BY DOOR MANUFACTURER   |  |                  |                                       |
| 1  | EA  | CREDENTIAL READER               | BY SECURITY INTEGRATOR          | ✓  |                  |                                       |
| 1  | EA  | DOOR POSITION SWITCH            | BY SECURITY INTEGRATOR          | ✓  |                  |                                       |
| POWER THEORY DOOR PROPER FREE DOOR REMAINS LOCKED UPON LOSS OF POWER (FAIL SECURE) |     | SUPPLY CREDENTIAL EGRESS        | SHARED OF NORMALLY TO READER AT | WITH   | DR. RETRACTS ALL | V1-1. OPERATION: LOCKED. LATCH TIMES. |

Beacon CSD CIP-21 Project D

Hardware Group No. E19

For use on Door #(s):

V2-1

(Glenham)

Provide each PR door(s) with the following:

| QTY   |     | DESCRIPTION                     | CATALOG NUMBER                |      | FINISH  | MFR |
|---|-----|---------------------------------|-------------------------------|------|---------|-----|
| 2   | EA  | CONT. HINGE                     | 112HD EPT                     | ☐    | 628     | IVE |
| 2   | EA  | POWER TRANSFER                  | EPT10                         | ☐    | ✓ 689   | VON |
| 1   | EA  | REMOVABLE MULLION               | KR4954 STAB                   | ☐    | 689     | VON |
| 1   | EA  | ELEC PANIC HARDWARE             | RX-QEL-99-EO 24 VDC           | ☐    | ✓ 626   | VON |
| 1   | EA  | ELEC PANIC HARDWARE             | RX-QEL-99-NL-OP-110MD VDC     | 24 ☐ | ✓ 626   | VON |
| 2   | EA  | SFIC CYLINDER                   | AS REQUIRED                   |      | 626     |     |
| 2   | EA  | PERMANENT CORE                  | BY OWNER                      |      | 626     | BES |
| 2   | EA  | 90 DEG OFFSET PULL              | 8190EZHD 10" STD              | ☐    | 630-316 | IVE |
| 2   | EA  | OH STOP                         | 100S                          | ☐    | 630     | GLY |
| 2   | EA  | SURFACE CLOSER                  | 4050A EDA                     | ☐    | 689     | LCN |
| 2   | EA  | BLADE STOP SPACER               | 4050A-61 SRT                  | ☐    | 689     | LCN |
| 1   | EA  | MULLION SEAL                    | 8780NBK PSA                   | ☐    | BK      | ZER |
| 1   | SET | INTEGRAL GASKETING              | BY DOOR AND FRAME MFR.        |      |         |     |
| 2   | EA  | RECESSED ADJUSTABLE DOOR BOTTOM | PROVIDED BY DOOR MANUFACTURER |      |         |     |
| 1   | EA  | THRESHOLD                       | 625A-223                      | ☐    | A       | ZER |
| 1   | EA  | CREDENTIAL READER               | BY SECURITY INTEGRATOR        | ✓    |         |     |
| 1   | EA  | REMOTE RELEASE                  | BY SECURITY CONTRACTOR        | ✓    |         | B/O |
| 2   | EA  | DOOR POSITION SWITCH            | BY SECURITY INTEGRATOR        | ✓    |         |     |
| 1   | EA  | POWER SUPPLY                    | PS904 900-2RS 120/240 VAC     | ☐    | ✓       | VON |
| POWER THEORY DOORS  |     |                                 |                               |      |         |     |
| SUPPLY SHARED OF NORMALLY   |     |                                 |                               |      |         |     |
| WITH DR.  |     |                                 |                               |      |         |     |
| V2-2 OPERATION: LOCKED.   |     |                                 |                               |      |         |     |
| PROPER CREDENTIAL TO READER OR REMOTE RELEASE FROM OFFICE RETRACTS LATCH ON LEAF. |     |                                 |                               |      |         |     |
| ACTIVE (RHR)  |     |                                 |                               |      |         |     |
| BOTH LEAVES CAN BE LEFT UNLOCKED WITH LATCHED RETRACTED THROUGH ACCESS SYSTEM.    |     |                                 |                               |      |         |     |
| CONTROL   |     |                                 |                               |      |         |     |
| FREE EGRESS AT ALL TIMES.   |     |                                 |                               |      |         |     |
| DOOR REMAINS LOCKED UPON LOSS OF POWER (FAIL SECURE).                             |     |                                 |                               |      |         |     |

Beacon CSD CIP-21 Project D

Hardware Group No. E20

For use on Door #(s):

V2-2

(Glenham)

Provide each PR door(s) with the following:

| QTY  |        | DESCRIPTION                     | CATALOG NUMBER                |      | FINISH  | MFR                |
|--|--------|---------------------------------|-------------------------------|------|---------|--------------------|
| 2  | EA     | CONT. HINGE                     | 112HD EPT                     | ☐    | 628     | IVE                |
| 2  | EA     | POWER TRANSFER                  | EPT10                         | ☐    | ✓ 689   | VON                |
| 1  | EA     | REMOVABLE MULLION               | KR4954 STAB                   | ☐    | 689     | VON                |
| 1  | EA     | ELEC PANIC HARDWARE             | RX-QEL-99-EO 24 VDC           | ☐    | ✓ 626   | VON                |
| 1  | EA     | ELEC PANIC HARDWARE             | RX-QEL-99-NL-OP-110MD VDC     | 24 ☐ | ✓ 626   | VON                |
| 2  | EA     | SFIC CYLINDER                   | AS REQUIRED                   |      | 626     |                    |
| 2  | EA     | PERMANENT CORE                  | BY OWNER                      |      | 626     | BES                |
| 2  | EA     | 90 DEG OFFSET PULL              | 8190EZHD 10" STD              | ☐    | 630-316 | IVE                |
| 2  | EA     | OH STOP                         | 100S                          | ☐    | 630     | GLY                |
| 2  | EA     | SURFACE CLOSER                  | 4050A EDA                     | ☐    | 689     | LCN                |
| 2  | EA     | BLADE STOP SPACER               | 4050A-61 SRT                  | ☐    | 689     | LCN                |
| 1  | EA     | MULLION SEAL                    | 8780NBK PSA                   | ☐    | BK      | ZER                |
| 1  | SET    | INTEGRAL GASKETING              | BY DOOR AND FRAME MFR.        |      |         |                    |
| 2  | EA     | RECESSED ADJUSTABLE DOOR BOTTOM | PROVIDED BY DOOR MANUFACTURER |      |         |                    |
| 1  | EA     | CREDENTIAL READER               | BY SECURITY INTEGRATOR        | ✓    |         |                    |
| 1  | EA     | REMOTE RELEASE                  | BY SECURITY CONTRACTOR        | ✓    |         | B/O                |
| 2  | EA     | DOOR POSITION SWITCH            | BY SECURITY INTEGRATOR        | ✓    |         |                    |
| POWER THEORY DOORS   | SUPPLY | SHARED OF NORMALLY              | WITH                          | DR.  | V2-1    | OPERATION: LOCKED. |
| PROPER CREDENTIAL TO READER OR REMOTE RELEASE FROM OFFICE RETRACTS LATCH ON ACTIVE |        | (RHR)                           |                               |      |         | LEAF.              |
| BOTH LEAVES CAN BE LEFT UNLOCKED WITH LATCHED RETRACTED THROUGH ACCESS CONTROL     |        |                                 |                               |      |         | SYSTEM.            |
| FREE EGRESS AT ALL   |        |                                 |                               |      |         | TIMES.             |
| DOOR REMAINS LOCKED UPON LOSS OF POWER (FAIL SECURE).                              |        |                                 |                               |      |         |                    |

END OF SECTION

## **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. Fire-protection-rated glazing.
  - 3. Fire-resistance-rated glazing.
  - 4. Security glazing.
  - 5. Insulating glass.

#### **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.

#### 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," "Flush Wood Doors," "Fire-Rated Glazed Opening Assemblies," and "Aluminum-Framed Entrances and Storefronts," concurrently.

#### 1.7 ACTION SUBMITTALS

- A. Product Data: For each type of product indicated.
1. Insulating glass.
- 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.
  4. Security 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. Fire-protection-rated glazing.
  2. Fire-resistance-rated glazing.
  3. Security glazing.
  4. Insulating glass.
- 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 INFORMATIONAL SUBMITTALS

- A. Forced-Entry-Resistance-Rated Certification: For each type of forced-entry-resistance-rated security glazing for tests performed by a qualified testing agency indicating compliance with performance requirements.
- B. Bullet-Resistance-Rated Performance Certification: For each type of bullet-resistance-rated security glazing for tests performed by a qualified testing agency indicating compliance with performance requirements.
- C. Preconstruction adhesion and compatibility test report.

#### 1.9 CLOSEOUT SUBMITTALS

- A. Maintenance Data: For glazing to include in maintenance manuals.
- B. Warranties: Executed special warranties.

#### 1.10 PRECONSTRUCTION TESTING

- A. Preconstruction Adhesion and Compatibility Testing: Test each glazing product, tape sealant, gasket, glazing accessory, and framing member for adhesion to and compatibility with elastomeric glazing sealants.
  - 1. Testing is not required if data are submitted based on previous testing of current sealant products and glazing materials matching those submitted.
  - 2. Use ASTM C1087 to determine whether priming and other specific joint-preparation techniques are required to obtain rapid, optimum adhesion of glazing sealants to glazing, tape sealants, gaskets, and glazing channel substrates.
  - 3. Test no fewer than eight Samples of each type of material, including joint substrates, shims, sealant backings, secondary seals, and miscellaneous materials.
  - 4. Schedule enough time for testing and analyzing results.
  - 5. For materials failing tests, submit sealant manufacturer's written instructions for corrective measures including use of specially formulated primers.

#### 1.11 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.

#### 1.12 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.

#### 1.13 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-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 Laminated-Glass Security Glazing: Manufacturer or manufacturer/fabricator, as applicable, agrees to replace laminated-glass security glazing units that deteriorate within specified warranty period. Deterioration of laminated glass security glazing is defined as defects developed from normal use that are not attributed to glass breakage or to maintaining and cleaning laminated glass security glazing 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 Security Glazing", as used in this paragraph, includes clear laminated-glass security glazing.
1. Warranty Period: 5 years from date of Substantial Completion.
- E. 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[s] "Manufacturer's Special Warranty for Laminated-Glass Security Glazing" 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.

## 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.
  1. Installed security glazing shall withstand security-related loads and forces without damage to the glazing beyond that allowed by referenced standards.

- 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.
  2. Design Snow Loads: As indicated on Drawings.
  3. Maximum Lateral Deflection: For glazing supported on all four edges, limit center-of-glass deflection at design wind pressure to not more than 1/50 times the short-side length or 1 inch, whichever is less. Maintain engagement of the glazing edge with an appropriate margin of safety under all conditions.
- D. Windborne-Debris-Impact Resistance: Exterior glazing shall pass ASTM E1886 missile-impact and cyclic-pressure tests in accordance with ASTM E1996 for Wind Loading per drawings for basic protection.
1. Large-Missile Test: For glazing located within 30 feet of grade.
  2. Small-Missile Test: For glazing located between 30 feet and above grade.
- E. Safety Glazing: Where safety glazing is indicated, provide glazing that complies with 16 CFR 1201, Category II.
- F. Security Glazing: Installed security glazing shall withstand security-related loads and forces without damage to the glazing beyond that allowed by referenced standards.
- G. 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.
- H. Fire-Test-Response Characteristics of Plastic Glazing: As determined by testing plastic glazing by a qualified testing agency acceptable to authorities having jurisdiction.
1. Self-ignition temperature of 650 deg F or higher when tested according to ASTM D1929 on plastic sheets in thicknesses indicated for the Work.

2. Smoke-Developed Index of 450 or less when tested according to ASTM E84, or smoke density of 75 or less when tested according to ASTM D2843 on plastic sheets in thicknesses indicated for the Work.
3. Burning rate of 1 inch or less when tested according to ASTM D635 at a nominal thickness of 0.060 inch or thickness indicated for the Work, where Class CC1 is indicated.
4. Burning rate of 2.5 in./min. or less when tested according to ASTM D635 at a nominal thickness of 0.060 inch or thickness indicated for the Work, where Class CC2 is indicated.
5. Flame-spread index of not less than that indicated when tested according to ASTM E84.

## 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: "Laminated Glazing Reference Manual" and "Glazing Manual."
  2. IGMA Publication for Insulating Glass: SIGMA TM-3000, "North American Glazing Guidelines for Sealed Insulating Glass Units for Commercial and Residential Use."
- B. Safety Glazing Labeling: Where safety glazing is indicated, permanently mark glazing with certification label of the SGCC or another certification agency acceptable to authorities having jurisdiction. Label shall indicate manufacturer's name, type of 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. Plastic Glazing Labeling: Identify plastic sheets with appropriate markings of applicable testing and inspecting agency, indicating compliance with required fire-test-response characteristics.
- F. 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.
- G. 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.
- H. 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. Low-Iron Annealed Float Glass: ASTM C1036, Type I, Class I (clear), Quality-Q3; and with visible light transmission of not less than 91 percent.
- C. Fully Tempered Float Glass: ASTM C1048, Kind FT (fully tempered), 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 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.

- D. 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 parallel to bottom edge of glass as installed unless otherwise indicated.

## 2.5 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 Tempered Glass: Fire-protection-rated tempered glass; complying with 16 CFR 1201, Category II.
  - 1. Type FP: Fire-protection-rated tempered glass, exempted from the hose-stream test.
    - 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 I.
      - 2) Technical Glass Products; Fireglass 20.
      - 3) Vetrotech Saint-Gobain; Pyroswiss 20.
    - b. Rating: 20 minutes.
    - c. Thickness: 6 mm.
    - d. Safety glazing required.
- D. 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; Pyran Platinum L.
      - 2) Technical Glass Products; FireLite Plus.
    - b. Rating: 45 minutes or 60 minutes.
    - c. Thickness: 8-9 mm.
    - d. Safety glazing required.

## 2.6 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-XLM 60.
      - 2) Technical Glass Products; Pilkington Pyrostop.
      - 3) Vetrotech Saint-Gobain; Contraflam 60.
    - b. Rating: 60 minutes.
    - c. Thickness: 23-33 mm.
    - d. Safety glazing required.

## 2.7 SECURITY GLAZING

- A. Laminated-Glass Security Glazing: 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. Laminated glass made from multiple plies of uncoated, ultraclear (low-iron) float glass and complying with 16 CFR 1201, Category II.
  - 1. Type SCL: Clear laminated-glass security glazing.
    - a. Products: Subject to compliance with requirements, available products that may be incorporated in the Work include, but are not limited to:
      - 1) Global Security Glazing; Childgard 2118.
      - 2) LTI Smart Glass, Inc.; SG5 by School Guard Glass.
      - 3) Oldcastle BuildingEnvelope, a CRH Company; ArmorGarde Plus.
    - b. Forced-Entry Resistance:
      - 1) Class 1.4 according to ASTM F1233.
      - 2) H. P. White 5-aa1 assault test-rated for not less than 12 minutes, as a continuous attack.
        - a) Withstand a minimum of 5 shots from a military-style assault rifle with a minimum caliber of 7.62 mm.



- b) Withstand a minimum of abuse as applied by a single assailant at full force, including strikes with bricks, hammers, baseball bats, and sledgehammers.
- c. Nominal Overall Thickness: 7/16- to 9/16-inch.
- d. Interlayer Thickness: As required for performance indicated.
- e. Interlayer Color: Clear.
- f. Appearance: Provide clear laminated-glass security glazing without haze and with visual clarity and transparency indistinguishable from clear fully tempered float glass.
- g. 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 Warm Edge Technology (WET) 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. Winter Nighttime U-Factor: 0.24 Btu/sq. ft. x h x deg F maximum.
    - g. SHGC: 0.28 maximum.
    - h. Visible Light Transmittance: 62 percent minimum.
- C. Insulating Security Glass:
  - 1. Type FCE/SCL: Low-e-coated, laminated-glass security insulating glass.
    - a. Overall Unit Thickness: 1 and 1/16 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 security glazing, Type SCL.
    - f. Winter Nighttime U-Factor: 0.24 Btu/sq. ft. x h x deg F maximum.

- g. SHGC: 0.28 maximum.
- h. Visible Light Transmittance: 57 percent minimum.

D. Insulating Skylight Glass:

## 2.9 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.

## 2.10 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.

## 2.11 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, including security applications, 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.

## 2.12 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.

## 2.13 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. Clean-cut or flat-grind vertical edges of butt-glazed monolithic lites to produce square edges with slight chamfers at junctions of edges and faces.
- C. Grind smooth and polish exposed glass edges and corners.

## 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.
- D. For laminated-glass security glazing, examine glazing units to locate attack or threat side and protected side. Label or mark units as needed so that attack or threat side and protected side are readily identifiable. Do not 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. For security glazing, set glazing lites with proper orientation so that surfaces face attack or threat side or protected side as specified.
- L. 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.

- M. 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. Z-shaped furring.
  - 6. Tie wire.
  - 7. Hanger attachments to concrete.
  - 8. Wire hangers.
  - 9. Flat hangers.
  - 10. Carrying channels (main runners).
  - 11. 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.
- B. STC-Rated Assemblies: For STC-rated assemblies, provide materials and construction identical to those tested in assembly indicated on Drawings, according to ASTM E90 and classified according to ASTM E413 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. Z-Shaped Furring: With slotted or nonslotted web, face flange of 1-1/4 inches, wall attachment flange of 7/8 inch, minimum uncoated-steel thickness of 0.0179 inch, and depth required to fit insulation thickness indicated.

## 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 AC308 as appropriate for the substrate.
    - a. Uses: Securing hangers to structure.
    - b. Type: 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.
    - d. Material for Exterior or Interior Locations and Where Stainless Steel Is Indicated: Alloy Group 1 stainless-steel bolts, ASTM F593, and nuts, ASTM F594.
  - 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. 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.
- E. 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.
- B. Coordination with Sprayed Fire-Resistive Materials:
  - 1. Before sprayed fire-resistive materials are applied, attach offset anchor plates or ceiling tracks to surfaces indicated to receive sprayed fire-resistive materials. Where offset anchor plates are required, provide continuous plates fastened to building structure not more than 24 inches o.c.
  - 2. After sprayed fire-resistive materials are applied, remove them only to extent necessary for installation of non-load-bearing steel framing. Do not reduce thickness of fire-resistive materials below that are required for fire-resistance ratings indicated. Protect adjacent fire-resistive materials from damage.

### 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.
  - 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.
  5. Sound-Rated Partitions: Install framing to comply with sound-rated assembly indicated.
  6. Curved Partitions:
    - a. Bend track to uniform curve and locate straight lengths so they are tangent to arcs.
    - b. Begin and end each arc with a stud, and space intermediate studs equally along arcs. On straight lengths of no fewer than two studs at ends of arcs, place studs 6 inches o.c.
- E. Direct Furring:
1. Screw to wood framing.
  2. Attach to concrete or masonry with stub nails, screws designed for masonry attachment, or powder-driven fasteners spaced 24 inches o.c.
- F. Z-Shaped Furring Members:
1. Erect insulation, specified in Division 07 Section "Thermal Insulation," vertically and hold in place with Z-shaped furring members spaced 24 inches o.c.
  2. Except at exterior corners, securely attach narrow flanges of furring members to wall with concrete stub nails, screws designed for masonry attachment, or powder-driven fasteners spaced 24 inches o.c.
  3. At exterior corners, attach wide flange of furring members to wall with short flange extending beyond corner; on adjacent wall surface, screw-attach short flange of furring channel to web of attached channel. At interior corners, space second member no more than 12 inches from corner and cut insulation to fit.
- G. 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 as 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 board, Type X.
  - 2. Flexible gypsum board.
  - 3. Abuse-resistant gypsum board.
  - 4. Mold-resistant gypsum board.
  - 5. Acoustically enhanced gypsum board.
  - 6. 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.
- B. STC-Rated Assemblies: For STC-rated assemblies, provide materials and construction identical to those tested in assembly indicated according to ASTM E90 and classified according to ASTM E413 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 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.
- B. Flexible Gypsum Board: ASTM C1396/C1396M. Manufactured to bend to fit radii and to be more flexible than standard regular-type gypsum board of same thickness.
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; Flex Gypsum Board.
    - b. National Gypsum Company; Gold Bond Brand High Flex Gypsum Board.
    - c. USG Corporation; Sheetrock Brand Flexible Gypsum Panels.
  2. Thickness: 1/4 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.

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. Wood Framing: Install gypsum panels over wood framing, with floating internal corner construction. Do not attach gypsum panels across the flat grain of wide-dimension lumber, including floor joists and headers. Float gypsum panels over these members or provide control joints to counteract wood shrinkage.
- J. 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.

- K. 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. Type X: All surfaces unless otherwise indicated.
2. Flexible Type: Apply in double layer at curved assemblies.
3. Abuse-Resistant Type: As indicated on Drawings.
4. Mold-Resistant Type: As indicated on Drawings.
5. Acoustically Enhanced 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. On Z-shaped furring members, apply gypsum panels vertically (parallel to framing) with no end joints. Locate edge joints over furring members.
4. 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.

#### D. Curved Surfaces:

1. Install panels horizontally (perpendicular to supports) and unbroken, to extent possible, across curved surface plus 12-inch-long straight sections at ends of curves and tangent to them.
2. For double-layer construction, fasten base layer to studs with screws 16 inches o.c. Center gypsum board face layer over joints in base layer, and fasten to studs with screws spaced 12 inches o.c.

### 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.

### 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.

#### **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: CFT.
  - 2. Glazed wall tile: CWT.
  - 3. Marble thresholds.



4. Latex-portland cement.
  5. Portland cement mortar (thickset) installation materials.
  6. Latex-portland cement mortar (thin set).
  7. Water-cleanable epoxy grout.
  8. Trowelable underlayments and patching compounds.
- 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.
  2. Full-size units of each type of trim and accessory for each color and finish required.
  3. Stone thresholds 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 HEX SHAMROCK MOSAIC or comparable product by one of the following:
  - a. American Olean Inc.
- 2. Composition: ceramic mosaic porcelain.
- 3. Module Size: 1/2 inches HEX.
- 4. Thickness: 1/4 inch.
- 5. Face: Plain with cushion edges.
- 6. Surface: Slip-resistant.
- 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.
- 9. Trim Units: Coordinated with sizes and coursing of adjoining flat tile where applicable and matching characteristics of adjoining flat tile. Provide shapes as follows, selected from manufacturer's standard shapes:

### 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, VERTICAL STACK
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 X 12 inches.
  - b. Base for Thin-Set Mortar Installations: Straight, module size 4 X 12 inches.

## 2.3 THRESHOLDS

- A. 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.
- B. 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.

## 2.4 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. 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.
- C. Moisture Control: 2-part liquid coating.
  - 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 Vapor Ban Primer ER.
    - b. MAPEI Planiseal MSP.
- 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

## 2.5 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.
  - 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.

## 2.6 GROUT MATERIALS

A. Water-Cleanable Epoxy Grout: ISO 13007; RG and ANSI A118.3.

1. Basis-of-Design Product: Subject to compliance with requirements, provide Laticrete International; Spectralock Pro Premium Epoxy Grout or comparable product by one of the following:
  - a. MAPEI-Kerapoxy CQ
  - b. TEC; a subsidiary of H. B. Fuller Company.
  - c. Custom Building Products

## 2.7 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; stainless-steel, ASTM A 666, 300 Series 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.

## 2.8 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 bonded mortar bed or thin-set 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.
- 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.

### 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 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 F114-11: Cement mortar bed (thickset) with cleavage/waterproof membrane; epoxy grout; TCNA F114, ANSI A108.1B
  - a. Tile Type: CFT.
  - b. Thin-Set Mortar for Cured-Bed Method: Latex-portland cement mortar.
  - c. Grout: Water-cleanable epoxy grout.
- 2. Tile Installation F122-11: Thin-set mortar on cleavage/waterproof membrane; TCNA F122, ANSI A108.5.
  - a. Tile Type: CFT.
  - b. Thin-Set Mortar: Latex-portland cement mortar.
  - c. Grout: epoxy grout.

#### B. Interior Wall Installations:

- 1. Tile Installation W211-11: Cement mortar bed (thickset) bonded to substrate with crack isolation membrane; TCNA W211 and ANSI A108.1C.
  - a. Tile Type: CWT.
  - 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: Water-cleanable epoxy grout.
- 2. Tile Installation W244-11: Thin-set mortar on cementitious backer units over cleavage membrane; TCNA W244.
  - a. Tile Type: CWT.
  - b. Thin-Set Mortar: Latex-portland cement mortar.
  - c. Grout: Water-cleanable epoxy grout.

END OF SECTION 09 30 13

## **SECTION 09 30 16 – QUARRY 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. Quarry tile.
  - 2. Stone thresholds.
  - 3. Waterproof membrane.
  - 4. Metal edge strips.

#### **1.3 DEFINITIONS**

- A. General: Definitions in the current ANSI A108 series of tile installation standards and in the current ANSI A137.1 apply to Work of this Section unless otherwise specified.
- B. ANSI A108 Series: ANSI A108.01, ANSI A108.02, ANSI A108.1A, ANSI A108.1B, ANSI A108.1C, ANSI A108.4, ANSI A108.5, ANSI A108.6, ANSI A108.8, ANSI A108.9, ANSI A108.10, ANSI A108.11, ANSI A108.12, ANSI A108.13, ANSI A108.14, ANSI A108.15, ANSI A108.16, and ANSI A108.17, which are contained in "American National Standard Specifications for Installation of Ceramic Tile."
- C. Face Size: Actual tile size, excluding spacer lugs.

#### **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- Minimum 0.42 wet.

#### **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.
- 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.
- 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.
  - 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 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.
- 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 mockup of each type of floor tile installation.
  - 2. Build mockup of each type of wall tile installation.
  - 3. Approved mockups may become part of the completed Work if undisturbed at time of Substantial Completion.
- E. Pre-installation Conference: Conduct conference at Project site.
  - 1. Review requirements in ANSI A108.01 for substrates and for preparation by other trades.

#### 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. Current ANSI Standards for Tile Installation Materials: Provide materials complying with ANSI A108.02, ANSI standards referenced in other Part 2 articles, ANSI standards referenced by TCA installation methods specified in tile installation schedules, and other requirements specified.
- C. FloorScore Compliance: Tile for floors shall comply with requirements of FloorScore Standard.
- D. Low-Emitting Materials: Tile flooring systems 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."
- E. 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.

## 2.2 TILE PRODUCTS

- A. Tile Type QT [**Insert designation**]: Unglazed square-edged quarry tile.
  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 Olean; Division of Dal-Tile International Inc.; Quarry Naturals.
    - b. Daltile; Division of Dal-Tile International Inc.; Quarry Textures.
  2. Face Size: 6 by 6 inches- to match existing.
  3. Thickness: 1/2 inch.
  4. Tile Color and Pattern: As selected by Architect from manufacturer's full range.
  5. Grout Color: As selected by Architect from manufacturer's full range.
  6. 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: Coved with surface bullnose top edge, size to match existing.

## 2.3 THRESHOLDS

- A. 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.
- B. 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.

## 2.4 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. Laticrete Hydro Ban Sheet Membrane
    - b. Noble Company (The); Nobleseal TS.
- C. Latex-Portland Cement: 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 Chemical Waterproof Membrane
    - b. MAPEI Corporation; Mapelastic (PRP 315).

## 2.5 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.

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. Laticrete 3701 Fortified Mortar Bed or 3701 Admix with 226 Thick Bed Mortar

## 2.6 GROUT MATERIALS

- A. Polymer-Modified Tile Grout: ANSI A118.7.

1. Basis-of-Design Product: Subject to compliance with requirements, provide MAPEI Corporation; Keracolor **S** or comparable product by one of the following:
  - a. Laticrete High Performance Permacolor.
2. Polymer Type: Ethylene vinyl acetate or acrylic additive, in dry, redispersible form, prepackaged with other dry ingredients.

## 2.7 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. 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

## 2.8 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 ANSI A108.01 for installations indicated.
  - 2. Verify that concrete substrates for tile floors installed with bonded mortar bed or [thin-set 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 floors installed with suitable products made to be trowelable for 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 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's installation methods specified in tile installation schedules. Comply with parts of the ANSI A108 Series "Specifications for Installation of Ceramic Tile" that are referenced in TCNA installation methods, specified in tile installation schedules, and apply to types of setting and grouting materials used.
  - 1. For the following installations, follow procedures in the most current ANSI A108 Series of tile installation standards for providing 95 percent mortar coverage:
    - a. Tile floors in wet areas.
    - b. Tile floors composed of rib-backed tiles.
- B. Extend tile work into recesses and under or behind equipment and fixtures to form complete covering without interruptions unless otherwise indicated. Terminate work neatly at obstructions, edges, and corners without disrupting pattern or joint alignments.
- C. Accurately form intersections and returns. Perform cutting and drilling of tile without marring visible surfaces. Carefully grind cut edges of tile abutting trim, finish, or built-in items for straight aligned joints. Fit tile closely to electrical outlets, piping, fixtures, and other penetrations so plates, collars, or covers overlap tile.
- D. Provide manufacturer's standard trim shapes where necessary to eliminate exposed tile edges.
- E. Jointing Pattern: Lay tile in grid pattern unless otherwise indicated. Lay out tile work and center tile fields in both directions in each space or on each wall area. Lay out tile work to minimize the use of pieces that are less than half of a tile. Provide uniform joint widths unless otherwise indicated.
  - 1. Where adjoining tiles on floor, base, walls, or trim are specified or indicated to be same size, align joints.
  - 2. 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.
- F. Joint Widths: Unless otherwise indicated, install tile with the following joint widths:
  - 1. Quarry Tile: to match existing.
- 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 them 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.

### 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 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.
- 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 QUARRY TILE INSTALLATION SCHEDULE

#### A. Interior Floor Installations, Concrete Subfloor:

1. Tile Installation F121: Cement mortar bed (thickset) on waterproof membrane; TCA F121 and ANSI A108.1C.
  - a. Thin-Set Mortar for Cured-Bed Method: Latex-portland cement mortar.
  - b. Grout: Polymer-modified sanded grout.

END OF SECTION 09 30 16

## **SECTION 09 30 19 – PORCELAIN 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. Porcelain tile.

#### **1.3 DEFINITIONS**

- A. General: Definitions in the current ANSI A108 series of tile installation standards and in current ANSI A137.1 apply to Work of this Section unless otherwise specified.
- B. ANSI A108 Series: ANSI A108.01, ANSI A108.02, ANSI A108.1A, ANSI A108.1B, ANSI A108.1C, ANSI A108.4, ANSI A108.5, ANSI A108.6, ANSI A108.8, ANSI A108.9, ANSI A108.10, ANSI A108.11, ANSI A108.12, ANSI A108.13, ANSI A108.14, ANSI A108.15, ANSI A108.16, and ANSI A108.17, which are contained in "American National Standard Specifications for Installation of Ceramic Tile."
- C. Module Size: Actual tile size plus joint width indicated.
- D. Face Size: Actual tile size, excluding spacer lugs.

#### **1.4 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 DCOF Acu-Test in accordance with ASTM A137.1-2012 standard:
  - 1. Level Surfaces: Minimum 0.42 wet.

#### **1.5 ACTION SUBMITTALS**

- A. Product Data: For each type of product indicated.
- 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 locations of floor drains and sloped slabs.
- 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.

#### 1.6 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.

#### 1.7 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.

#### 1.8 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.

#### 1.9 DELIVERY, STORAGE, AND HANDLING

- A. Deliver and store packaged materials in original containers with seals unbroken and labels intact until time of use. Comply with requirements in ANSI A137.1 for labeling tile packages.
- B. Store tile and cementitious materials on elevated platforms, under cover, and in a dry location.

- C. Store aggregates where grading and other required characteristics can be maintained and contamination can be avoided.
- D. Store liquid materials in unopened containers and protected from freezing.
- 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.

#### 1.10 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 TCA installation methods specified in tile installation schedules, and other requirements specified.
- C. Factory Blending: For tile exhibiting color variations within ranges, blend tile in factory and package so tile units taken from one package show same range in colors as those taken from other packages and match approved Samples.

#### 2.2 TILE PRODUCTS

- A. Tile Type PT: Porcelain tile with Cross Tread. (School Kitchen application)
  - 1. Basis-of-Design Product: Subject to compliance with requirements, provide "Cross-Colors Mingles" by Crossville Inc. or comparable product by one of the following:
    - a. Approved Equal.
  - 2. Composition: Porcelain.
  - 3. Face Size: 6 by 6 inches.
  - 4. Thickness: 5/16 inch.

5. Face: Cross-Tread with square or cushion edges.
6. Finish: Cross-Tread.
7. Tile Color and Pattern: As selected by Architect from manufacturer's full range.
8. Grout Color: As selected by Architect from manufacturer's full range.
9. Leveling clips- for tile sizes over 12" x 12" use required leveling clips similar to "Raimondi Leveling System Clips". Including pliers for wall and floor applications, breakaway clips and wedges.
10. Trim Units: Coordinated with sizes and coursing of adjoining flat tile where applicable. Provide shapes as follows, selected from manufacturer's standard shapes.

## 2.3 SETTING MATERIALS

- A. 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.

## 2.4 GROUT MATERIALS

- A. Water-Cleanable Epoxy Grout: ANSI A118.3
  1. Basis-of-Design Product: Subject to compliance with requirements, provide MAPEI Corporation; Kerapoxy CQ or comparable product by one of the following:
    - a. Laticrete International, Inc.-Spectralock Pro premium Grout

## 2.5 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. Latex-Portland Cement: 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
- b. MAPEI Corporation; Mapelastic (PRP 315).

## 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.
- 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. Laticrete 3701 or Laticrete 3701 Admix with 226 Thick Bed Mortar

### B. Latex-Portland Cement Mortar (Thin Set): ANSI A118.4.

- 1. Basis-of-Design Product: Subject to compliance with requirements, provide MAPEI Corporation; Kerabond/Keralastic System or comparable product by one of the following:
  - a. Laticrete 254 Platinum.
- 2. Provide prepackaged, dry-mortar mix containing dry, redispersible, vinyl acetate or acrylic additive to which only water must be added at Project site.
- 3. For wall applications, provide mortar that complies with requirements for nonsagging mortar in addition to the other requirements in ANSI A118.4.

## 2.7 GROUT MATERIALS

### A. Polymer-Modified Tile Grout: ANSI A118.7.

- 1. Basis-of-Design Product: Subject to compliance with requirements, provide MAPEI Corporation; Keracolor S or comparable product by one of the following:
  - a. Laticrete High Performance Permacolor.

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. 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.

## 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, and free of coatings that are incompatible with tile-setting materials including curing compounds and other substances that contain soap, wax, oil, or silicone; and comply with flatness tolerances required by ANSI A108.01 for installations indicated.
  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 floors installed with patching and leveling with suitable products made to be trowelable for 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 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 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. Where adjoining tiles on floor, base, walls, or trim are specified or indicated to be same size, align joints.
  - 2. 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.
- F. Joint Widths: Unless otherwise indicated, install tile with the following joint widths:
  - 1. Porcelain Tile: Match existing.
- 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 them at same width and as current TCNA EJ171.

### 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 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.

- 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 PORCELAIN TILE INSTALLATION SCHEDULE

- A. Interior Floor Installations, Concrete Subfloor:
  - 1. Tile Installation F121: Cement mortar bed (thickset) on waterproof/crack isolation membrane; TCA F121 and ANSI A108.1C.
    - a. Thin-Set Mortar for Cured-Bed Method: Latex-portland cement mortar.
    - b. Grout: Polymer-modified sanded grout.
  - 2. Tile Installation F122: Thin-set mortar on waterproof membrane; TCA F122.
    - a. Thin-Set Mortar: Latex-portland cement mortar.
    - b. Grout: Polymer-modified sanded grout.

END OF SECTION 09 30 19

## **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. Hold-down clips.
  - 4. Seismic clips, stabilizer bars, struts.
  - 5. 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.

2. Acoustical panels for ceiling type A2.
  3. Acoustical panels for ceiling type A3.
  4. Acoustical panels for ceiling type A4.
  5. Metal suspension system for ceiling types.
  6. 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.
- D. Delegated-Design Submittal: For seismic restraints for ceiling systems.
1. Include design calculations for seismic restraints including analysis data signed and sealed by the qualified professional engineer responsible for their preparation.

#### 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. 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. Delegated Design: Engage a qualified professional engineer, as defined in Division 01 Section "Quality Requirements," to design seismic restraints for ceiling systems.
- B. Seismic Performance: Suspended ceilings shall withstand the effects of earthquake motions determined according to ASCE/SEI 7.
- 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: 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, unless otherwise indicated.
- 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 1713.
  - b. CertainTeed Ceilings; Fine Fissured High NRC HHF-457 HNRC.
  - c. USG Corporation; Radar High-NRC Panels 22111.

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: Square.
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 40 percent.

C. Acoustical 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.; Ultima Lay-In 1991.
  - b. CertainTeed Ceilings; Symphony f 13412-60-IOF-1.
  - c. USG Corporation; Mars High-NRC Logix Acoustic Panel 86517.
2. Type and Form: Type IV, mineral base with painted finish; Form 2, water felted.
3. Pattern: As indicated by manufacturer's designation.
4. Modular Size: 12 by 60 inches.
5. Thickness: 3/4 inch minimum.
6. Edge Detail: Square.
7. NRC: Not less than 0.75
8. Recycled Content: Not less than 40 percent.

D. Acoustical Panels for Ceiling Type A4:

1. Products: Subject to compliance with requirements, available products that may be incorporated into the Work include, but are not limited to:
  - a. Unika Vaev Instyle: Ecooustic Sculpt Tide.
2. Type and Form: Felt modular system.
3. Pattern: As indicated by manufacturer's designation.

4. Modular Size: 24 by 24 inches.

## 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, A2, A3, and A4:
  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: Heavy-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.

## 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. Comply with seismic design requirements.
  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 bonded anchors.

2. 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 hangers of type indicated and with capability to sustain, without failure, a load equal to 10 times that imposed by ceiling construction, as determined by testing according to ASTM E1190, conducted by a qualified testing and inspecting agency.
- B. Wire Hangers, Braces, and Ties: Provide wires as follows:
1. Nickel-Copper-Alloy Wire: ASTM B164, nickel-copper-alloy UNS No. N04400.
  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. Hold-Down Clips: Manufacturer's standard hold-down.
- D. Seismic Clips: Manufacturer's standard seismic clips designed to secure acoustical panels in place during a seismic event.
- E. Seismic Stabilizer Bars: Manufacturer's standard perimeter stabilizers designed to accommodate seismic forces.
- F. Seismic Struts: Manufacturer's standard compression struts designed to accommodate seismic forces.

## 2.8 METAL EDGE MOLDINGS AND TRIM

- A. Roll-Formed, Sheet-Metal Edge Moldings and Trim: Type and profile indicated or, if not indicated, manufacturer's standard moldings for edges and penetrations that comply with seismic design requirements; formed from sheet metal of same material, finish, and color as that used for exposed flanges of suspension-system runners.
1. Edge moldings shall fit acoustical panel edge details and suspension systems indicated and match width and configuration of exposed runners unless otherwise indicated.
  2. For lay-in panels with reveal edge details, provide stepped edge molding that forms reveal of same depth and width as that formed between edge of panel and flange at exposed suspension member.
  3. For circular penetrations of ceiling, provide edge moldings fabricated to diameter required to fit penetration exactly.
- B. 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, seismic design requirements, 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. 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.
  - 3. Install hold-down clips in areas indicated; space according to panel manufacturer's written instructions unless otherwise indicated.
    - a. Hold-Down Clips: Space 24 inches o.c. on all cross runners only at Glenham Elementary School entry vestibule.

#### 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 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 stair accessories.
3. Abrasive safety strips.
4. 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. Trowelable leveling and patching compounds.
8. Concrete slab primer.
9. Adhesives.
10. 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 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.

## 2.3 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.

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.

## 2.4 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.
- 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.

## 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. Interface: Stargazing Collection.
- B. Tile Standard: ASTM F 1700.
  - 1. Class: Class III, printed film vinyl tile.
  - 2. Type: Type B, embossed surface.
- C. Thickness: 4.5mm.
- D. Size: 50cm x 50cm.
- 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: 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: to match existing, in pattern of colors and sizes indicated.
    - b. Accent Tile: to match existing, 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. Interlocking, rubber floor 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 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. 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 and custom colors.
  - 2. 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 tiles on flat surfaces.

## 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 post installation 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 INTERLOCKING, RUBBER FLOOR TILE

- A. Basis-of-Design Product: Subject to compliance with requirements, provide Pawling Corporation; Architectural Products Division; Hid-N-Lok II HL-155 or comparable product.
- B. Description: Athletic flooring consisting of modular rubber tiles with precision cut, interlocking edges, for free-lay installation.
- C. Material: Rubber.
- D. Fire-Test-Response Characteristics: ASTM E 648; greater than 0.45 W/cm2, Class 1.
- E. Tile Interlock: Hidden.
- F. Traffic-Surface Texture: Textured.
- G. Size: 24 inches square.
- H. Thickness: 3/8 inch.
- I. Weight: Not less than 12 pounds per tile.
- J. Color and Pattern: As selected by Architect from manufacturer's full range.

## 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 FLOOR TILE INSTALLATION

- A. Lay out 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 -to match existing.
- B. Discard broken, cracked, chipped, or deformed tiles.
- C. Match tiles for color and pattern by selecting tiles from cartons in same sequence as manufactured and packaged if so numbered.
- D. 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.
- E. Free-Lay Flooring: Place flooring at locations indicated with all units securely interconnected and fully seated on substrate to form a smooth, level surface.

### 3.5 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 marks, 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 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.
  - 1. Thin-set, epoxy-resin matrix terrazzo flooring- poured epoxy.
  - 2. Epoxy- resin matrix terrazzo base- precast.
  - 3. Thin-set divider strips.
  - 4. Heavy-top divider strips.
  - 5. Control-joint strips.
  - 6. Accessory strips.
  - 7. Anchoring devices.
  - 8. Patching and fill material.
  - 9. Joint compound.
  - 10. Resinous matrix terrazzo cleaner.
- 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. Marble threshold location.
4. Photocopies of Tetra Tech documentation not acceptable.
5. Divider strips.
6. Control-joint strips.
7. Precast terrazzo jointing and edge configurations.
8. 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. Precast Terrazzo: 6-inch-square Samples.
2. Accessories: 6-inch-long Samples of each exposed strip item required.
3. NTMA color plates showing the full range of colors and patterns available for each terrazzo type.

#### 1.6 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.

#### 1.7 CLOSEOUT SUBMITTALS

- A. Maintenance Data: For terrazzo to include in maintenance manuals.

#### 1.8 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.

## 1.9 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.

## 1.10 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. Terrazzo & Marble Supply Companies; Terroxy Resin Systems.
  - 2. Thickness: 3/8 inch nominal.



3. Formulated Mix Color and Pattern: To match existing or As selected by Architect from NTMA terrazzo plates.
4. Custom Mix Color and Pattern: Match Architect's sample 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.
  2. Top Width: To match existing.
- B. Heavy-Top Divider Strips: L-type angle in depth required for topping thickness indicated.
1. Bottom-Section Material: Matching top-section material.
  2. Top-Section Material: White-zinc.
  3. Top-Section Width: To match existing.
- C. 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.
- D. 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. 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 Matrix 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 to match existing back to back directly above concrete-slab control joints.
    - c. Install control-joint strips to match existing 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 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.

### 3.5 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 67 23 - RESINOUS 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. Decorative resinous flooring systems - Epoxy.

#### **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 manufacturer's technical data, application instructions, and recommendations for each resinous flooring component required.
- B. Samples for Verification and Initial Color Selection: For each resinous flooring system required, 6 inches square, applied to a rigid backing by Installer for this Project.
- C. Product Schedule: For resinous flooring.

#### **1.5 INFORMATIONAL SUBMITTALS**

- A. Installer Certificates: Signed by manufacturer certifying that installers comply with specified requirements for each specified product as listed. At the time of product submission, TetraTech will contact each product manufacturer to verify installation qualifications prior to being approved.
- B. Material Certificates: For each resinous flooring component, from manufacturer.
- C. Material Test Reports: For each resinous flooring system.

#### **1.6 CLOSEOUT SUBMITTALS**

- A. Maintenance Data: For resinous flooring to include in maintenance manuals.

## 1.7 QUALITY ASSURANCE

- A. Installer Qualifications: Manufacturer's authorized representative who is trained and approved for installation of flooring systems required for this Project.
  - 1. Engage an installer who is certified in writing by resinous flooring manufacturer as qualified to apply resinous flooring systems indicated.
- B. Source Limitations: Obtain primary resinous flooring materials, including primers, resins, hardening agents, grouting coats, and topcoats, 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. Mockups: Apply mockups to verify selections made under sample submittals and to demonstrate aesthetic effects and set quality standards for materials and execution.
  - 1. Apply full-thickness mockups on 48-inch-square floor area selected by Architect.
    - a. Include 48-inch length of integral cove base with inside and outside corner.
  - 2. Simulate finished lighting conditions for Architect's review of mockups.
  - 3. Approved mockups may become part of the completed Work if undisturbed at time of Substantial Completion.
- D. Preinstallation Conference: Conduct conference at Project site.

## 1.8 DELIVERY, STORAGE, AND HANDLING

- A. Deliver materials in original packages and containers, with seals unbroken, bearing manufacturer's labels indicating brand name and directions for storage and mixing with other components.

## 1.9 PROJECT CONDITIONS

- A. Environmental Limitations: Comply with resinous flooring manufacturer's written instructions for substrate temperature, ambient temperature, moisture, ventilation, and other conditions affecting resinous flooring application.
- B. Lighting: Provide permanent lighting or, if permanent lighting is not in place, simulate permanent lighting conditions during resinous flooring application.
- C. Close spaces to traffic during resinous flooring application and for not less than 24 hours after application unless manufacturer recommends a longer period.



## 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 comparable product by one of the following:
  - 1. Acrylicon Industrial Flooring
  - 2. BASF Construction Chemicals, Inc.; BASF Building Systems.
  - 3. Dur-A-Flex, Inc.
  - 4. Sherwin-Williams Company; General Polymers.
  - 5. Silikal America
  - 6. Stonhard, Inc.

### 2.2 MATERIALS

- A. VOC Content of Liquid-Applied Flooring Components: Not more than 100 g/L when calculated according to 40 CFR 59, Subpart D (EPA Method 24):
- 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."

### 2.3 DECORATIVE RESINOUS FLOORING – EPOXY

- A. Basis of design product: Subject to compliance with requirements, provide, "Ceramic Carpet by Sherwin Williams Company, General Polymers" or by the following:
  - 1. Or approved equal.
- B. Resinous Flooring: Abrasion-, impact- and chemical-resistant, decorative-aggregate-filled, epoxy-resin-based, monolithic floor surfacing designed to produce a seamless floor and integral cove base.
- C. System Characteristics:
  - 1. Color and Pattern: to match existing – custom mix.
  - 2. Wearing Surface: to match existing.
  - 3. Overall System Thickness: to match existing.
- D. Body Coats:
  - 1. Resin: Epoxy.
  - 2. Formulation Description: High solids.

3. Application Method: Self-leveling slurry with broadcast aggregates.
    - a. Thickness of Coats: 1/16 inch.
    - b. Number of Coats: Two.
  4. Aggregates: to match existing.
- E. Topcoat: Sealing or finish coats.
1. Resin: Epoxy.
  2. Formulation Description: High solids.
  3. Type: Clear.
  4. Finish: to match existing.
  5. Number of Coats: Two.
- F. System Physical Properties: Provide resinous flooring system with the following minimum physical property requirements when tested according to test methods indicated:
1. Compressive Strength: 12,000 psi per ASTM C 579.
  2. Tensile Strength: 2,500 psi min. per ASTM C 307.
  3. Flexural Strength: 4,500 psi min. per ASTM C 580.
  4. Water Absorption: 0.04% per ASTM D 570.
  5. Indentation: 0.025 percent maximum per MIL-D-3134.
  6. Impact Resistance: No chipping, cracking, or delamination and not more than 1/16-inch permanent indentation per MIL-D-3134.
  7. Resistance to Elevated Temperature: No slip or flow at required temperature per MIL-D-3134.
  8. Abrasion Resistance: 90 – 100 mg maximum weight loss per ASTM D 4060.
  9. Flammability: Self-extinguishing per ASTM D 635.
  10. Flame Spread/NFPA 101: Class A greater per ASTM E-84.
  11. Hardness: 65-80, Shore D per ASTM D 2240.
  12. Bond Strength: 300 psi, 100 percent concrete failure per ACI 503R.
- G. System Chemical Resistance: Test specimens of cured resinous flooring system are unaffected when tested according to ASTM D 1308 for 50 percent immersion in the following reagents for no fewer than seven days:

## 2.4 ACCESSORIES

- A. Primer: Type recommended by manufacturer for substrate and body coats indicated.
- B. Waterproofing Membrane: Type recommended by manufacturer for substrate and primer and body coats indicated.
- C. Reinforcing Membrane: Flexible resin formulation that is recommended by manufacturer for substrate and primer and body coats indicated and that prevents substrate cracks from reflecting through resinous flooring.
- D. Patching and Fill Material: Resinous product of or approved by resinous flooring manufacturer and recommended by manufacturer for application indicated.

## PART 3 - EXECUTION

### 3.1 PREPARATION

- A. General: Prepare and clean substrates according to resinous flooring manufacturer's written instructions for substrate indicated. Provide clean, dry substrate for resinous flooring application.
- B. Concrete Substrates: Provide sound concrete surfaces free of laitance, glaze, efflorescence, curing compounds, form-release agents, dust, dirt, grease, oil, and other contaminants incompatible with resinous flooring.
  - 1. Roughen concrete substrates as follows:
    - a. 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. Comply with ASTM C 811 requirements unless manufacturer's written instructions are more stringent.
  - 2. Repair damaged and deteriorated concrete according to resinous flooring manufacturer's written instructions.
  - 3. Verify that concrete substrates are dry and moisture-vapor emissions are within acceptable levels according to manufacturer's written instructions.
    - a. Perform anhydrous calcium chloride test, ASTM F 1869. Proceed with application of resinous flooring only after substrates have maximum moisture-vapor-emission rate of 5 lb of water/1000 sq. ft. of slab area in 24 hours.
    - b. Perform plastic sheet test, ASTM D 4263. Proceed with application only after testing indicates absence of moisture in substrates.
    - c. Perform relative humidity test using in situ probes, ASTM F 2170. Proceed with installation only after substrates have a maximum 85 percent relative humidity level measurement.
  - 4. Alkalinity and Adhesion Testing: Verify that concrete substrates have pH within acceptable range. Perform tests recommended by manufacturer. Proceed with application only after substrates pass testing.
- C. Resinous Materials: Mix components and prepare materials according to resinous flooring manufacturer's written instructions.
- D. Use patching and fill material to fill holes and depressions in substrates according to manufacturer's written instructions.
- E. Treat control joints and other nonmoving substrate cracks to prevent cracks from reflecting through resinous flooring according to manufacturer's written instructions.

- F. Beginning installation constitutes Contractor's acceptance of substrates and conditions.

### 3.2 APPLICATION

- A. General: Apply components of resinous flooring system according to manufacturer's written instructions to produce a uniform, monolithic wearing surface of thickness indicated.
  - 1. Coordinate application of components to provide optimum adhesion of resinous flooring system to substrate, and optimum intercoat adhesion.
  - 2. Cure resinous flooring components according to manufacturer's written instructions. Prevent contamination during application and curing processes.
  - 3. At substrate expansion and isolation joints, comply with resinous flooring manufacturer's written instructions.
- B. Apply primer over prepared substrate at manufacturer's recommended spreading rate.
- C. Apply waterproofing membrane, where indicated, in manufacturer's recommended thickness.
  - 1. Apply waterproofing membrane to integral cove base substrates.
- D. Apply reinforcing membrane to entire substrate surface.
- E. Integral Cove Base: Apply cove base mix to wall surfaces before applying flooring. Apply according to manufacturer's written instructions and details including those for taping, mixing, priming, troweling, sanding, and top coating of cove base. Round internal and external corners.
  - 1. Integral Cove Base: height to match existing.
- F. Apply self-leveling slurry body coats in thickness indicated for flooring system.
  - 1. Broadcast aggregates at rate recommended by manufacturer and, after resin is cured, remove excess aggregates to provide surface texture indicated.
- G. Apply troweled or screeded body coats in thickness indicated for flooring system. Hand or power trowel and grout to fill voids. When cured, remove trowel marks and roughness using method recommended by manufacturer.
- H. Apply grout coat, of type recommended by resinous flooring manufacturer, to fill voids in surface of final body coat and to produce wearing surface indicated.
- I. Apply topcoats in number indicated for flooring system and at spreading rates recommended in writing by manufacturer.

### 3.3 FIELD QUALITY CONTROL

- A. Core Sampling: At the direction of Owner and at locations designated by Owner, take one core sample per 1000 sq. ft. of resinous flooring, or portion of, to verify thickness. For each sample that fails to comply with requirements, take two additional samples. Repair damage caused by coring and correct deficiencies.

- B. Material Sampling: Owner may at any time and any number of times during resinous flooring application require material samples for testing for compliance with requirements.
1. Owner will engage an independent testing agency to take samples of materials being used. Material samples will be taken, identified, sealed, and certified in presence of Contractor.
  2. Testing agency will test samples for compliance with requirements, using applicable referenced testing procedures or, if not referenced, using testing procedures listed in manufacturer's product data.
  3. If test results show applied materials do not comply with specified requirements, pay for testing, remove noncomplying materials, prepare surfaces coated with unacceptable materials, and reapply flooring materials to comply with requirements.

### 3.4 PROTECTION

- A. Protect resinous flooring from damage and wear during the remainder of construction period. Use protective methods and materials, including temporary covering, recommended in writing by resinous flooring manufacturer.

END OF SECTION 09 67 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.
- B. Entry way carpet tile system.

#### **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. Entry way carpet tile
  - 3. Trowelable leveling and patching compounds.
  - 4. Adhesives.
  - 5. 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, color, and location of insets and borders.
  - 5. Type, color, and location of edge, transition, and other accessory strips.
  - 6. Transition details to other flooring materials.
  - 7. 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.

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- Field Carpet Color

- A. Basis of design product: Subject to compliance with requirements, provide, "Aerial Flying Colors" by Interface" or by the following:
  - 1. Or approved equal.
- B. Pattern: Aerial Flying Colors – "AE315."
- C. Color: As selected by Architect from manufacturer's full range.
- D. Fiber Content: 100 percent nylon 6.
- E. Fiber Type: Aquafil.
- F. Pile Characteristic: Tufted, Textured Pattern Loop Pile.
- G. Pile Thickness: 0.090 inches.
- H. Pile Density: 6400.



- I. Primary Backing/Backcoating: Glasbac Tile.
- J. Size: 25cm by 1m.
- K. Applied Soil-Resistance Treatment: Manufacturer's standard material.
- L. Antimicrobial Treatment: Manufacturer's standard material.
- M. Performance Characteristics: As follows:
  - 1. Appearance Retention Rating: heavy traffic, 3.0 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 ENTRY CARPET TILE C3 - Accent Carpet Colors, up to 5 different colors per room, typ.

- A. Basis of design product: Subject to compliance with requirements, provide, "On Line" by Interface" or by the following:
  - 1. Or approved equal.
- B. Pattern: "On Line
- C. Color: As selected by Architect from manufacturer's full range- up to 5 different colors per room, typ.
- D. Fiber Content: 100 percent nylon 6.
- E. Fiber Type: Aquafil
- F. Pile Characteristic: Tufted, Textured Pattern Loop Pile
- G. Pile Thickness: 0.100 inches.
- H. Pile Density: 6480.
- I. Primary Backing/Backcoating: Glasbac Tile.
- J. Size: 25cm by 1m.
- K. Applied Soil-Resistance Treatment: Manufacturer's standard material.

- L. Antimicrobial Treatment: Manufacturer's standard material.
- M. Performance Characteristics: As follows:
  - 1. Appearance Retention Rating: heavy traffic, 3.0 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."

## 2.3 WAY CARPET TILE C2

- A. Basis of design product: Subject to compliance with requirements, provide, "Mannington Commercial Carpet." Collection: Friktion and Liaison Collection Carpet Entry System" the following Pattern[s] or comparable product by the following:
  - 1. Mannington Commercial; Liaison collection.
- B. Pattern: Recoarse II, Ruffian II, Change, Force and Inertia.
- C. Color: As selected by Architect from manufacturer's full range.
- D. Fiber Content: 100 percent nylon 6, 6.
- E. Pile Characteristic: Tip Shear Tufted loop pile.
- F. Pile Thickness: 0.155 for inches.
- G. Stitches: 10 per inch.
- H. Gage: 5/ 32.
- I. Face Weight: 36 oz/sq. yd and 38 oz/sq. yd.
- J. Primary Backing/Backcoating: 100% Synthetic.
- K. Secondary Backing:
  - 1. Mannington: Infinity RE Modular.
- L. Size: 24 by 24 inches and 18 x 36 inches.
- M. Applied Soil-Resistance Treatment: Manufacturer's standard material.

N. Performance Characteristics: As follows:

1. Appearance Retention Rating: Heavy traffic, 3.0 minimum according to ASTM D 7330.
2. Electrostatic Propensity: Less than 3.0 kV according to AATCC 134.
3. Emissions: Provide carpet tile that complies with testing and product requirements of CRI's "Green Label Plus" program.
4. 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."

## 2.4 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. Entry way carpet tile system.

1. Install over existing Terrazzo, Marble or glossy flooring- level all grout lines with manufactures recommended leveler, remove glossy finish by sanding.

2. VCT- tiles must be secured to floor, remove all broken, loose or cracked tiles. All wax must be removed apply leveler as recommended by manufacture.
- F. Proceed with installation only after unsatisfactory conditions have been corrected.
- G. 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 72 00 - WALL COVERINGS**

### **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. Marker Board Wall Covering.
  - 2. Tackable Wall Covering.

#### **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 data on physical characteristics, durability, fade resistance, and flame-resistance characteristics.
- B. Shop Drawings: Show location and extent of each wall-covering type. Indicate seams and termination points.
- C. Samples for Verification and Initial Color Selection: Full width by 36-inch-long section of wall covering and molding samples not less than 12 inches long.
  - 1. Sample from same print run or dye lot to be used for the Work, with specified treatments applied. Show complete pattern repeat. Mark top and face of fabric.
  - 2. Sample from same flitch to be used for the Work, with specified finish applied.

#### **1.5 INFORMATIONAL SUBMITTALS**

- A. Product Test Reports: Based on evaluation of comprehensive tests performed by a qualified testing agency, for wall covering.

#### **1.6 CLOSEOUT SUBMITTALS**

- A. Maintenance Data: For wall coverings to include in maintenance manuals.

## 1.7 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. Wall-Covering Materials: For each type, full-size units equal to 10 percent of amount installed, but not less than one full roll.

## 1.8 QUALITY ASSURANCE

- A. Fire-Test-Response Characteristics: As determined by testing identical wall coverings applied with identical adhesives to substrates according to test method indicated below by a qualified testing agency. Identify products with appropriate markings of applicable testing agency.
  - 1. Surface-Burning Characteristics: As follows, per ASTM E 84:
    - a. Flame-Spread Index: 25 or less.
    - b. Smoke-Developed Index: 450 or less.
  - 2. Fire-Growth Contribution: Textile wall coverings tested according to, NFPA 286 non-sprinklered area on partitions less than 8 feet and complying with test protocol and criteria in the 2003 IBC.

## 1.9 PROJECT CONDITIONS

- A. Environmental Limitations: Do not deliver or install wall coverings 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.
  - 1. Maintain a consistent temperature of not less than 60 deg F in installation areas for at least 10 days before and 10 days after installation, unless otherwise recommended by wall covering manufacturer.
  - 2. Wood-Veneer Wall Coverings: Condition spaces for not less than 48 hours before installation.
- B. Lighting: Do not install wall covering until a permanent level of lighting is provided on the surfaces to receive wall covering.
- C. Ventilation: Provide continuous ventilation during installation and for not less than the time recommended by wall-covering manufacturer for full drying or curing.



## PART 2 - PRODUCTS

### 2.1 PERFORMANCE REQUIREMENTS

- A. Low-Emitting Materials: Wall covering 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 WALL COVERINGS

- A. General: Provide rolls of each type of wall covering from same print run or dye lot.

### 2.3 MARKER BOARD WALL COVERING-

- A. Vinyl, gloss, smooth wallcovering for projection and dry erase markers:
  - 1. Basis-of-Design Product: Subject to compliance with requirements, provide Wall talker "Just-rite"; or comparable product.
- B. Pattern: Visual textured- smooth, high gloss
- C. Total thickness: 17 mils.
- D. Width: 48" inches.
- E. Backing: Non-woven on gyp board.
- F. Adhesive: heavy duty clear or clay based premixed vinyl adhesive as recommended by manufacture.
- G. Substrate primer: White pigmented acrylic base primer/sealer specifically formulated to use with vinyl wallcovering.
- H. Substrate surface: Minimum Level 4 finish, per GA-214-M-97.
- I. Colors, Textures, and Patterns: As selected by Architect from manufacturer's full range.

### 2.4 TACKABLE WALLCOVERING-

- A. Linoleum resilient homogeneous, self-healing tackable wall surface:
  - 1. Basis-of-Design Product: Subject to compliance with requirements, provide Wall talker "Tac-wall"; or comparable product.
- B. Pattern: C250.
- C. Total thickness: ¼ inch.

- D. Width: 47"/48".
- E. Backing: Burlap.
- F. Adhesive: Solvent-free, SBR type linoleum adhesive (L-910) as recommended by manufacture.
- G. Substrate primer: White pigmented acrylic base primer/sealer specifically formulated to use with vinyl wallcovering.
- H. Substrate surface: Minimum Level 4 finish, per GA-214-M-97.
- I. Colors, Textures, and Patterns: As selected by Architect from manufacturer's full range, of min. 12 colors.

## 2.5 ACCESSORIES

- A. Adhesive: Mildew-resistant, non-staining, strippable adhesive, for use with specific wall covering and substrate application as recommended in writing by wall-covering manufacturer.
  - 1. Adhesive shall have VOC content of 50 g/L or less when calculated according to 40 CFR 59, Subpart D (EPA Method 24).
  - 2. Adhesive shall comply with the testing and product requirements of the California Department of Health Services' "Standard Practice for the Testing of Volatile Organic Emissions from Various Sources Using Small-Scale Environmental Chambers."
- B. Primer/Sealer: Mildew resistant, complying with requirements in Section 09 90 00 "Painting" and recommended in writing by wall-covering manufacturer for intended substrate.
- C. Wall Liner: Nonwoven, synthetic underlayment and adhesive as recommended by wall-covering manufacturer.
- D. Seam Tape: As recommended in writing by wall-covering manufacturer.
- E. Metal Primer: Interior ferrous metal primer complying with Section 09 90 00 "Painting."
- F. Marker/Eraser Dispenser- Provide Plastic marker/eraser dispenser for each board unit, min. one per room.
- G. Trim:
  - 1. Wall-covering for projection and dry erase markers: J-cap, 1/16" aluminum trim, miter at all corners. Secure with mechanical fasteners with self-tapping drywall screws.
    - a. Wallcovering for tackable surface: J-trim, 5/16 aluminum trim, miter at all corners. Secure with mechanical fasteners with self-tapping drywall screws.
    - b. Wall covering for tackable surface: H-trim, 5/16 aluminum trim, for material seams. Secure with mechanical fasteners with self-tapping drywall screws.

## PART 3 - EXECUTION

### 3.1 EXAMINATION

- A. Examine substrates and conditions, with Installer present, for compliance with requirements for levelness, wall plumpness, maximum moisture content, 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. Comply with manufacturer's written instructions for surface preparation.
- B. Clean substrates of substances that could impair bond of wall covering, including dirt, oil, grease, mold, mildew, and incompatible primers.
- C. Prepare substrates to achieve a smooth, dry, clean, structurally sound surface free of flaking, unsound coatings, cracks, and defects.
  - 1. Moisture Content: Maximum of 5 percent on new plaster, concrete, and concrete masonry units when tested with an electronic moisture meter.
  - 2. Plaster: Allow new plaster to cure. Neutralize areas of high alkalinity. Prime with primer as recommended in writing by primer/sealer manufacturer and wall-covering manufacturer.
  - 3. Metals: If not factory primed, clean and apply metal as recommended in writing by primer/sealer manufacturer and wall-covering manufacturer.
  - 4. Gypsum Board: Prime with primer as recommended in writing by primer/sealer manufacturer and wall-covering manufacturer.
  - 5. Painted Surfaces: Treat areas susceptible to pigment bleeding.
- D. Check painted surfaces for pigment bleeding. Sand gloss, semigloss, and eggshell finish with fine sandpaper.
- E. Remove hardware and hardware accessories, electrical plates and covers, light fixture trims, and similar items.
- F. Acclimatize wall-covering materials by removing them from packaging in the installation areas not less than 24 hours before installation.
- G. Install wall liner, with no gaps or overlaps, where required by wall-covering manufacturer. Form smooth wrinkle-free surface for finished installation. Do not begin wall-covering installation until wall liner has dried.

### 3.3 INSTALLATION

- A. General: Comply with wall-covering manufacturers' written installation instructions applicable to products and applications indicated except where more stringent requirements apply.
- B. Cut wall-covering strips in roll number sequence. Change roll numbers at partition breaks and corners.
- C. Install strips in same order as cut from roll.
- D. Install reversing every other strip.
- E. Install wall covering with no gaps or overlaps, no lifted or curling edges, and no visible shrinkage.
- F. Match pattern 72 inches above the finish floor.
- G. Install seams vertical and plumb at least 6 inches from outside corners and 3 inches from inside corners unless a change of pattern or color exists at corner. No horizontal seams are permitted.
- H. Fully bond wall covering to substrate. Remove air bubbles, wrinkles, blisters, and other defects.
- I. Trim edges and seams for color uniformity, pattern match, and tight closure. Butt seams without any overlay or spacing between strips.

### 3.4 CLEANING

- A. Remove excess adhesive at finished seams, perimeter edges, and adjacent surfaces.
- B. Use cleaning methods recommended in writing by wall-covering manufacturer.
- C. Replace strips that cannot be cleaned.
- D. Reinstall hardware and hardware accessories, electrical plates and covers, light fixture trims, and similar items.

END OF SECTION 09 72 00

## **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. 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

#### **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. Interior concrete, vertical surfaces.
  - 2. Interior concrete, vertical surfaces (deep tone accent colors).
  - 3. Interior CMU.
  - 4. Interior CMU (deep tone accent colors).
  - 5. Interior steel.
  - 6. Interior steel (deep tone accent colors).
  - 7. Interior previously painted cabinet heater/fin tube enclosures.
  - 8. Interior steel piping, piping supports and hangers.
  - 9. Interior galvanized metal.
  - 10. Interior galvanized metal (metal deck).
  - 11. Interior galvanized metal (metal deck, deep tone accent colors).
  - 12. Interior aluminum (where indicated).
  - 13. Interior wood.

14. Interior wood (deep tone accent colors).
15. Interior plaster.
16. Interior plaster (deep tone accent colors).
17. Interior gypsum board.
18. Interior gypsum board (deep tone accent colors).
19. Interior insulation-covering.
20. Interior insulation-covering (deep tone accent colors).

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 3<sup>rd</sup> 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 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. 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).

P. 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).

Q. 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).

R. 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).

S. 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).

T. 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).

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.

**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.
- 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.

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 exterior 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

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. Tackboards.
  - 2. Sliding visual display units.

#### **1.3 DEFINITIONS**

- A. Tackboard: Framed, 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. Vinyl-fabric-faced tackboards.
  - 2. Horizontal-sliding visual display units.
  - 3. Dispenser.
- B. Shop Drawings: For visual display surfaces. Include plans, elevations, sections, details, and attachments to other work.
  - 1. Show locations of panel joints.
  - 2. Show locations of special-purpose graphics for visual display surfaces.

3. Include sections of typical trim members.
- 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 visual display wall panel display rail.
  2. Fabric swatches of vinyl and polyester fabric-faced tack assemblies.
  3. Include accessory Samples to verify color selected.
  4. 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.
- 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 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. Matte Finish: Low reflective; chalk wipes clean with dry cloth or standard eraser.
  - 3. Gloss Finish: Gloss as indicated; dry-erase markers wipe clean with dry cloth or standard eraser.

- B. Polyester Fabric: Nondirectional weave, 100 percent polyester; weighing not less than 16 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 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. Polyester-Fabric-Faced Tackboard: 1/4-inch-thick, polyester-fabric-faced cork sheet factory laminated to 1/4-inch-thick hardboard backing.
- C. Flammability of Vinyl and Cork Materials (ASTM E-84) - Meet or exceed following requirements:
- D. Flame spread less than 25.
- E. Smoke developed less than 450.
- F. Assembly Weight: 1 lb./sq. ft.
- G. Assembly Thickness: Approximately 1/2-inch.
- H. TackBoard vinyl weight: min. 15 oz.

## 2.3 SLIDING VISUAL DISPLAY UNITS

- A. Horizontal-Sliding Visual Display Units: Factory-fabricated units consisting of extruded-aluminum tubular frame, fixed-rear visual display panel, aluminum-framed horizontal-sliding panels, and extruded-aluminum fascia that conceals overhead sliding track; designed for recessed mounting. Provide panels that operate smoothly without vibration or chatter.



- B. Basis-of-Design Product: Subject to compliance with requirements, provide Claridge Products and Equipment, Inc, Similar to "Horizontal Sliding Units" or comparable product by one of the following:
  - 1. Best-Rite Manufacturing.
  - 2. PolyVision Corporation; a Steelcase company.
- C. Three-Track Units: Fabricate unit with fixed rear panel covering entire rear surface. Provide three sliding panels, each equal to not less than one-half of overall length of unit.
- D. Sliding Panels: Sliding 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.
- E. Fixed back panel: 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.
- F. Frame and exposed metals: extruded aluminum in satin finish, reinforced corners with angles, Nylon ball bearings at top of unit, nylon guide rollers at bottom
  - 1. Hardware: Manufacturer's standard, extruded-aluminum overhead track and channel-shaped bottom guides; with two nylon ball-bearing carriers and two nylon rollers for each sliding panel.

## 2.4 BOARD UNIT ACCESSORIES

- A. Aluminum Frames and Trim: Fabricated from not less than 0.062-inch-thick, extruded aluminum; of size and shape indicated on Drawings.
  - 1. Factory-Applied Trim: Manufacturer's standard.
- B. Chalktrays: Manufacturer's standard, continuous.
  - 1. Solid Type: Extruded aluminum with ribbed section with screw on chalk trough end enclosures.
    - a. Basis-of-Design Product: Subject to compliance with requirements, provide Claridge Products and Equipment, Inc.; "No. 262 Chalk Trough".
- C. Map Rail: Provide the following accessories:
  - 1. Integral Display Rail: Continuous and integral with map rail; fabricated from cork approximately 2 inches wide.
    - a. Basis-of-Design Product: Subject to compliance with requirements, provide Claridge Products and Equipment, Inc.; Hang Tight Rail System".

2. End Stops: Located at each end of map rail.
  - a. Basis-of-Design Product: Subject to compliance with requirements, provide Claridge Products and Equipment, Inc.; No. 74ES.”
3. Map Hooks: Two map hooks for every 48 inches of map rail or fraction thereof.
  - a. Basis-of-Design Product: Subject to compliance with requirements, provide Claridge Products and Equipment, Inc.; No. 76M Spring Clip Map Hook.”
4. Flag Holder: One for each room.
  - a. Basis-of-Design Product: Subject to compliance with requirements, provide Claridge Products and Equipment, Inc.; No.76FH Flag Holders.”

## 2.5 FABRICATION

- A. 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.
- B. Factory-Assembled Visual Display Units: Coordinate factory-assembled units with trim and accessories indicated. Join parts with a neat, precision fit.
- C. 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.

## 2.6 GENERAL FINISH REQUIREMENTS

- A. Comply with NAAMM's "Metal Finishes Manual for Architectural and Metal Products" for recommendations for applying and designating finishes.
- B. 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.

## 2.7 ALUMINUM FINISHES

- A. Clear Anodic Finish: AAMA 611, AA-M12C22A31, Class II, 0.010 mm or thicker.

- B. 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 INSTALLATION OF FACTORY-FABRICATED VISUAL DISPLAY UNITS

- A. Sliding Visual Display Units: Install units in recessed locations and at mounting heights indicated. Attach to wall framing with fasteners at not more than 16 inches o.c.
  - 1. Adjust panels to operate smoothly without warp or bind. Lubricate operating hardware as recommended by manufacturer.

### 3.6 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.

### 3.7 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. Non-illuminated bulletin boards - MS.
  - 2. Illuminated display cases -Sargent.

#### **1.3 DEFINITIONS**

- A. Bulletin Board: Tackable visual display surface or tackboard enclosed in a display case.
- B. 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 bulletin boards and display cases.
  - 1. Non-illuminated bulletin boards; sliding doors.
  - 2. Display cases.
- B. Shop Drawings: For bulletin boards and 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 bulletin boards and 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 bulletin boards and 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. 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 TACKBOARD ASSEMBLIES

- A. Vinyl-Fabric-Faced Tackboard: 1/4-inch-thick, vinyl-fabric-faced cork sheet factory laminated to 1/4-inch-thick hardboard backing.
  - 1. Basis-of-Design Product: Subject to compliance with requirements, provide Claridge Products and Equipment, Inc.; Fabricork or comparable product.

### 2.3 BULLETIN BOARD

- A. Non-illuminated Bulletin Boards; Sliding Doors: MS
  - 1. Basis-of-Design Product: Subject to compliance with requirements, provide Claridge Products and Equipment, Inc.; 4' x 10' Contemporary Series Bulletin Boards or comparable product by one of the following:
    - a. Best-Rite Manufacturing.
    - b. Marsh Industries, Inc.; Visual Products Group.

## 2.4 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. 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: Birch with transparent finish.
  - 4. Aluminum Finish: Powder coat.
    - 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: Two.
- D. Shelves: 3/16"-thick tempered glass; supported on adjustable shelf standards and supports.
  - 1. Shelf Width: 8 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: 48"
- I. Height: 48"
- J. Depth: modify for dimension on as indicated on Drawings.



## 2.5 FABRICATION

- A. Fabricate bulletin boards and 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.

## 2.6 GENERAL FINISH REQUIREMENTS

- A. Comply with NAAMM's "Metal Finishes Manual for Architectural and Metal Products" for recommendations for applying and designating finishes.
- B. 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.

## 2.7 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 bulletin boards and 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. 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, Surface mounted to wall with adhesive and two-face tape.
- B. Sign Types:
1. 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.
  2. 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).

3. 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.
4. 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.

## 2.4 ACCESSORIES

- A. Adhesive: As recommended by sign manufacturer.
- B. Two-Face Tape: Manufacturer's standard high-bond, foam-core tape, 0.045 inch thick, with adhesive on both sides.

## 2.5 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.

## 2.6 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. 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.
  - 2. 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.

### 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



## **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), standard type Floor Mounted Overhead Braced.
  - 2. General Partitions Mfg. Corp.; High Density Polymer (HDPE), Series 40-7 Floor Supported - Headrail.
  - 3. Scranton Products; Hiny Hiders Toilet Partitions 55 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.

1. Door and Panel Height: Not less than 55 inches.
  2. Door and Panel Mounting Height: 14 inches above finish floor.
  3. Pilaster Height: Not less than 82 inches - Integral Hinges: Configure doors and pilasters to receive integral hinges.
  4. Heat-Sink Strip: Manufacturer's continuous, stainless steel strip fastened to exposed bottom edges of solid-plastic components to hinder malicious combustion.
  5. 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 paired, wraparound, self-closing type that can be adjusted to hold doors open at any angle up to 90 degrees, allowing emergency access by lifting door. Mount with through bolts.
  2. Latch and Keeper: Manufacturer's heavy-duty, surface-mounted, cast stainless steel latch unit, designed to resist damage due to slamming, with combination rubber-faced door strike and keeper, and with provision for emergency access. Provide units that comply with regulatory requirements for accessibility at 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. Aluminum Castings: ASTM B26/B26M.
- B. Aluminum Extrusions: ASTM B221.
- C. Stainless Steel Sheet: ASTM A240/A240M or ASTM A666, Type 304, stretcher-leveled standard of flatness.
- D. 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 26 00 - WALL AND DOOR PROTECTION**

### **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. Corner guards.

#### **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: Include construction details, material descriptions, impact strength, fire-test-response characteristics, dimensions of individual components and profiles, and finishes for each impact-resistant wall protection unit.
- B. Shop Drawings: For each impact-resistant wall protection unit showing locations and extent. Include sections, details, and attachments to other work.
- C. Samples for Verification and Initial Color Selection: For each type of impact-resistant wall protection unit indicated.
  - 1. Corner Guards: 12 inches long. Include examples of joinery, corners, end caps, top caps, and field splices.
- D. Warranty: Sample of special warranty.

#### **1.5 INFORMATIONAL SUBMITTALS**

- A. Qualification Data: For qualified Installer.
- B. Material Certificates: For each impact-resistant plastic material, from manufacturer.

## 1.6 CLOSEOUT SUBMITTALS

- A. Maintenance Data: For each impact-resistant wall protection unit to include in maintenance manuals.
  - 1. Include recommended methods and frequency of maintenance for maintaining optimum condition of plastic covers under anticipated traffic and use conditions. Include precautions against using cleaning materials and methods that may be detrimental to plastic finishes and performance.
- B. Warranty: Executed special warranty.

## 1.7 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. Corner-Guard Covers: Full-size plastic covers of maximum length equal to 5 percent of each type, color, and texture of units installed, but no fewer than two, 5-foot-long units.
- B. Include mounting and accessory components. Replacement materials shall be from same production run as installed units.

## 1.8 QUALITY ASSURANCE

- A. Installer Qualifications: An employer of workers trained and approved by manufacturer.
- B. Source Limitations: Obtain impact-resistant wall protection units from single source from single manufacturer.
- C. Surface-Burning Characteristics: Provide impact-resistant, plastic wall protection units with surface-burning characteristics as determined by testing identical products per ASTM E 84, NFPA 255, or UL 723 by UL or another qualified testing agency.
- D. 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.

## 1.9 DELIVERY, STORAGE, AND HANDLING

- A. Store impact-resistant wall protection units in original undamaged packages and containers inside well-ventilated area protected from weather, moisture, soiling, extreme temperatures, and humidity.
  - 1. Maintain room temperature within storage area at not less than 70 deg F during the period plastic materials are stored.
  - 2. Keep plastic sheet material out of direct sunlight.

3. Store plastic wall protection components for a minimum of 72 hours, or until plastic material attains a minimum room temperature of 70 deg F.
  - a. Store corner-guard covers in a vertical position.
  - b. Store wall-guard covers in a horizontal position.

#### 1.10 PROJECT CONDITIONS

- A. Environmental Limitations: Do not deliver or install impact-resistant wall protection units until building is enclosed and weatherproof, wet work is complete and dry, and HVAC system is operating and maintaining temperature at 70 deg F for not less than 72 hours before beginning installation and for the remainder of the construction period.

#### 1.11 WARRANTY

- A. Special Warranty: Manufacturer's standard form in which manufacturer agrees to repair or replace components of impact-resistant wall protection units that fail in materials or workmanship within specified warranty period.
  1. Failures include, but are not limited to, the following:
    - a. Structural failures.
    - b. Deterioration of plastic and other materials beyond normal use.
  2. Warranty Period: Five years from date of Substantial Completion.

### PART 2 - PRODUCTS

#### 2.1 MATERIALS

- A. Stainless-Steel Sheet: ASTM A 240/A 240M.
- B. Fasteners: Aluminum, nonmagnetic stainless-steel, or other noncorrosive metal screws, bolts, and other fasteners compatible with items being fastened. Use security-type fasteners where exposed to view.

#### 2.2 CORNER GUARDS

- A. Surface-Mounted, Metal Corner Guards: Fabricated from one-piece, formed, or extruded metal with formed edges; with wrap, double 90-degree turn to match wall condition.
  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. Construction Specialties, Inc.; Acrovyn Model ASCO-8.
    - b. Korogard Wall Protection Systems; a division of RJF International Corporation; Stainless Steel Corner Guards.

- c. Pawling Corporation; Pro-Tek CG-50.
- 2. Material: Stainless steel, Type 304.
  - a. Thickness: Minimum 0.0625 inch (16 gage).
  - b. Finish: Directional satin, No. 4.
- 3. Wing Size: Nominal 3-1/2 by width of wall- verify per location.
- 4. Corner Radius: 1/8 inch.
- 5. Height: 6 feet, unless noted otherwise.
- 6. Mounting: Flat-head, countersunk stainless-steel screws through factory-drilled mounting holes.

## 2.3 FABRICATION

- A. Fabricate impact-resistant wall protection units to comply with requirements indicated for design, dimensions, and member sizes, including thicknesses of components.
- B. Assemble components in factory to greatest extent possible to minimize field assembly. Disassemble only as necessary for shipping and handling.
- C. Fabricate components with tight seams and joints with exposed edges rolled. Provide surfaces free of wrinkles, chips, dents, uneven coloration, and other imperfections. Fabricate members and fittings to produce flush, smooth, and rigid hairline joints.

## 2.4 METAL FINISHES

- A. Comply with NAAMM's "Metal Finishes Manual for Architectural and Metal Products" for recommendations for applying and designating finishes.
  - 1. Remove tool and die marks and stretch lines, or blend into finish.
  - 2. Grind and polish surfaces to produce uniform finish, free of cross scratches.
  - 3. Run grain of directional finishes with long dimension of each piece.
  - 4. When polishing is completed, passivate and rinse surfaces. Remove embedded foreign matter and leave surfaces chemically clean.
- B. Protect finishes on exposed surfaces from damage by applying a strippable, temporary protective covering before shipping.

## PART 3 - EXECUTION

### 3.1 EXAMINATION

- A. Examine substrates and wall areas, with Installer present, for compliance with requirements for installation tolerances, fire rating, and other conditions affecting performance of work.

- B. Examine walls to which impact-resistant wall protection will be attached for blocking, grounds, and other solid backing that have been installed in the locations required for secure attachment of support fasteners.
  - 1. For impact-resistant wall protection units attached with adhesive, 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.
- D. Beginning installation constitutes Contractor's acceptance of substrates and conditions.

### 3.2 PREPARATION

- A. Complete finishing operations, including painting, before installing impact-resistant wall protection system components.
- B. Before installation, clean substrate to remove dust, debris, and loose particles.

### 3.3 INSTALLATION

- A. General: Install impact-resistant wall protection units level, plumb, and true to line without distortions. Do not use materials with chips, cracks, voids, stains, or other defects that might be visible in the finished Work.
  - 1. Install impact-resistant wall protection units in locations and at mounting heights indicated on Drawings.
  - 2. Provide splices, mounting hardware, anchors, and other accessories required for a complete installation.
    - a. Provide anchoring devices to withstand imposed loads.
    - b. Where splices occur in horizontal runs of more than 20 feet, splice aluminum retainers and plastic covers at different locations along the run, but no closer than 12 inches.
    - c. Adjust end and top caps as required to ensure tight seams.
- B. Impact-Resistant Wall Covering: Install top and edge moldings, corners, and divider bars as required for a complete installation.

### 3.4 CLEANING

- A. Immediately after completion of installation, clean plastic covers and accessories using a standard, ammonia-based, household cleaning agent.

- B. Remove excess adhesive using methods and materials recommended in writing by manufacturer.

END OF SECTION 10 26 00

## **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. Electric hand dryers.

#### 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. Grab bar.
  - 2. Sanitary-napkin disposer.

3. Mirror, glass.
  4. Electric hand dryer.
- 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 OWNER-FURNISHED MATERIALS

- A. Owner-Furnished Materials for Installation by Contractor:
1. Toilet tissue dispenser, jumbo.
  2. Paper towel dispenser (roll).
  3. Soap dispenser.

### 2.2 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.

## 2.3 TOILET ACCESSORIES

A. Source Limitations: Obtain toilet accessories from single source from single manufacturer.

B. 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.

C. 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).

D. Mirror, Glass MG/MGT:

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.

## 2.4 ELECTRIC HAND DRYERS

- A. Source Limitations: Obtain warm-air dryers from single source from single manufacturer.
- B. Electric Hand Dryer EHD:
  - 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.; 0185-93.
      - 2) Bradley Corporation; 2902-287400.
      - 3) World Dryer; SLIMdri L-973.
  - 2. Description: Standard-speed, electric hand dryer.
  - 3. Mounting: Surface mounted, with low-profile design.
  - 4. Operation: Electronic-sensor activated with timed power cut-off switch.
  - 5. Electrical Requirements: 100-120 V, 9.5 A, 1,150 W.

## 2.5 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.

## 2.6 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.

### 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. Non-rated fire protection cabinets.
  - 2. Rated fire protection cabinets.
- B. Product Schedule: For fire-protection cabinets. Indicate whether recessed or semirecessed. 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 NON-RATED FIRE-PROTECTION CABINET

- A. Cabinet Type: Suitable for fire extinguisher.
- B. Cabinet Construction: Nonrated.
- C. Cabinet Tub Material: Cold-rolled 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.
    - b. JL Industries, Inc., a division of the Activar Construction Products Group, Inc.; Ambassador 2015.
    - c. Larsen's Manufacturing Company; Architectural Series 2712-R.
- E. Semirecessed Cabinet: One-piece combination trim and perimeter door frame overlapping surrounding wall surface, with exposed trim face and wall return at outer edge (backbend).
  - 1. Rolled-Edge Trim: 2-1/2-inch backbend depth.
  - 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; 1622.
    - b. JL Industries, Inc., a division of the Activar Construction Products Group, Inc.; Ambassador 2017.
    - c. Larsen's Manufacturing Company; Architectural Series 2712-RL.
- F. Door and Frame Material: Steel sheet.

- G. Door Style: Solid opaque panel with frame.
- H. 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.
- I. 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.
- J. Materials:
  - 1. Cold-Rolled Steel: ASTM A1008/A1008M, Commercial Steel (CS), Type B.
    - a. Finish: Baked enamel, TGIC polyester powder coat, HAA polyester powder coat, epoxy powder coat, or polyester/epoxy hybrid powder coat, complying with AAMA 2603.
    - b. Prepare, pretreat, and apply coating to exposed metal surfaces to comply with coating and resin manufacturers' written instructions.
    - c. Color:
      - 1) Exterior: Red.
      - 2) Interior: White.
  - 2. Aluminum: ASTM B221 for extruded shapes and aluminum sheet, with strength and durability characteristics of not less than Alloy 6063-T5 for aluminum sheet.
    - a. Finish: Clear anodic.
  - 3. Stainless Steel: ASTM A240/A240M or ASTM A666, Type 304.
    - a. Finish: ASTM A480/A480M No. 4 directional satin finish.
  - 4. Tempered Float Glass: ASTM C1048, Kind FT, Condition A, Type I, Quality q3, 3 mm thick, Class 1 (clear).

- K. Placement: Provide at all locations, except as otherwise indicated.

## 2.4 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: Cold-rolled 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.
    - b. JL Industries, Inc., a division of the Activar Construction Products Group, Inc.; Ambassador 2015 Fire-FX2.
    - c. Larsen's Manufacturing Company; Architectural Series Flame-Shield FS 2712-R.
- E. Semirecessed Cabinet: One-piece combination trim and perimeter door frame overlapping surrounding wall surface, with exposed trim face and wall return at outer edge (backbend).
  - 1. Rolled-Edge Trim: 2-1/2-inch backbend depth.
  - 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-1622.
    - b. JL Industries, Inc., a division of the Activar Construction Products Group, Inc.; Ambassador 2017 Fire-FX2.
    - c. Larsen's Manufacturing Company; Architectural Series Flame-Shield FS 2712-RL
- F. Door and Frame Material: Steel sheet.
- G. Door Style: Solid opaque panel with frame.
- H. 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.

I. 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.

J. Materials:

1. Cold-Rolled Steel: ASTM A1008/A1008M, Commercial Steel (CS), Type B.
  - a. Finish: Baked enamel, TGIC polyester powder coat, HAA polyester powder coat, epoxy powder coat, or polyester/epoxy hybrid powder coat, complying with AAMA 2603.
  - b. Prepare, pretreat, and apply coating to exposed metal surfaces to comply with coating and resin manufacturers' written instructions.
  - c. Color:
    - 1) Exterior: Red.
    - 2) Interior: White.
2. Aluminum: ASTM B221 for extruded shapes and aluminum sheet, with strength and durability characteristics of not less than Alloy 6063-T5 for aluminum sheet.
  - a. Finish: Clear anodic.
3. Stainless Steel: ASTM A240/A240M or ASTM A666, Type 304.
  - a. Finish: ASTM A480/A480M No. 4 directional satin finish.
4. Tempered Float Glass: ASTM C1048, Kind FT, Condition A, Type I, Quality q3, 3 mm thick, Class 1 (clear).

K. 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 and semirecessed 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 and semirecessed 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 semirecessed 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 repair by finish touchup or similar minor repair 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).
- 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 and on mounting bracket.
  - a. Provide 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 11 53 63 - LABORATORY EQUIPMENT 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. Fire Blanket.
  - 2. First Aid Kit.

**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.
- B. Samples for Initial Selection: For factory-applied finishes and other materials requiring color selection.

**1.5 QUALITY ASSURANCE**

- A. Flammable Liquid Storage: Where cabinets are indicated for solvent or flammable liquid storage, provide units that are listed and labeled as complying with requirements in NFPA 30 by a testing and inspecting agency acceptable to authorities having jurisdiction.
- B. Electrical Components, Devices, and Accessories: Listed and labeled as defined in NFPA 70, by a qualified testing agency, and marked for intended location and application.

**1.6 DELIVERY, STORAGE, AND HANDLING**

- A. Protect finished surfaces during handling and installation with protective covering of polyethylene film or other suitable material.

**1.7 COORDINATION**

- A. Coordinate installation of laboratory equipment and accessories with installation of other laboratory equipment.

## PART 2 - PRODUCTS

### 2.1 LABORATORY EQUIPMENT

- A. Fire Blankets: Painted steel cabinet with drop hinge door, for wall mounting, containing 100 percent wool, and naturally fire retardant, Metal Cabinet is 16"H x 18"W x 5 1/4"D , fire blanket 62 inches by 80 inches in size.
  - 1. Basis-of-Design Product: Subject to compliance with requirements, provide Flinn Scientific. "SE3006 Series" Metal Case or comparable product.
- B. First Aid Kits: Steel cabinet, for wall mounting, containing first aid supplies and instructions. Included in kit: adhesive bandages, adhesive bandages with non-adherent pads, bandage compress, gauze pads, triangle bandages, burn cream, two sizes of stretch bandages, adhesive tape, non-adherent pads, eye flush with eye pads, eye cup and tape, antiseptic towelettes, cold pack, latex gloves, forceps, and scissors.
  - 1. Basis-of-Design Product: Subject to compliance with requirements, provide Flinn Scientific., "SE1083 50 person, 9 1/2"H x 9"W x 2 1/2"D First Aid Kit" or comparable product.

### 2.2 ELECTRICAL SERVICE FITTINGS

- A. Service Fittings, General: Provide units complete with metal housings, receptacles, terminals, switches, pilot lights, device plates, accessories, and gaskets required for mounting.

## PART 3 - EXECUTION

### 3.1 EXAMINATION

- A. Examine areas, with Installer present, for compliance with requirements for installation tolerances, location of reinforcements, and other conditions affecting performance of laboratory equipment and accessories.
- 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 OF LABORATORY EQUIPMENT AND ACCESSORIES

- A. Install accessories according to Shop Drawings, installation requirements in SEFA 2.3, and manufacturer's written instructions.
- B. Securely fasten units to partition framing or reinforcements in partitions.



### 3.3 INSTALLATION OF SERVICE FITTINGS

- A. Comply with requirements in other Sections for installing electrical devices.
- B. Install fittings according to manufacturer's written instructions.

### 3.4 CLEANING AND PROTECTING

- A. 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 11 53 63

## **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.
- 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. 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.
- D. Shadebands:
  - 1. Shadeband Material: Light-blocking fabric similar to "Sun-Bloc Series" fabric by Draper Inc.
- E. Shadeband Bottom (Hem) Bar: Steel or extruded aluminum.
  - 1. Type: Enclosed in sealed pocket of shadeband material.
- F. 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 windowsill, 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.

G. 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-Blocking Fabric: Opaque fabric, stain and fade resistant.
  1. Source: Roller-shade manufacturer.

2. Type: Fiberglass textile with PVC film bonded to both sides.
  3. Thickness: 0.015 inches.
  4. Weight: 12 oz./sq. yd.
  5. Features: Washable.
  6. Color: As selected by Architect from manufacturer's full range.
  7. Basis-of-Design Product: Subject to compliance with requirements, provide Draper Inc.; SunBloc Series SB9000 or comparable product.
- C. Rescue Window Labels: Provide and install on window shade in every space of pupil occupancy opaque label 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 inch, 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 label 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.
    - d. Solid Surface windowsills.
  - 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. Adjustable shelf supports.
- 8. Wardrobe rod.
- 9. Coat hooks.
- 10. Closet rod and shelf.
- 11. 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 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.
- D. Mock-Ups: Submit following units for comparison with items installed as part of casework installation. Mock-up units must be submitted prior to or with casework submittal. Casework submittals and shop drawings will not be approved without mock-up units.
  1. One full-size base cabinet unit complete with hardware, doors, and drawers; without finish top.

#### 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 "Wood Laboratory Casework Contemporary Style" by Wood-Metal Industries (Division of Wood-Mode, Inc.) Selinsgrove, PA or comparable product by one of the following:
  - 1. Kewaunee Scientific Corporation.
  - 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. Lipped overlay with radiused 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: 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-2.
- F. MDF: ANSI A208.2, Grade 130.
- G. Hardboard: ANSI A135.4, Class 1 Tempered.
- H. 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.

- I. 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.
- J. Epoxy Resin Countertop: Factory-molded modified epoxy-resin formulation with smooth, non-specular finish, edge as per details.
1. Physical Properties:
    - a. Flexural Strength: .....Not less than 10,000 psi.
    - b. Modulus of Elasticity: .....Not less than 2,000,000 psi.
    - c. Hardness (Rockwell M): .....Not less than 100.
    - d. Water Absorption (24 Hours): .....Not more than 0.02 percent.
    - e. Heat Distortion Point: .....Not less than 260 deg F.
  2. Chemical Resistance: Epoxy-resin material has the following ratings when tested with indicated reagents according to NEMA LD 3, Test Procedure 3.4.5:
    - a. No Effect: Acetic acid (98 percent), acetone, ammonium hydroxide (28 percent), benzene, carbon tetrachloride, dimethyl formamide, ethyl acetate, ethyl alcohol, ethyl ether, methyl alcohol, nitric acid (70 percent), phenol, sulfuric acid (60 percent), and toluene.
    - b. Slight Effect: Chromic acid (60 percent) and sodium hydroxide (50 percent).
  3. Countertop Fabrication: Fabricate with factory cutouts for sinks and with butt joints assembled with epoxy adhesive and pre-fitted, concealed metal splines.
    - a. Countertop Configuration: Molded into solid, flat, min.1 inch thick,
      - 1) Drip groove
      - 2) Back splash
      - 3) Marine edge

- 4) Rounded edges and corners - refer to details
  - b. Countertop Configuration: As indicated.
  - c. Countertop Construction: Uniform throughout full thickness.
- 4. Color: Black, Gray or Beige As selected by Architect from manufacturer's full range.
- K. Solid Surface window sills and aprons:
  - 1. Solid-Surfacing Material Thickness: 1/2-inch.
  - 2. Fabrication: Fabricate stools and aprons in one piece, unless otherwise indicated. Comply with solid-surface-material manufacturer's written instructions for adhesives, sealers, fabrication, and finishing.
  - 3. Adhesives: Adhesives shall not contain urea formaldehyde.
  - 4. 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.
  - 5. 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. Provide on surface of subbase, at exposed sides and ends, material to match cabinet material to ensure continuity where rubber base height may not cover due to floor shim. Typical
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- Maple:
  - 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. Semi-Flush Radius Lipped – 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.

## 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 flattening 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 –Maple 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, 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; epoxy-coated steel with polymer rollers.
  - 2. Heavy Duty (Grade 1HD-100 and Grade 1HD-200): Side mounted; full-overtravel-extension type; zinc-plated, steel ball-bearing slides.
  - 3. Box Drawer Slides: Grade 1HD-100, for drawers not more than 6 inches high and 24 inches wide.
  - 4. File Drawer Slides: Grade 1HD-200, for drawers more than 6 inches high or 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.
- H. Adjustable Wall Shelf Supports: Surface-type steel standards and steel shelf brackets, with epoxy powder-coated finish, complying with BHMA A156.9, Types B04102 and B04112.
- I. Countertop Support: type and style as called out on drawings.
- J. Grilles: Continuous satin aluminum finished countertop grille and toe-kick grille for air filtration at fin tube locations and as shown on Drawings similar to "Model #CT-PP-3 (c'top)/#CT-PP-0 (toe)Linear Diffuser" by Titus.

## 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 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.

### 3.3 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, base and tall cabinets.
    - b. Tops for all base units.
    - c. Solid Surface window sills.
    - d. ADA safety station.
  - 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. Pulls.
- 4. Door catches.
- 5. Drawer slides.
- 6. Drawer and hinged door locks.
- 7. Sliding-door hardware sets.
- 8. Adjustable shelf supports.
- 9. Wardrobe rod.

- 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 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. Case Systems Inc.
  - 2. 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:

|  | <u>Flame Spread</u> | <u>Smoke Developed</u> |
|--|---------------------|------------------------|
|  | <u>Index</u>        | <u>Index</u>           |
| 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 edge banding 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 Solid surface material:

1. Provide countertops with the following front style: 1-1/4" front profile thickness, fabricated from 1/2-inch thick, solid surface material.
2. Splashes: 4" high unless noted otherwise, of 1/2-inch-thick solid surface material.
3. Fabrication: Fabricate tops in one piece on MDF, with shop-applied edges unless otherwise indicated. Comply with solid-surface-material manufacturer's written instructions for adhesives, sealers, fabrication, and finishing.
4. Solid Surface Material: Homogeneous solid sheets of filled plastic resin complying with ANSI SS1, Class A.
5. Fabricate with loose splashes for field assembly.
6. Adhesives: Adhesives shall not contain urea formaldehyde.
7. 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. Corian

- b. Formica Corporation.
  - c. Wilsonart International.
  - d. Hanex Solid Surfaces.
- 8. Colors and Patterns: As selected by Architect from manufacturer's full range.
- G. Solid Surface windowsills and aprons:
  - 1. Solid-Surfacing Material Thickness: 1/2-inch.
  - 2. Fabrication: Fabricate stools and aprons in one piece, unless otherwise indicated. Comply with solid-surface-material manufacturer's written instructions for adhesives, sealers, fabrication, and finishing.
  - 3. Adhesives: Adhesives shall not contain urea formaldehyde.
  - 4. 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. Corian.
    - b. Formica Corporation.
    - c. Wilsonart International.
    - d. Hanex Solid Surfaces.
  - 5. Colors and Patterns: As selected by Architect from manufacturer's full range.
- H. 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.
  - 2. Flexible 3mm PVC: Flexible, 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.
- I. 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.
- 3. Edge banding for Thermoset Decorative Panels: PVC edge banding matching thermoset decorative panels.

## 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, and Tops of Wall Cabinets and Tall 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.
  - 6. Door and Drawer Fronts: Minimum 3/4-inch (19-mm) thick particleboard.
  - 7. Drawer Sides, Backs and Sub-Front: Minimum 1/2-inch (12-mm) particleboard, doweled together utilizing minimum 8mm hardwood, fluted dowels.
  - 8. Drawer Bottoms: Minimum 1/2-inch (12-mm) particleboard, screwed directly to the bottom edges of the drawer box.
- 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.

## 2.6 CASEWORK HARDWARE AND ACCESSORIES

- A. Hardware, General: Unless otherwise indicated, provide manufacturer's standard satin-finish, commercial-quality, heavy-duty hardware.
- B. Hinges: Epoxy powder coated, five-knuckle hinges, institutional grade, 2-3/4 inch overlay type with hospital safety tip, of 0.095 inch thick metal, complying with BHMA A156.9, Grade 1 requirements. Available in color options including gray, beige, white, black and chrome. Provide two hinges for doors less than 48 inches (1220 mm) high, and provide three hinges for doors more than 48 inches (1220 mm) high.

- C. Pulls: Pull design to be selected by Architect from TMI Vendor Stock Pull Program or similar pre-approved program. Selection to include minimum of 20 design and finish options including: Bar Pull, Bow Pull, Contemporary Pull, Heavy Bow Pull, Petite Bow Pull, and Wire Pull. All pull designs to be of full metal construction, with 96mm hole spacing, meeting requirements of the ADA law.
- D. Door Catches: nylon-roller spring catch or dual, self-aligning, permanent magnet catch. Provide two catches on doors more than 48 inches (1220 mm) high.
- E. Drawer Slides: BHMA A156.9, Type B05091.
  - 1. Standard Drawers: Side mounted and extending under bottom edge of drawer, epoxy-coated steel with polymer rollers. 100-lb load rating with positive stop in both directions, and self-closing feature.
  - 2. File Drawers and Paper Storage Drawers: Full-Extension Side mounted and extending under bottom edge of drawer, epoxy-coated steel with polymer rollers. 150-lb load rating with positive stop in both directions, and self-closing feature
- F. Drawer and Hinged Door Locks: Cylindrical (cam) type, five-pin tumbler, brass with chrome-plated finish, and complying with BHMA E07261/62/63, 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, self-locking for 3/4-inch and 1-inch shelves, polycarbonate shelf clips complying with BHMA A156.9, Type B04013. Adjustable in 32-mm line boring holes. Load rating of a minimum of 300 lbs. each support without failure
- H. Adjustable Wall Shelf Supports: Surface-type steel standards and steel shelf brackets, with epoxy powder-coated finish, complying with BHMA A156.9, Types B04102 and B04112.
- I. Countertop Support: type and style as called out on drawings.
- J. Wardrobe Rod: 1-inch diameter, 14-gauge chrome plated steel, supported by captive mounting flanges.
- K. Coat Hooks:
  - 1. Single coat hooks, wall mount - Satin Aluminum.
  - 2. Double coat hooks, wall mount - Satin Aluminum.
- L. Closet Rod and Shelf:
  - 1. Wall mount rod brackets - 1-inch diameter, 14-gauge chrome plated steel, supported by captive mounting flanges.
  - 2. Wood rod and plastic laminate shelf above.
  - 3. Length as shown on Drawings.

- M. Grilles: Continuous satin aluminum finished countertop grille and toe-kick grille for air filtration at fin tube locations and as shown on Drawings similar to “Model #CT-PP-3 (countertop) / #CT-PP-0 (toe) Linear Diffuser” by Titus.

## 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. Door and Drawer Fronts:
  - 1. Laminated Door and Drawer Fronts: Minimum 3/4 inch thick. Drawer fronts and hinged doors overlay cabinet body. Maintain maximum 1/8-inch reveal between pairs of doors, between door and drawer front, or between multiple drawer fronts within cabinet.
  - 2. Frameless Sliding Glass Doors: 1/4 inch thick tempered glass with ground and polished edges. Fitted with anodized aluminum shoes and nylon rollers.
- C. Drawers
  - 1. Drawer Fronts: Applied to separate drawer body component sub-front.
  - 2. Drawer Sides: Doweled together utilizing minimum 8mm hardwood, fluted dowels. Stapled fastening not acceptable.
  - 3. Drawer Bottoms: Minimum 1/2-inch (12-mm) particleboard, screwed directly to the bottom edges of the drawer box. Bottom fully supported by drawer glides running front-to-back.
  - 4. Paper Storage Drawers: Fitted with full width hood at back.
  - 5. Suspension (all drawers): Drawer Slides as specified above in "CASEWORK HARDWARE AND ACCESSORIES."
- D. 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."
- E. Door/Drawer Front Rail: Provide minimum 3/4-inch x 6 inches x full width cabinet body rails immediately behind all door/drawer and multiple drawer horizontal joints.
- F. ADA-Americans with Disabilities Act Requirements: Comply with following special requirements, where specifically indicated on Drawings as "ADA" or "H.C."
  - 1. Countertop Height: With or without cabinet below, not to exceed a height of 34 inches above finished floor, at surface depth of 24 inches.
  - 2. Kneespace Clearance: Minimum 27 inches above finish floor and 30 inches clear span width.
  - 4. Adjustable or Fixed 12 inches Deep Shelving: not exceeding 9 inches to 54 inches above finish floor.

5. Wardrobe Cabinets: Furnished with rod/shelf adjustable to 48 inches above finish floor at maximum 21 inches shelf depth.
  6. Sink Cabinet Clearances: In addition to "Kneespace Clearance" above, upper kneespace frontal depth not less than 8 inches, and lower toe frontal depth not less than 11 inches, at point 9 inches above finish floor, provide outlet in back corner of sink bowl. Coordinate with Plumbing drawings and as further described in ADAAG guidelines.
- G. Epoxy Resin Countertops and sinks: Modified epoxy resins molded in solid thickness tops; 1-inch thickness. Provide tops in as long as practical continuous lengths. No joints wider than 1/8 inch or closer than 24 inches either side of sinks. Provide epoxy fittings including tailpieces, strainers and stoppers. Provide at all Science room locations and as indicated on drawings.
- H. 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. Wall Cabinets: Hang cabinets straight, level, and plumb. Adjust fronts and bottoms within 1/16 inch (1.5 mm) of a single plane. Fasten to hanging strips, masonry, framing, wood blocking, or reinforcements in walls and partitions. Align similar adjoining doors to a tolerance of 1/16 inch (1.5 mm).
- E. 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."
- F. 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.
- G. Adjust casework and hardware so doors and drawers operate smoothly without warp or bind. Lubricate operating hardware as recommended by manufacturer.

#### 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 56 51 - LIBRARY FURNITURE**

### **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-case library shelving.
  - 2. Movable shelving units.

#### **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 construction details, material descriptions, dimensions of individual components and profiles, and finishes for library furniture and accessories.
  - 1. Wood-case shelving.
  - 2. Movable shelving units.
- B. Shop Drawings:
  - 1. Include plans, elevations, sections, and details.
  - 2. Show clear-aisle widths from face of units.
  - 3. Detail fabrication and installation of library shelving systems including methods of anchoring to building structure at locations recommended by manufacturer.
- C. Samples for Initial Selection: For units with factory-applied finishes, 6 inches in size.

#### **1.5 INFORMATIONAL SUBMITTALS**

- A. Seismic Design Calculations: For seismic design of library shelving systems including analysis data signed and sealed by the qualified professional engineer responsible for their preparation.
- B. Qualification Data: For Installer.

## 1.6 CLOSEOUT SUBMITTALS

- A. Maintenance Data: For library stack systems to include in maintenance manuals.

## 1.7 QUALITY ASSURANCE

- A. Installer Qualifications: An entity that employs installers and supervisors who are trained and approved by manufacturer.
- B. Source Limitations: Obtain library furniture through one source from a single manufacturer, unless noted otherwise.
- C. Fire-Test-Response Characteristics of Upholstered Chairs:
  - 1. Fabric: Class 1 according to U.S. Department of Commerce (DOC) CS 191 and 16 CFR 1610.61, tested according to California Technical Bulletin 117.
  - 2. Padding: Comply with California Technical Bulletin 117.
  - 3. Full-Scale Fire Test: Comply with California Technical Bulletin 133.
- D. Product Options: Drawings indicate size, profiles, and dimensional requirements of library furniture and are based on the specific system indicated. Refer to Division 01 Section "Product Requirements."
  - 1. Do not modify requirements, as judged solely by Architect, except with Architect's approval. If modifications are proposed, submit comprehensive explanatory data to Architect for review.

## 1.8 DELIVERY, STORAGE, AND HANDLING

- A. Deliver library furniture only after painting, utility roughing-in, and similar operations that could damage, soil, or deteriorate library furniture have been completed in installation areas. If library furniture 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 PROJECT CONDITIONS

- A. Environmental Limitations: Do not deliver or install library furniture 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 occupancy levels during the remainder of the construction period.
- B. Field Measurements: Verify actual dimensions of construction contiguous with library furniture by field measurements before fabrication. Indicate measurements on Shop Drawings.

## PART 2 - PRODUCTS

### 2.1 PERFORMANCE REQUIREMENTS

- A. Seismic Performance: Library shelving systems shall withstand the effects of earthquake motions determined according to ASCE/SEI 7.

### 2.2 WOOD-CASE SHELVING

- A. Wood-Case Library Shelving: Shelving designed for library use and consisting of base frame and full end, top, and back panels, with end panels made to receive pins to support adjustable shelves.
  - 1. Basis-of-Design Product: Subject to compliance with requirements, provide Worden Company; Pin-Fast Shelving or comparable product.
- B. Wood Case Library Shelving: Shelving designed for library use and consisting of full end, top, and back panels, with end panels made to receive pins to support adjustable shelves.
  - 1. Configuration: Starter/adder units.
- C. Vertical Panels: Panels consisting of lumber-core veneer panels, 1-inch-thick, with solid-wood banding. Provide two rows of 8 mm holes at 32 mm intervals for shelf support pins on one side of end panels and both sides of intermediate panels.
- D. Base Frames: Lumber-core veneer panel external toe kick; particleboard with thermally fused melamine internal and back toe kicks; 4 inches high; designed to support bottom shelf and fabricated to attach and tie together vertical panels.
- E. Wood Shelves: Panels consisting of solid hardwood boards glued together, 3/4-inch-thick, with 2-inch solid-wood nosing strip, and grooved on underside to rest securely on supporting pins.
- F. Cornice Tops: 3/4-inch-thick, particleboard-core veneer panel banded with solid hardwood fasciae on one side for single-faced units and on two sides for double-faced units, fabricated to attach and tie together vertical panels.
- G. Back panels: Veneer-core, veneer-faced panels, 1/4-inch-thick.
- H. Bookstack Units:
  - 1. Type: Single faced units.
  - 2. Width: 36 inches-or as shown modified.
  - 3. Height and Number of Shelves:
    - a. 42 inches; three adjustable shelves; one base shelf.
  - 4. Shelf Depth: 14 inches.

5. Shelf Style:

- a. Flat, unless noted otherwise.
- b. Adjustable divider, where indicated.
  - 1) Notch shelf bottom for dividers.
- c. Pivot type periodical: for use in 12-inch-deep units, where indicated.
  - 1) Provide retaining rail, and adjustable pins for access to stored back issues.
- d. Hinged periodical: for use in 16-inch-deep units, where indicated.
  - 1) Provide retaining rail and allow for shelves to be self-storing in open position.

I. Bookstack Units- Movable: each 3' section to have locking casters.

- 1. Type: Double faced units- 24" deep, movable.
- 2. Width: 36 inches.
- 3. Height and Number of Shelves:
  - a. 42 inches; three adjustable shelves; one base shelf.
- 4. Shelf Depth: 12 inches nominal.
- 5. Shelf Style:
  - a. Flat, unless noted otherwise.

J. Accessories:

- 1. Adjustable Shelf Dividers: One-piece shelf partitions, with hooks or tabs to fit in slots in divider shelves.
  - a. Provide three per adjustable divider shelf.

## 2.3 STRUCTURAL SUPPORT

- A. Wall Anchorage: Manufacturer's standard, galvanized steel anchor designed to secure shelving to adjacent wall. Provide one per shelving unit for each shelving unit adjacent to a wall.

## 2.4 GENERAL FINISH REQUIREMENTS

- A. 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 WOOD FINISHES

- A. Preparation: Sand wood units after assembling for uniform smoothness at least equivalent to that produced by 220-grit sanding and without machine marks, cross sanding, or other surface blemishes.
- B. Staining: Remove fibers and dust and apply wash-coat sealer and stain to exposed and semi exposed surfaces as required to provide uniform color and to match approved samples.
- C. Finishing: Apply manufacturer's standard, baked, clear finish consisting of a sealer and a conversion varnish or nitro cellulous lacquer topcoat. Sand and wipe clean between applications of sealer and topcoat.

## 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 library stack systems.
- 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. Vacuum finished floor and wet mop resilient flooring over which shelving is to be installed.
- B. Before installing wood-case shelving], condition materials to average prevailing humidity in installation areas for a minimum of 48 hours unless longer conditioning is recommended by manufacturer.

### 3.3 INSTALLATION, WOOD CASE LIBRARY SHELVING

- A. Install library shelving systems at locations indicated on Drawings and according to manufacturer's written instructions.
- B. Level units with integral adjustable leveling devices to a tolerance of 1/8 inch in 96 inches for level and plumb.
- C. Install using anchorage or bracing as recommended by manufacturer and as required for stability.
- D. Install the following with concealed fasteners:
  - 1. End panels.
  - 2. Canopy tops- solid surface.



- E. Install shelves at equal spacing in each unit.

#### 3.4 CLEANING AND PROTECTING

- 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 installed products from damage during remainder of the construction period.

END OF SECTION 12 56 51

**SECTION 13 24 00 – MODULAR SOUND-ISOLATION PRACTICE ROOM****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. Modular sound-isolation practice room.

**1.3 SYSTEM DESCRIPTION**

- A. Design and Performance Requirements:
  - 1. Sound-Isolation Practice Rooms: Factory-fabricated, modular, sound-isolation enclosures with sound transmission characteristics meeting requirements. Enclosures shall be internally wired for power, lighting, and ventilation controls. Site-fabricated enclosures and enclosures with site-installed gaskets and sealants shall not be allowed. Modifications to room on site affect acoustical performance and laboratory test data. Rooms shall be assembled from factory-gasketed modular components that allow reconfiguration and relocation without component modification or loss of acoustical performance.
    - a. Interior Room Dimensions: As shown.
    - b. Interior Room Height: 7 feet 6 inches (2438 mm).
  - 2. Airborne Noise Reduction: Sound-isolation practice rooms with 410 cu. ft. (11.6 cu. m) interior volume, 34 percent perforated interior panels, 12 inch (304 mm) airspace between modules, mounted on concrete floor construction, tested as follows:
    - a. NIC 41 from exterior to interior of module, per independent lab test.
  - 3. Ambient Noise at Center of sound-isolation room: Lighting and ventilating systems operating, per ANSI S 12.2: Not exceeding NC 25.
  - 4. Reverberation Time: Sound-Isolation Practice Rooms with 640 cu. ft. (18.12 cu. m) interior volume: in contiguous octave bands, center frequencies from 125 to 4000 Hz, per ASTM C 423: 0.45 plus or minus 0.10 seconds.
  - 5. Ventilation Air Change Rate: Sound-isolation practice rooms with 406 cu. ft. (11.5 cu. m) interior volume shall have 35 air changes per hour. Other rooms will vary according to size and occupancy.

6. HVAC Ceiling Panel Sound Transmission Class: Per internal testing only: STC 45
7. Sound-Isolating Door Sound Transmission Class: With full window, per internal testing only: STC 46
8. Safety Glazing Products: 16 CFR 1201.
9. Seismic Performance: Comply with ASCE 7, "Minimum Design Loads for Buildings and Other Structures": Section 9, "Earthquake Loads" based upon seismic design criteria indicated.

#### 1.4 SUBMITTALS

- A. Comply with contractual requirements for submittals and as modified below.
- B. Product Data: Submit manufacturer's product literature, installation instructions, and maintenance recommendations.
- C. Shop Drawings: Prepared by manufacturer. Include elevations showing sound-isolation practice room components and details of each condition of installation. Show fabrication and installation details. Include plans, elevations, sections, details, and connections and attachments to other work.
  1. Indicate seismic bracing and fastening requirements.
- E. Samples: For each color and finish for each exposed practice room component.
- F. Contract Closeout Submittals: Comply with requirements for closeout submittals including training and submission of operating and maintenance.

#### 1.5 QUALITY ASSURANCE

- A. Company specializing in modular building construction with a minimum ten years of experience in the manufacture of sound-isolation practice rooms. Obtain sound-isolation practice rooms through one source from a single approved manufacturer.
- B. Installer to be manufacturer or manufacturer certified subcontractor.
- C. Coordinate installation of concrete slab supporting sound-isolation practice rooms meeting the following flatness tolerance requirements:
  1. The gap at any point between concrete surface and a 10-foot- (3.05-m-) long straightedge resting on 2 high spots and placed anywhere on the surface does not exceed 1/4 inch (6 mm).
  2. The elevation of the concrete slab around the perimeter of the room does not vary at any point by more than plus or minus 3/8 inch (8 mm) from level.

- D. Fire-Test-Response Characteristics per ASTM E 84 or UL Standard 723: Flame spread index: 25 or less; Smoke developed index: 450 or less.
- E. Safety Glass: Products complying with testing requirements in 16 CFR 1201 for Category II materials.
- F. Regulatory Requirements: Where components are indicated to comply with accessibility requirements, comply with the U.S. Architectural & Transportation Barriers Compliance Board's "Americans with Disabilities Act (ADA) and Architectural Barriers Act (ABA) Accessibility Guidelines for Buildings and Facilities".
- G. Electrical Components: Listed and labeled per NFPA 70, Article 100, by a testing agency acceptable to authorities having jurisdiction.

## 1.6 WARRANTY

- A. The product shall be guaranteed for a period of **five years** after completion against defective materials and workmanship. Failures are defined to include, but are not limited to, the following:
  - 1. Fracturing or breaking of room components, including doors, panels, or hardware, that results from normal wear and tear and normal use other than vandalism.
  - 2. Delamination or other failures of glue bond of components.
  - 3. Warping of components not resulting from leaks, flooding, or other uncontrolled moisture or humidity.
  - 4. Failure of operating hardware.
  - 5. Failure of acoustical gaskets and seals.
  - 6. Failure of room to perform acoustically in accordance with manufacturer's published data.

## PART 2 - PRODUCTS

### 2.1 MANUFACTURERS

- A. For convenience, details and specifications have been based on modular sound-isolation booth by Wenger Corporation, which is located at: 555 Park Dr.; Owatonna, MN 55060; Toll Free Tel: 800-4WENGER (493-6437); Tel: (507) 455-4100; Fax: (507) 455-4258; Email: request info (info@wengercorp.com); Wenger Corporation - Syracuse, which is located at 7041 Interstate Island Road, Syracuse, NY 13209; Toll Free Tel: 800-836-1885; Tel: (315) 451-3440; Email: request info (JRCinfo@wengercorp.com); Web: <https://www.wengercorp.com> or approved equal to establish quality and function.
- B. Refer to Instructions to Bidders, General Conditions, Supplementary Conditions and Division 1 for additional provisions and requirements relating to equivalent products or substitutions.

## 2.2 MATERIALS

- A. Steel Sheet: Cold-rolled, ASTM A 1008/A 1008M, commercial steel, Type B.
- B. Sound Attenuation Material: ASTM C 665, Type I, 1.5-lb/cu. ft (24 kg/cu. m).

## 2.3 SOUND-ISOLATION PRACTICE ROOM

- A. General: Sound-isolating booth meeting Contract Document requirements.

### 1. Floor System

- a. Sheet vinyl flooring bonded to high density 1-1/8 inches thick particleboard (fire resistant treated), supported by steel under structure, with 1-1/2 inches sound-absorbing vibration isolators, supported on 6-1/4 Hz natural frequency vibration isolators with 1/4 inches maximum deflection under typical loading, joined by mechanical fasteners and aligned by interlocking steel support clips. Floor fabricated for installation inside finished practice room without disassembly of modules.

### 2. Wall System

- a. Wall Frame: 14-gauge/0.075 inch thick steel channel with 1-1/4 inch thick factory-applied acoustical gasketing at floor slab, with 3/4 inch leveling adjustment.
- b. Wall Panels: 30 inches by 4 inches thick composite panels, consisting of an exterior face of 16-gauge/0.0598 inch sheet steel, an interior face of 22-gauge/0.0299 inch perforated or solid sheet steel, with sound-attenuation material at panels indicated as perforated (coordinate w/mech).
  - 1) Acoustical Seal: Two continuous acoustical gaskets factory-mounted at panel perimeter.
  - 2) Panel Attachment: Two or more mechanical locks on each vertical edge to align and engage adjoining panel and create compression seal between panels.
  - 3) Corner Assembly: Same construction as wall panels.
  - 4) Power Panel (one per unit): Same construction as wall panels, with factory pre-wiring meeting ETL and NEC requirements, consisting of conduit, wiring, junction and electrical boxes, and airtight cover plates, and including the following:
    - a. Two duplex receptacles.
    - b. Dimmable switches, occupancy sensors and connectors for lighting control (and fans, and VAE, as required).
    - c. Three empty raceways for future Owner-installed circuitry.

- 5) Acoustic Vision Lite Wall Panel: Same construction as wall panels, 30 inches wide, with nominal 26.5 by 65.5 inches vision lite, respectively, consisting of 1/4 and 3/8 inch thick laminated safety glass with 3 inches interspace, mounted in metal frame.
- 6) Communication Wall Panels: Same construction as wall panels, size and configuration indicated, with factory installed rough-in for addition wiring by owner, consisting of conduit, junction boxes, and airtight cover plates, and includes one pre-wired quad outlet.

### 3. Ceiling System

- a. Ceiling Frame: Sheet steel, 16-gauge/0.053 inch thick, with clamping mechanism for compressing ceiling panel acoustical gaskets, with external support beam where required by room size.
- b. Ceiling Panels: Same construction as wall panels, 15 inches wide by 6 inches thick, with the following characteristics:
  - 1) Acoustical Seal: Two continuous acoustical gaskets factory mounted at panel perimeter.
  - 2) Panel Attachment: Two mechanical locks on each vertical edge to align and engage adjoining panel and create compression seal between panels.
  - 3) Light Panels: Four (4), highly efficient, 50/60Hz, 100-277 Volt AC, 40 Watt, 1' x 4' dimmable edge-lit LED flat panels.
    - a) Technical information; power factor: 0.9, lifetime (L70): 50,000 hours, LED chip type: 2835, number of LEDs (per panel): 216, physical dimensions: 11.83 inches (W) x 47.63 inches (L) x 0.39 inches (H), color temperature: 5000k (standard), lumens: 4200, beam angle: 120 degrees, RA value: 80, compatible with 0-10V dimmers. Compliance & approvals: ETL, FCC, DLC QPL, IP rating: damp locations.

### 4. Interior Door

- a. 2 inches (51 mm) thick composite panel, consisting of an exterior face of 16-gauge/0.053 inch (1.34 mm) sheet steel, an interior face of 14-gauge/0.068 inch (1.72 mm-) sheet steel, and a core of sound-attenuation material, sound transmission class (STC) 46 (based on internal testing), size and swing as indicated on Drawings, and as follows:
- b. Acoustical Seals: Magnetic seal plus compression seal at head and jambs, and adjustable sweep seal at door bottom.
- c. Hinge: Cam-type wrap around continuous barrel hinge, CR 1010 steel.
- d. Door size: 3 feet (914 mm) wide standard.

- e. Door Vision Lite: Nominal 22 by 66 inches (559 by 1676 mm), glazed with safety glass.
  - f. Metal threshold: Stainless steel, 1/2 inch (12.7 mm) high.
  - g. Lockset: ANSI/BHMA A156.2, Series 4000, Grade 1, cylindrical lock with lever handle, 6 pin cylinder, classroom function locking, satin nickel finish.
  - h. Keying: Interchangeable core, with cylinder specified in Section 08 71 53 - Security Door Hardware.
5. Ceiling Ventilation System
- a. Provide manufacturer's, built-in fan standard free-standing room ventilation system:
  - b. Vent Panels: 15 inches (381 mm) wide by 6 inches (152 mm) thick panel with integral acoustical air plenum, with 1-1/2 inches (38 mm) sound-absorbing duct liner and four 90-degree bends.
  - c. Fan Exhaust Panels: 120 cfm (0.057 cu. m/s) exhaust fan mounted in panel with same construction panel as vent intake panel. Number of fan panels equal to number of vent panels. Fan exhausts to surrounding space.
6. Finishes
- a. Electrical Cover Plates:
    - 1) Light, Fan and VAE Switch (as required): Satin chrome finish.
    - 2) All other: Painted to match wall panel colors.
7. Other Exposed Components: Iron phosphate pre-coat and thermo-set epoxy resin powder coat (baked) finish.
- a. Colors:
    - 1) Wall and ceiling panels: Oyster.
    - 2) Wall and ceiling panels: Vanilla.
    - 3) Wall and ceiling panels: Warm Sand.
    - 4) Floor rail and door: Charcoal Grey.
    - 5) Floor rail and door: Warm Beige.

## PART 3 - EXECUTION

### 3.1 EXAMINATION

- A. Examination: Verification of Conditions (By Installer): Examine sound-isolation room installation areas for compliance with requirements for installation tolerances, including required overhead clearances and floor levelness, and other existing conditions affecting installation and performance of sound-isolating rooms. Proceed with room installation upon correction of unsatisfactory conditions.

#### 1. Sound-isolation Room Installation:

- a. Install rooms under direct supervision of manufacturer.
- b. Install rooms plumb, level, and true, using integral levelers. Install in accordance with manufacturer's instructions and approved submittals.
- c. Install room components utilizing integral panel clamping mechanisms. Do not use sealants, fillers, loose insulation, or exposed fasteners.
- d. Install seismic bracing and fastening in accordance with approved shop drawings.
- e. Do not modify panels or accessories in the field.
- f. Do not fasten room frame to floor unless indicated on approved shop drawings in compliance with seismic design requirements.
- g. Adjust rooms and hardware for doors to operate smoothly without warp or bind and close with uniform compression against flanges. Adjust sweep seals.

### 3.2 CLEANING

- A. Clean installed room surfaces. Touch-up, refinish or replace damaged components to restore damaged or soiled areas.

END OF SECTION 13 24 00



## **SECTION 14 42 00 - WHEELCHAIR LIFTS**

### **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. Vertical enclosed permanently installed platform lifts.

#### **1.3 DEFINITIONS**

- A. Definitions in ASME A18.1 apply to Work of this Section.

#### **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. Include 1. Preparation instructions and recommendations construction details, material descriptions, dimensions of individual components, and finishes for lifts. Include rated capacities, operating characteristics, electrical characteristics, safety features, controls, finishes, and accessories.
  - 1. Vertical enclosed permanently installed platform lifts.
- B. Shop Drawings: For each lift.
  - 1. Include plans, elevations, sections, details, attachments to other work, and required clearances.
  - 2. Indicate dimensions, weights, loads, and points of load to building structure.
  - 3. Include details of equipment assemblies, method of field assembly, components, and location and size of each field connection.
  - 4. Include diagrams for power, signal, and control wiring.
- C. Samples: For surfaces and components with factory-applied color finishes.
  - 1. Include Samples of integrally colored materials and accessories involving color selection.

- D. Sample Warranty: For special warranty.

## 1.6 INFORMATIONAL SUBMITTALS

- A. Product Certificates: For each lift.
  - 1. Include statement that runway, ramp or pit, dimensions as shown on Drawings, and electrical service as shown and specified are adequate for lift being provided.

## 1.7 CLOSEOUT SUBMITTALS

- A. Operation and Maintenance Data: For each type of lift to include in operation and maintenance manuals.
  - 1. In addition to items specified in Division 01 Section "Operation and Maintenance Data," include the following:
    - a. Parts list with sources indicated.
    - b. Recommended parts inventory list.
- B. Inspection and Acceptance Certificates and Operating Permits: As required by authorities having jurisdiction for normal, unrestricted use of lifts.
- C. Warranty: Executed special warranty.

## 1.8 QUALITY ASSURANCE

- A. Installer Qualifications: An authorized representative who is trained and approved by manufacturer.

## 1.9 WARRANTY

- A. Special Warranty: Manufacturer agrees to repair or replace components of lifts that fail in materials or workmanship within specified warranty period, at no cost to Owner.
  - 1. Warranty Period: Manufacturer shall provide a warranty for a period of ten years on the drive train, four years on all other components, and 90 days on labor, starting from the date of Substantial Completion.

## PART 2 - PRODUCTS

### 2.1 PERFORMANCE REQUIREMENTS

- A. Accessibility Requirements: Comply with applicable provisions in the U.S. Architectural & Transportation Barriers Compliance Board's ADA-ABA Accessibility Guidelines, ICC A117.1, and building code in effect for Project.

- B. Regulatory Requirements: Comply with ASME A18.1, "Safety Standard for Platform Lifts and Stairway Chairlifts."

## 2.2 VERTICAL PLATFORM LIFT

- A. Vertical Enclosed Permanently Installed Platform Lift: Pre-engineered lift system.
  - 1. For convenience, details and specifications have been based on the following:
    - a. Model: Clarity 16D Lift
    - b. Manufacturer: Ascension®, a division of AGM Container Controls, Inc., which is located at: 3526 E. Ft. Lowell Rd.; Tucson, AZ 85716; Toll Free Tel: 800-459-0400; Tel: 520-881-3993; Fax: 520-881-4983; Email: request info (WebSales@ascension-lift.com); Web: <https://ascension-lift.com>
  - 2. Enclosed vertical platform wheelchair lift with self-contained drive system.
    - a. For independent use by individuals with disabilities.
    - b. ADA Compliance: Includes all applicable operating and safety devices.
    - c. Low-Profile Platform Floor: Eliminates need for pit or access ramp at lower landing and facilitates entry into lift platform.
- B. Refer to Instructions to Bidders, General Conditions, Supplementary Conditions and Division 1 for additional provisions and requirements relating to equivalent products or substitutions.

## 2.3 LIFT PRODUCT

- A. Lift description: Machine cabinet, transparent runway enclosure, and lifting platform servicing 2 landings, each on the same side of the lift.
  - 1. Machine Cabinet: Installs against wall/structure opposing the landings, providing clear view lines through the transparent runway enclosure on three sides.
  - 2. Unobstructed View. Transparent panels on 3 sides of enclosure.
  - 3. Required Installation Space: 48.13 x 67.75 inches (1225 x 1720 mm).
  - 4. Enclosure Structure: Aluminum alloy.
- B. Platform Size: 36 by 56 inches.
- C. Lifting capacity: 750 lbs (340 kg).
- D. Vertical Speed: 20 fpm (6 mpm).
- E. Vertical Travel Range: 34 to 168 inches (865 to 4265 mm).
- F. Safety Features:
  - 1. Operating Switches: Constant pressure.
  - 2. Integral Emergency Lighting: Illuminates platform floor and controls.

3. Manual Lowering: Provide manual operation and battery power system to raise or lower unit in case of malfunction or power loss.
  4. Emergency Stop Button: Lighted, sounds audible alarm.
  5. Chain Safeties: 2X Type A.
- G. Door Operation and Clear Opening Width: Low-energy, power-operated doors that remain open for 20 seconds minimum; end door with minimum 33.43-inch clear opening width.
1. Lower Landing Door, 80" High:
    - a. Automatic Operation: Right-handed.
  2. Upper Landing Gate, 48" High:
    - a. Automatic Operation: Right-handed.
  3. Universal Keys: Provide two (2) per landing to limit lift use to authorized persons.
  4. Door and Gate: Interlock Switch IDEC HS5E/HS5L.
- H. Drive Configuration: 2:1 chain hydraulic.
1. Platform Support: 2 hydraulic jacks with 2 suspension chains each.
  2. Suspension Chains: No. 50 roller chain, 5045 lbs (22.4 kN) breaking strength.
  3. Hydraulic Power Unit: Mounted on vibration-isolating supports to minimize vibration transmission and reduce frame-borne noise.
- I. Power Supply: 120 VAC, 60 hertz. Amperage capacity: Exceeding 6 Amps, single phase.
1. Amperage Draw per Lift: 6 Amps maximum.
  2. Full-Time Battery Power: Integral 24 VDC SLA battery bank.
  3. Motor: 3 hp (2.1 kW), 24 VDC.
  4. Electrical System: Certified to ASME A17.5 by independent testing laboratory.
- J. Self-Supporting Unit: Support vertical loads of unit only at base, with lateral support as designed by Lift Manufacturer for Code Requirements.
- K. Machine Cabinet Enclosure: Manufacturer's standard enclosure assembly.
- L. Runway Enclosure: Rectangular steel-tube frame with 1/4 inch (6 mm) thick high impact strength clear thermoplastic to meet ASTM E-84.
- M. Lift Platform
1. Platform: Steel sheet or galvanized-steel sheet with manufacturer's standard black rubber flooring.
  2. Platform Enclosure, Door and Gate: Rectangular steel-tube frame with 1/4 inch (6 mm) thick high impact strength clear thermoplastic to meet ASTM E-84.
  3. Platform Grab Bar and Accent Rails: Stainless Steel.
  4. Lower Landing Ramp: Fixed ramp matching platform to provide transition from floor to lift platform per IAW ADAAG-404.2.5.

- N. Guide Rails: Aluminum alloy, integral to machine cabinet.
- O. Guide Rail Brackets and Cabinet Supporting Members: Steel.

## 2.4 MATERIALS

- A. Steel Plates, Shapes, and Bars: ASTM A 36/A 36M.
- B. Steel Tubing: ASTM A 500/A 500M.
- C. Steel Pipe: ASTM A 53/A 53M; standard weight (Schedule 40) unless otherwise indicated or required by loads.
- D. Stainless Steel Tubing: ASTM A 269, Grade MT 316L.
- E. Steel Sheet: ASTM A 1008/A 1008M, cold-rolled commercial steel (CS) or ASTM A 1011/A 1011M hot-rolled, commercial steel (CS); as required for each use.
- F. Galvanized-Steel Sheet: ASTM A 653/A 653M, G90 zinc coating,
- G. Galvanizing: Hot-dip galvanize items complying with the following:
  - 1. ASTM A 123/A 123M, for galvanizing steel and iron products.
  - 2. ASTM A 153/A 153M, for galvanizing steel and iron hardware.
- H. Aluminum: Alloy and temper recommended by aluminum producer and finisher for type of use, corrosion resistance, and finish indicated; manufacturer's standard strengths and thicknesses for type of use.
  - 1. Extruded Aluminum: ASTM B 221.
  - 2. Aluminum Sheet and Plate: ASTM B 209.
- I. Thermoplastic: Meets ASTM E-84, 25 Flame Spread Index and 450 Smoke Developed Index.
- J. Inserts: Furnish required concrete and masonry inserts and similar anchorage devices for installing structural members, guide rails, machines, and other lift components where installation of devices is specified in another Section.
- K. Expansion Anchors: Anchor-bolt-and-sleeve assembly of material indicated below with capability to sustain a load equal to 10 times the load imposed as determined by testing according to ASTM E 488 conducted by a qualified independent testing agency.
  - 1. Material: Group 1, Alloy 304 or Alloy 316, stainless-steel bolts and nuts complying with ASTM F 593 and ASTM F 594.
- L. Nonshrink, Nonmetallic Grout: Factory-packaged, nonstaining, noncorrosive, nongaseous grout complying with ASTM C 1107/C 1107M.

## 2.5 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.

## 2.6 FINISHES

- A. Steel and Galvanized-Steel Factory Finish:
  - 1. Powder-Coat Finish: After cleaning and pretreating, apply manufacturer's standard two-coat, baked-on finish consisting of prime coat and thermosetting topcoat to a minimum dry film thickness of 2 mils.
  - 2. Color and Gloss: As selected by Architect from manufacturer's full range.
  - 3. Stainless Steel: Brushed.
- B. Aluminum Finishes:
  - 1. Color Anodic Finish: AAMA 611, AA-M12C22A42/A44, Class I, 0.018 mm or thicker.
    - a. Color: As selected by Architect from full range of industry colors and color densities.

## PART 3 - EXECUTION

### 3.1 EXAMINATION

- A. Examine substrates, areas, and conditions, with Installer present, for compliance with requirements for installation tolerances, critical dimensions, and other conditions affecting performance of the Work.
- B. Minimum Headroom Clearance: Verify that installed lift will have a minimum headroom of 80 inches at any point during travel.
- 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

- A. General: Comply with ASME A18.1 and manufacturer's written instructions for installation of lifts unless otherwise indicated.

- B. Wiring Method: Conceal conductors and cables within housings of units or building construction. Do not install conduit exposed to view in finished spaces. Bundle, lace, and train conductors to terminal points with no excess and without exceeding manufacturer's limitations on bending radii.
- C. Coordinate runway doors with platform travel and positioning, for accurate alignment and minimum clearance between platforms, runway doors, sills, and door frames.
- D. Position sills accurately and fill space under sills solidly with nonshrink, nonmetallic grout.
- E. Coordinate platform doors with platform travel and positioning.
- F. Adjust stops for accurate stopping and leveling at each landing, within required tolerances.
  - 1. Leveling Tolerance: 1/4 inch up or down, regardless of load and direction of travel.
- G. Lubricate operating parts of lift, including drive mechanism, guide rails, hinges, safety devices, and hardware.
- H. Test safety devices and verify smoothness of required protective enclosures and other surfaces.

### 3.3 FIELD QUALITY CONTROL

- A. Acceptance Testing: On completion of lift installation and before permitting use of lifts, perform acceptance tests as required and recommended by ASME A18.1 and authorities having jurisdiction.
- B. Operating Test: In addition to acceptance testing, load lifts to rated capacity and operate continuously for 30 minutes between lowest and highest landings served. Readjust stops, signal equipment, and other devices for accurate stopping and operation of system.
- C. Advise Owner, Architect, and authorities having jurisdiction in advance of dates and times tests are to be performed on lifts.

### 3.4 MAINTENANCE SERVICE

- A. Initial Maintenance Service: Beginning at Substantial Completion, maintenance service shall include 12 months' full maintenance by skilled employees of lift Installer. Include quarterly preventive maintenance, repair or replacement of worn or defective components, lubrication, cleaning, and adjusting as required for proper lift operation. Parts and supplies shall be manufacturer's authorized replacement parts and supplies.

### 3.5 DEMONSTRATION

- A. Engage a factory-authorized service representative to train Owner's maintenance personnel to adjust, operate, and maintain lifts. Include a review of emergency systems and emergency procedures to be followed at time of operational failure and other building emergencies.

- B. Check operation of lifts with Owner's personnel present and before date of Substantial Completion. Determine that operating systems and devices are functioning properly.
- C. Check operation of lifts with Owner's personnel present not more than one month before end of warranty period. Determine that operating systems and devices are functioning properly.

END OF SECTION 14 42 00